

The Treasurer's Global Guide to Investing Cash



From HSBC Global Asset Management
in association with The Association of Corporate Treasurers

Authored by

WWCP

With contributions from **Deloitte.**





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Foreword

Welcome to the fifth edition of **The Treasurer's Global Guide to Investing Cash**.

This Guide provides a comprehensive overview of the professional investment of corporate cash, describing the content and context of the development of an investment policy, the factors that impact investment decision-making, and the different investment instruments available in various countries around the world.

It is intended to be used by treasurers and their teams not only as a guide to the complexities of developing and implementing an investment policy, but also as a tool to validate the policies of those who already have an investment strategy in place.

The basic principle remains true when investing corporate cash: treasurers face a trade-off between security, liquidity and yield. This Guide focuses on how to establish an appropriate investment policy to manage that trade-off and on the effective implementation of that strategy.

The Guide reviews the principle stages in developing an effective cash investment policy:

1. Forecasting cash flows accurately.
2. Managing cash flows effectively.
3. Segmenting cash flows intelligently.
4. Establishing an appropriate investment policy.
5. Implementing effective investment management.

This fifth edition has been updated to take account of the current global economic situation. In particular, the ongoing developments in the regulatory environment, faced by both treasurers and providers, continue to add complexity to the investment decision.

This edition contains 44 country profiles, with detailed information on the products available and tax and settlement considerations when making investment decisions.

HSBC Global Asset Management and the Association of Corporate Treasurers (ACT) are delighted to have collaborated in this new edition of the Guide and hope that it will be a useful and practical reference both for those new to investing short-term liquidity and for those who are already familiar with the subject through their work and ACT qualifications.

Sarah Boyce

Associate Director, Policy and Technical, ACT



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Colleagues around the world have provided valuable feedback on the country reports.

The support of Gerald Eastwood and Rani Bandal at HSBC Global Asset Management has been a crucial part of the production process.

On behalf of WWCP, I would like to extend my thanks to all of the above.

Guy Voizey

Editor, September 2017

Introduction

Since the publication of the fourth edition of this Guide three years ago, the global economic outlook has changed. After almost ten years of historic low interest rates, the Federal Reserve raised interest rates in December 2015 and there have been further increases since. Although central bankers in Europe expect to increase rates at some point, the experience of Japan shows that the timing of such moves is by no means certain. Any decision by a central bank to shrink the size of its own balance sheet, increased as a result of quantitative easing programmes, is likely to add inflationary pressure to the economy and, consequently, result in higher interest rates.

The regulatory changes trailed in the last edition have been further implemented. The Basel III reforms have already had an impact, notably on the way banks manage their own balance sheets. Money market fund (MMF) reforms to US 2a-7 funds were implemented in October 2016. The result was a major shift out of prime funds, which now must have a variable net asset value, into government funds, which can retain a constant net asset value. The pressures of supply and demand have led to an increased spread between returns offered on the two types of fund. Reforms to EU money market funds were agreed in May 2017, with implementation due by 2019.

Notwithstanding this upheaval, the fundamental challenge for the investing treasurer remains the same: to reduce the risks associated with investing cash both in terms of the preservation of principal and the maintenance of liquidity. Although the core text of this book has been written with the corporate treasurer in mind, the principles of managing cash apply to treasurers in any business.

This book is based on the five principles of effective cash management, with each one forming the basis of a separate chapter. Although there are chapters on every stage of the process, the focus is clearly upon the development of an investment policy and the implementation of any investment decision.

Forecasting cash flows accurately

Understanding future cash flows allows the company to use internal funds more efficiently, reducing the reliance on external borrowing in many organisations. This also helps from an investment perspective. It reduces the need for precautionary balances to be held, in case of

need, allowing the treasurer to plan the investment of funds until they are needed by the business to meet its matching obligations. Tools to support more accurate forecasting have become more widely available in recent years.

Managing cash flows effectively

The next stage is to put in place an effective liquidity management structure, which will allow cash to be collected, pooled (if appropriate) and disbursed to cash-poor entities within the group. Such a structure is likely to improve the visibility of cash within the organisation, increasing the funds available to invest.

Segmenting cash flows intelligently

With a clear understanding of cash flows and an efficient liquidity management structure in place, the treasurer will be able to identify the levels of peak cash surplus and, more importantly, the expected timing and amount of lowest cash surplus. This information provides treasury with the volume of cash available for investment at specific points in the future, together with the times when funds will be needed by the business. With increased uncertainty in the financial and money markets, it is prudent for treasurers to segment cash into two categories: operating cash, including working capital and other cash needed within a specified period (typically up to a year), and strategic cash, which is not likely to be needed by the business during that time.

Establishing an appropriate investment policy

With a clear view of how cash flows through the business, and a forecast of future cash balances, the treasurer needs to establish a clear investment policy appropriate to his or her company or group. This should establish clear overall objectives for short-term investment and detail how the treasury will seek to manage the risks arising. This policy should be pre-approved to indicate board-level support for the risk appetite the policy implies.

Implementing effective investment management

With an investment policy in place, the treasury needs to establish a set of operating procedures to follow when making an individual investment decision. These procedures should set out, in detail, the precise steps to be taken, from identifying the funds available to invest, through the process of selecting the appropriate instrument and counterparty, to dealing and final settlement, before outlining how to monitor the investment from settlement through to maturity.

The book concludes with four appendices. The first provides an explanation of the core money market instruments, including an analysis of their main characteristics and uses. The second is a guide to the most commonly used investment calculations. The third is a series of country profiles, being particularly useful as a reference source outlining the main instruments available in 44 different countries. The last is a glossary of investment terms.

This book will be invaluable for any treasurer who is new to the task of investing cash. At the same time, it will act as a validation tool for the treasurer who wants to review his or her

organisation's investment policy and procedures. We hope you enjoy reading the Guide, and find it to be a useful addition to the treasury library.

Change is the new normal when investing cash

The Association of Corporate Treasurers

When the fourth edition of this guide was published in 2014, corporate treasurers had dealt with the immediate consequences of the 2008 global financial crisis (GFC) and, in particular, were managing cash through a period of historically low interest rates, and a loss of confidence in bank counterparty risk.

Arguably, little has changed in the last three years; interest rates have remained low for the duration and bank counterparty risk continues to be subject to close monitoring. In practice, however, things have moved on; the extensive regulatory changes identified by the G20 through the auspices of Basel III are now reaching the end of the implementation stage and the consequences of these changes and the costs of doing business are feeding through to the real economy.

Regulatory changes that particularly impact the treasurer looking to invest cash include:

- ▶ Implementation of the Basel III liquidity cover ratio (LCR) is adding to the distortion of short-term interest rates, and making pooling a less attractive tool for cash management.
- ▶ Bank ring-fencing continues to be a work in progress; separation into retail and wholesale banks is nearing implementation in the UK. Investors need to understand the new structures and where their money is being held to be able to identify the counterparty risk they are facing.
- ▶ EMIR has resulted in the posting of collateral in response to price movements on derivatives for large corporates (NFC+) in the EU. These regulations effectively transform foreign exchange and interest rate risk into liquidity risk, placing additional liquidity demands on these businesses.
- ▶ Revised MMF regulations are being implemented globally. Simply put, principal is no longer guaranteed and redemption fees and gates have been introduced to forestall a run on an MMF in the event of market dislocation.

All of these changing regulatory requirements have resulted in financial institutions, in particular, adjusting their business models, withdrawing from certain lines of business and limiting cross-border activities (parochially referred to in Europe as Balkanisation).

Furthermore, there are a number of other, more general, issues impacting financial markets:

- ▶ Basel IV and (in the EU) CRD V are now being tabled.
- ▶ Possible repeal or redrafting of Dodd-Frank legislation in the USA – the discussion over

the form and nature of bank regulation may result in the economically biggest member of the G20 diverging from the rest.

- ▶ The real possibility of rising interest rates.
- ▶ Uncertainty over timing and process to unwind quantitative easing programmes.

Alongside all of this, we have the Base Erosion and Profit Sharing initiative of the OECD, which reaffirms the long-standing reality that corporate treasury and corporate tax are interwoven. The UK appears intent on being the worldwide test bed for this initiative, which came into effect from April 2017. The impact is to make capital structure management more complex and to widen further the cost of carry of the cash reserves that corporates around the world have continued to hold since the GFC.

These changes, and the resultant levels of uncertainty when it comes to liquidity management generally, mean that ensuring your organisation has a clear and practical approach to working capital, cash management and investment of surplus funds is more important than ever. In the remainder of this article, we consider how each of the key phases in developing a cash management strategy has changed since this guide was last published in 2014.

Forecasting

The ability of the treasurer to access accurate, timely information about forecast cash flow activity became very important during the GFC and arguably remains so today, although credit conditions have eased materially. The lesson learned from 2008 was that forecasts must be stress tested and scenarios developed to ensure liquidity in times of crisis and uncertainty.

These are times of uncertainty. At the time of writing, the USA is seeking to revise radically its approach to international relations and domestic manufacturing and the UK has decided to leave the EU. These are part of a more general questioning of the political culture and economic behaviour that has evolved over the last 70 years.

In response, there has been increasing implementation of corporate enterprise resource planning systems that offer the opportunity to micro manage cash flow forecasts using data held in budgets, business plans, and accounts receivable and payable systems.

Managing

Having identified forecast cash flows, the treasurer must ensure that those flows can be managed effectively to guarantee the organisation gets the best use of its resources. The treasurer must also consider the security of any deposit.

Pre-2008, under 'too big to fail', it was assumed that a bank deposit was as safe as the government that stood behind the bank. However, by 2011 it was clear that national authorities would no longer bear this risk (on behalf of the taxpayer). As a result, there are

now Bail-In rules that, in the event of a bank failure, could ultimately result in a wholesale deposit being converted into equity.

Despite this potential security concern, post-GFC, treasurers have chosen to maintain greater levels of liquidity than would have been considered efficient pre-2008. The Treasury Strategies Quarterly Corporate Cash Briefing webinar in which the ACT participates (Source: www.TreasuryStrategies.com) presented statistics at Q4/2016 that showed that corporate cash holdings across the eurozone, UK, USA and Japan continued to rise strongly post-2008, although the cost of carry of cash increased dramatically, even for more highly rated businesses. Clearly, ensuring liquidity outweighed any concern over the cost of carry of cash.

Some businesses have continued the pre-2008 trend to concentrate group-wide cash flows into centralised processing entities where they have better control over outflows and can net off currency cash flows within the group (e.g. in-house banks). There has been greater use of pooling and netting solutions to concentrate cash for more efficient use, although regulatory developments (e.g. the Basel III LCR rules) are causing banks to reconsider offering some pooling solutions.

The trend in the cash holding statistics shows that the corporates prefer to hold cash than rely on multibank committed facilities for their immediate liquidity given that the undrawn amounts of a facility with a bailed-in bank could be cancelled.

Security of cash is more important than yield. Corporates have developed a preference for holding cash in the short term, rather than reducing debt. Estimates of corporate cash holdings to GDP are between 20% and 30% in the UK, USA and eurozone, and higher in Japan (Source: www.TreasuryStrategies.com).

Segmenting

This chapter explores how funds may be classified into various buckets depending on how much risk the organisation is prepared to take and how long the cash can be invested for: i.e. segmenting the funds. Given market and economic conditions, flexibility remains key when investing cash. Treasurers tend to prefer to keep duration short and diversify across a range of investment products to the extent practical for the scale of the organisation and its treasury.

Treasurers have three main choices when investing cash: bank deposits; MMF; and repos. The first two products have been directly affected by recent regulatory changes designed to try and avoid a liquidity crisis amongst financial institutions. These changes adversely affect the usefulness of these forms of investment for corporates. Bank deposits are discussed in detail in the following chapters, but it is worth noting that the implementation of the Basel III LCR will require that banks use part of the proceeds of a deposit to purchase high-quality liquid assets (HQLA) and this will depress the return on the deposit. The percentage of the

deposit that must be held as HQLA reduces once the deposit is made for more than 91 days and, as a result, deposits with longer maturities are more attractive to banks. However, this may be beyond a company's concept of flexibility. MMFs are also discussed later, but here we note that the introduction of redemption fees and gates to avoid runs on the MMFs makes them less flexible than historically because there is a risk these tools come into effect at the worst time for a corporate: i.e. when a liquidity crisis is occurring.

Repos are being used by large treasuries to increase the probability of redemption and do provide maturity flexibility, and often better yield, but require additional, relatively sophisticated systems and additional documentation.

Which instruments a treasurer chooses to use and how they are used will depend on the investment policy.

Investment policy

Treasury is essentially ensuring the right money is in the right place at the right time and so the underlying concern for treasurers will be access to cash and the ability to move it to where it is needed. There will be crises that are so profound that markets cease trading, but any damage is usually felt first by weaker credits either as a result of their business profile, their domicile or their size. Therefore, a corporate's investment policy needs to reflect the appetite for counterparty risk.

One lesson from the GFC was that even the most thorough credit analysis may fail to reveal unexpected events (Black Swans). Therefore, treasurers need to look beyond simplistic measures such as credit rating, the traditional measure of probability of repayment when considering counterparty risk. For example, identifying which country stands behind a counterparty has become more important than before (the ability, or otherwise, of a small economy to take responsibility for a large financial services sector was illustrated well by events in Iceland).

The group and branch structures of many financial entities need to be understood to identify which country regulator will take charge in the event of a crisis, either of the entity or of the markets on which that bank relies. Also, consideration should be paid to which part of an institution the organisation is doing business with. The onshore entity providing credit to you may be a better credit risk than its offshore subsidiary that wants to borrow your cash.

Some other considerations when putting together an investment policy might include:

MMFs – these continue to be a popular solution to achieve counterparty diversification, but treasurers need to monitor the counterparties in which they are invested. Despite recent regulation, there will remain a tendency to place cash with those who want and need it. As an example, some European MMFs became heavily biased towards eurozone banks

post-2008, because it was those banks that needed to borrow short-term cash; the level of the lenders' counterparty risk effectively depended on the willingness of the European Central Bank to support its bank markets.

Repos – these are reliant on a liquid market in the securities that are used to collateralise the cash lent. Although losses have not been recorded, there are examples of failed settlement where a borrower has not been able to deliver the required securities, which may be attributable to inefficient liquidity in those securities' markets.

Absolute Value At Risk – the simplest question to ask when forming an investment policy is 'How much cash could we afford to lose or have tied up for much longer than expected before we are in trouble?' This sets the maximum amount one could put at risk in any one segment, or in any one market participant.

Implementation

One lesson from the last ten years is that treasurers must now expect the unexpected – flexibility is key.

Today, receiving a substantial amount of cash, say from a sudden asset sale, raises problems as difficult to solve as finding your board has unexpectedly committed to funding a business transformation purchase of assets.

The likelihood is that any carefully crafted plans will need to change, and change quickly. Therefore, the organisation needs to have the technical systems in place that are sufficiently flexible to manage step changes in business, established routes to the board to change investment policy and a sufficiently broad range of relationships across the financial services sector to respond to cash management requirements.

This final point is particularly important, as establishing and maintaining such relationships can be onerous. Banks can no longer trade and then document business and, in the EU, MiFID2 will exacerbate the need for 'look forward' documentation. Add to this increasingly complex KYC requirements and implementation of an investment policy becomes as much a documentary exercise as a systems or relationship one.

As we have often explained to financial regulators, a corporate's financial services relationships are not necessarily with the cheapest supplier, but with those who understand the company's businesses and react to its changing needs.

Stephen Baseby, Associate Director – Policy and Technical (Ret)

Sarah Boyce, Associate Director – Policy and Technical

ACT

Forecast manage segment

Chapter 1

Forecasting cash flows accurately

Introduction

The development of technology over recent years has given treasurers access to more information about cash flows and cash positions than before. Notably, treasurers can increasingly see real-time transaction information for bank accounts located around the world. Moreover, treasurers can also use technology solutions to aggregate data feeds from many different banks so that the data can be consolidated to a single position shown on a single screen.

More confident of the accuracy of current positions, a proactive treasurer is then better able to focus on improving the quality of the company's cash flow and position forecasting processes. In addition, access to more sophisticated data feeds from banks around the world means that this improved forecasting can be extended to business units worldwide.

Having an understanding of likely future cash flows, and therefore of likely future bank account balances, allows the proactive treasurer to plan the company's borrowing and investment needs efficiently. With detailed forecasts, the treasurer is able to use internal funds (cash surpluses generated in one part of the business) to finance developments in cash-poor parts of the business. Efficient use of internal funds can significantly reduce the level of more expensive external borrowing in some organisations.

An understanding of when cash is likely to be needed by the business will also allow the treasurer to plan investments more skilfully. The company may find it needs to keep less precautionary cash in overnight accounts (although the treasurer may choose to keep cash in such accounts for other reasons); instead, the treasurer will be able to include longer-dated instruments when selecting appropriate alternative investments.

This chapter provides a brief outline of the main methods of cash flow forecasting, and how treasurers can best use them.

Different types of cash flow forecast

Time horizons

The most basic cash flow forecast will allow the treasurer to determine likely balances at the end of the current and next business days. However, in order to be useful to the treasurer, a cash flow forecast should be able to predict balances over a series of time horizons.

Most companies will prepare cash forecasts on three levels: short-term (from the end of the current day up to a month or three months, depending on the nature of the cash flows in the business); medium-term (up to a year); and long-term (over a year).

Short-term forecast

A short-term forecast will generate end-of-day balance forecasts on a rolling basis from the current business day up to seven or 14 days (depending on the nature of the business). For periods up to about three months, the forecast may be generated on a weekly basis.

For an international company operating with a number of bank accounts denominated in different currencies, these short-term forecasts may be prepared for every (or most) bank account(s). For smaller companies, or for those operating in one country in one currency, it may be sufficient to prepare an aggregated forecast balance. This is especially appropriate if the company maintains an automated sweep between accounts, to avoid unnecessary overdraft interest.

Medium-term forecast

A medium-term forecast will usually take the form of a series of rolling monthly cash forecasts, from one month up to one year. From an investment perspective, a medium-term forecast will enable the treasurer to identify the peaks and troughs of cash availability throughout the year. This will be useful when the treasurer is considering making investments for periods longer than a month.

Long-term forecast

A long-term forecast will mainly be used by the treasurer and finance director to plan corporate finance activity, such as arranging long-term bank facilities and bond issuance programmes, or setting a target for the company's long-term debt/equity balance. By its very nature, a long-term forecast cannot be as accurate as a short-dated forecast. However, from an investment perspective, it allows the treasurer to plan for the investment of the proceeds of a bond or rights issue, for example.

In addition, some listed companies may also be required to include a working capital statement (essentially confirmation that the business has sufficient cash reserves and borrowing facilities to cover net outgoings, including debt repayments) in their annual report and accounts. A long-term forecast will support the preparation of this statement.

Techniques

There are a number of different techniques that can be used to forecast cash. Their suitability depends on the company's ability to access the necessary information, the nature of the company's business and the cash flows that arise, as well as the time period over which the forecasts are being made.

Sources of data

The first stage in generating any forecast is to identify the potential sources of data. These will include scheduled outgoings (such as payroll, interest payments and supplier payments) and

expected incoming payments (such as payments for goods and services already supplied and contracted to be supplied). The analysis should also include the cash flow impacts of longer-term borrowings, such as the repayment of the principal of a bank loan, drawings down from commercial paper programmes and bond issues, and of other strategic activity, such as planned acquisitions or divestments.

For most forecasts, especially those with a longer time horizon, the treasurer may have to rely on predicted incoming payments (e.g. from sales forecasts) and outgoings (e.g. loan repayments based on forecast interest rates). This may require building data from a variety of sources, all of which are prepared differently.

As the information becomes more certain, this estimated data should be replaced by confirmed data in the various cash flow forecasts. At every stage, it is important the treasurer understands the reliability of the underlying data when planning future borrowing and investment. In particular, the treasurer needs to be aware of how changes in certain forecasts or market instruments (especially interest rates and key exchange rates) will affect the cash flow forecast.

Basis of forecast

Depending on the time horizon for the forecast, and the availability and reliability of the data available, the treasurer will need to assess the basis on which to build the forecast. Broadly speaking, there are two techniques for generating cash flow forecasts: for short-term forecasts, companies tend to use a receipts and payments method; while for the longer term, once a receipts and payments approach becomes too inaccurate to be useful, forecasts can be generated using forecast balance sheets and income statements. Whichever method is adopted, the forecasts will be more useful if there is some assessment of their expected accuracy. To an extent, this can be built up from experience in comparing forecasts to outcomes. Alternatively, a best and worst case forecast could be created by flexing the source data used to build the forecast. For example, forecasts can be varied using different exchange and interest rates.

Another way of gauging the likely reliability of the cash forecasts is to produce the core forecast and then consider what levers are realistically available to speed up or slow down payments, within the timescales being considered.

Receipts and payments method

This technique uses a combination of information drawn from bank accounts (usually cleared funds, with the value date important to distinguish between the posting date and the date of access to funds), accounts receivable (receipts for goods and services provided, interest receipts generated by investments) and accounts payable (payroll, payments for goods and services received, interest payments due on bank and non-bank borrowings) systems and records.

Using this information, the treasury can build up a pattern of expected cash inflows and outflows for each bank account under its control and, together with the starting cleared funds balance, generate a series of expected balances over the time frame of the forecast.

The real challenge when building the forecast is to recognise the difference between the known and estimated data that is entered. Many forecasts rely on estimates for both the timing (the treasurer will not usually be certain when customer payments will be received) and the value (the sales team may offer a price reduction for early payment) of receipts. Where estimates are made, these will need to be replaced with firm values when the information becomes known. As the estimates are based on previous trading performance, the treasurer should be aware of the effects of the estimated data on the forecast, especially in poor trading conditions.

Balance sheet and income statement method

For longer-term forecasts (perhaps for beyond three months, depending on the company's business), too little of the data used in generating a short-term forecast may be sufficiently accurate to provide a meaningful forecast. In these circumstances, treasurers tend to use data extrapolated from the balance sheet and income statement to generate a forecast cash flow at both group and operating company levels. This forecast will not be particularly accurate, as it will be based on expected sales and other projected accounting data. However, if prepared carefully, the treasurer will be able to predict the levels of any external and internal funding requirements, as well as the location and currency of any pools of surplus cash for investment.

Using the cash flow forecasts

The benefits of forecasting

Treasury's ability to identify and manage cash depends on the quality of management information available to the department. Although a certain amount of information supports a centralised liquidity management system, this is, at best, real-time information about actual cash flows. In order to plan an investment strategy, treasury will need advance information of future cash flows and balances from a cash flow forecasting system.

Whether a company has net cash or is a net borrower, a comprehensive cash flow forecasting system allows it to ensure that any available surplus cash is used within the business before the company borrows from the external markets. An effective cash flow forecast also means companies will need fewer standby facilities to meet unexpected borrowing peaks. These standby facilities represent an additional cost.

Cash flow forecasts and balance reports also act as a general form of management reporting that provides a powerful indicator and control mechanism, especially when forecast figures are compared with actual results. (This applies for both short-term and longer-term forecasts.) For those companies that must operate within the terms of financial covenants (e.g. a ratio of net debt to EBITDA, or a ratio of free operating cash flow to total debt), cash flow forecasts are an essential tool for compliance. Some companies, especially those financed by private equity, have very high debt ratios. As a result, they typically have to operate under very tight financial covenants, with cash flow being their most important indicator.

Although the focus of cash flow forecasting is usually to avoid unnecessary external borrowing, improving the process may allow treasury to take a longer-term view of investment

decisions. For example, if treasury knew net cash might be positive for a period of a week or more, it would be able to invest in some longer-dated instruments, rather than reinvesting all surplus cash on an overnight basis every day, allowing the company to select from a wider range of instruments and potential counterparties.

In contrast, a company without an effective cash flow forecast will need to keep some funds accessible to meet any unexpected cash demands. From an investing perspective, treasury may have to rely on trends, rather than forecasts, when managing overnight cash.

Collection of information

To achieve these objectives, a treasurer needs to collect and collate information from a range of sources, as accurately and as quickly as possible; however well the forecasting system is designed, its accuracy and effectiveness is wholly dependent on the quality of data it computes. For most treasurers, there are two core sources of underlying data for the cash forecast: partner banks and other group entities, including central teams (such as a shared services centre) and operating companies and other subsidiaries.

With respect to partner banks, recent developments in bank functionality and treasury technology have given treasurers access to a wider range of tools to support cash management. In the past, treasurers had direct access to information on bank accounts held in the name of group treasury only. Today's treasurer can access more accurate and timely information about a much greater number of bank accounts held in the name of the group. Even when they do not control operating company bank accounts, central treasurers can gain visibility over these accounts. This information helps to build a more accurate picture of the group's individual and aggregate cash positions.

Bank functionality also provides access to real-time information on bank accounts. Moreover, this information is increasingly available to treasurers wherever they happen to be via a range of mobile platforms. In addition, if banks decide in the future to impose charges for intra-day credit as a result of Basel III and other regulatory changes, having access to real-time information is likely to become more important. In these circumstances, treasurers will want the ability to time disbursements to minimise any charges.

Central to this improved functionality is a dramatic change in the way treasurers can communicate with their banks. Instead of needing a different line of communication with each bank, it is now possible for a treasury department to communicate with all of its core cash management banks from the same system: typically, but not necessarily, a treasury management system (TMS) or enterprise resource planning (ERP) system. Aggregating software can capture data feeds from different banks and translate it into a single position. Similarly, it can translate a treasurer's instructions into each partner bank's required format, enabling the treasurer to communicate with all banks from the same platform. At the same time, the work on standardising payment formats, especially via XML ISO 20022, has improved the flow of data between organisations.

This process has been helped by changes to the rules governing access to SWIFT. This has had

the effect of moving from a network closed to non-bank corporations to one that can be used by mid-sized corporates. The process of improving the flow of data between banks and their corporate clients will continue, not least because the banks need to respond to the ongoing threat of disintermediation posed by FinTech companies, and blockchain technology in particular. SWIFT's global payments innovation initiative, which is focused on improving the experience of cross-border payments, is one example of how the banking industry is responding.

Finally, as well as having greater visibility over group bank accounts, treasurers also have the ability to exercise greater control over the execution of payments. In recent years, the need to demonstrate compliance with progressively onerous regulation has encouraged the centralisation of treasury activity, which improvements in functionality has allowed. Even when execution is not centralised, the developments outlined above allow treasurers to introduce more standardised processes in execution, so timings of disbursements, in particular, can be controlled, with a consequent improvement in both cash forecasting and cash management.

The real difficulty in forecasting cash is the collection and collation of data from the group subsidiaries, which is necessary to be able to forecast the various bank account positions. In an ideal world, all group subsidiaries would use a common ERP system to record and process the same type of data in the same way. This data could then be fed into the cash flow forecast automatically, creating reliable and accurate forward-looking results.

In reality, it is not that straightforward. Where companies do employ ERP systems, it is not unusual for them to be using different versions of the same system or different systems completely. Some entities within a group may not use an ERP system, even if the majority of a group of companies does. This can make it difficult to develop a consolidated cash flow forecast.

One solution is to use a web-based tool for collecting data from subsidiaries. Entities can enter their data via a web interface to the cash flow forecasting system from wherever they are in the world, and irrespective of the operating system they use. This approach also allows group treasuries to integrate new acquisitions into the cash flow forecast very quickly.

Building a forecasting system

Where there is no automated cash flow forecasting system, the treasurer will need to identify how best to build one. This needs a careful cost benefit analysis. The benefits are likely to be greatest where more accurate information can be used to reduce external borrowing (perhaps by using cash surpluses generated by group subsidiaries more effectively) or to allow the treasurer to invest more funds for longer (reducing the cash that needs to be reinvested every night). These potential benefits must be evaluated against the costs of both building and operating a new cash flow system.

The need for accurate and complete cash forecasts will depend on how they are being used. If cash investments are being kept very short-term for credit risk reasons, then highly accurate short-term forecasts are not needed; the amounts being placed on deposit each day can be

used to compensate for any errors in the forecast. If several of the group's units are very small, their cash balances may be immaterial. Under these circumstances, those units need not be required to report their forecasts into the group forecast or, if they are, they may be asked to update their forecasts less frequently than the larger units.

Where a company uses a variety of incompatible operating systems, the treasurer may decide to build a forecasting system using spreadsheets. These have the advantage of being cheap to build. For smaller companies and groups without complex cash movements, a forecast using spreadsheets may be sufficient. However, spreadsheets are less useful for forecasting cash flows in more complex organisations, as they become difficult to create and more time-consuming to manage.

Depending on how the treasurer intends to use the cash flow forecast, there will be a point at which the implementation of more advanced technology will become cost-effective. Most TMS and ERP systems have cash flow forecasting modules that can interface with other systems throughout the business, such as the general ledger, bank reporting modules, and accounts payable and receivable systems. Adopting techniques to improve the visibility of cash throughout the group will also help the treasurer develop more accurate cash forecasts, as these can be based on more accurate and timely data.

When such systems work as intended, data only needs to be entered into one module of the interlinked system, allowing the forecasts to be updated automatically and without risk of error. However, the implementation of such systems becomes more difficult and costly as the complexity of the organisation increases.

The forecast will include a degree of sensitivity analysis, allowing the company to model the effects of changes in a range of factors on its cash flow. Most sensitivity analyses would model the effects of changes in market interest and exchange rates and inflation on cash flows. They would also allow the treasurer to model other changes, such as the timing of outgoing payments (a decision to move from a weekly to a fortnightly payment run, for example), to identify the impact on cash flows.

Finally, the treasury will want to improve the effectiveness of the cash flow forecast, by learning from variances between past forecasts and actual cash balances. By examining past performance, treasury will be able to identify trends that will allow the company to improve the accuracy of the forecasts over time.

Case Study:

Using technology effectively

From a cash management perspective, an appropriate deployment of technology can give a treasurer visibility over bank accounts worldwide and can be used to forecast cash positions ever more accurately.

This additional information can then be used to manage cash effectively and efficiently.

One non-bank financial institution (NBFI) needed to replace its bank account management system, as its previous solution was no longer supported by the provider. In part because of this experience, the NBFI has chosen to develop its own solution. As the new solution will not be tied to any single provider, the NBFI is seeking to achieve longevity and scalability. The new in-house bank account management system will not only accept data feeds in SWIFT formats, but will also accept data submitted in other formats, such as spreadsheets and pdf, in due course.

The primary objective is to create a centralised liquidity management solution covering all bank accounts to improve operational efficiency. The solution will integrate bank statements into the company's ERP, allowing transactions to be captured and reconciled to general ledger entries. Operationally, the system will generate payment files without manual intervention, reducing the risk of error and fraud and providing greater certainty over the value of payments going out.

The solution will also provide central treasury with much greater visibility over cash positions. The company receives end-of-previous-day balances from its banks, which are combined with intraday forecasts to estimate the current end-of-day balances. This allows for a more efficient investment of cash with fewer idle balances. The scalability of the solution means that, if needed, the company could decide to capture intra-day information from its banks.

There are other benefits, too. As a regulated entity, the NBFI needs to demonstrate that it is holding sufficient regulatory capital. Improved visibility of cash allows the treasurer to identify surplus cash more easily and to move it if necessary. The treasurer can also use this information to manage counterparty risk. By calculating group exposure to particular counterparties globally, if, for example, the NBFI wants to limit counterparty exposure to 25% of cash, the treasurer can ensure compliance with that limit.

This is a good example of how better visibility of cash can not only support more efficient operations, but also manage risk more effectively, in this case regulation and counterparty risk.

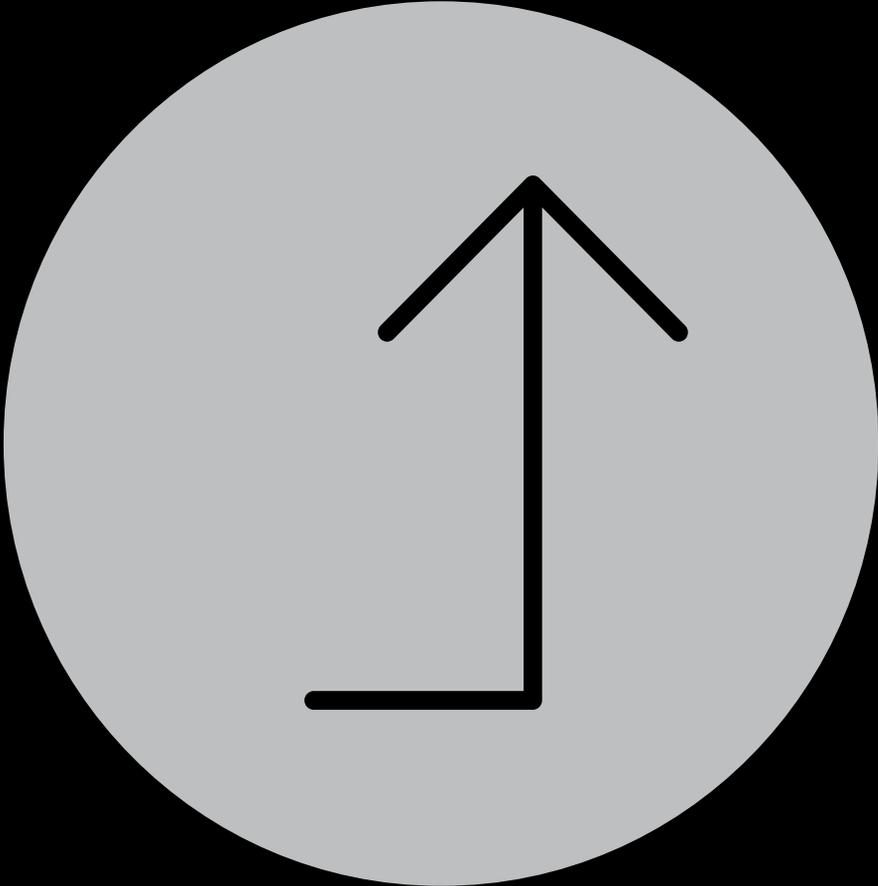
Opportunities for better investment

From the perspective of short-term investment, treasurers who can deposit funds for longer periods (i.e. longer than overnight) are better placed to structure their portfolios more effectively. Although not a primary consideration, they may be able to benefit from better returns. Under normal circumstances, the yield curve has a positive slope, meaning that the rates available increase as the investment term increases.

Further, as a result of Basel III and regulatory changes, banks are changing the way they value customer deposits, particularly non-operational cash with the shortest duration. Treasurers may be able to obtain additional benefits by optimising cash, i.e. by avoiding keeping excess cash in deposits with maturities of under 30 days, or supporting the deployment of that cash into investments off the bank's balance sheet via, for example, the use of a money market fund.

However, knowing how cash flows in and out of the business is only the first step. Armed with accurate information about future cash flows, treasurers will want to implement an effective liquidity management system, allowing surpluses to be used to fund group entities with cash requirements, thereby reducing the reliance on external borrowing, or, if the company is cash rich, concentrating cash to particular locations where it can be invested more efficiently.

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Chapter 2

Managing cash flows effectively

Introduction

One of the treasurer's most important roles is identifying where cash is within a business and then using it as effectively as possible to reduce the company's exposures to third parties and to help the company generate a better return on capital, without assuming any additional risk.

Understanding cash flow is critical in ensuring treasury has sufficient cash available, both in the right currencies and at the right time, to meet obligations as they fall due. To do this, the treasurer will need to establish a liquidity management structure. This chapter looks briefly at the techniques companies can employ to maximise the use of cash.

The role of treasury in managing cash

The management of cash is central to the treasury's role within any company. Put simply, the treasury department's prime responsibility is to ensure that the company has sufficient cash to meet its obligations as they fall due. In addition, treasury should manage cash in such a way that it is able to support any corporate strategy agreed by the board, which may range from investing in research or making new acquisitions, to being able to demonstrate strong internal financial management when seeking external funding from banks.

To be able to do these things successfully, treasury needs to understand how cash is used by the business. The core tools here are cash flow forecasts, outlined in the previous chapter, and the various bank account balance statements and other reports that show actual results. These will show where cash is generated and collected, and when cash is needed to meet payment obligations, such as interest, supplier, tax and salary payments.

The next stage for the treasurer is to use this information to create a liquidity management structure, so that cash may be moved within the company and used as efficiently as possible. This typically means using any available cash surplus balances to finance outgoing payments, before resorting to external borrowing to meet these obligations. These self-funding techniques enable companies to deploy their cash efficiently.

Any surplus cash can also be used to provide more formal intercompany loans to group entities with a borrowing requirement. Such loans should be provided, and documented, using arm's-length pricing. Any internal borrowers will benefit from a reduced cost of funds (although priced

at arm's length, the internal lender will not receive the same level of compensation for credit risk that a bank would charge). Because the funds are provided on an intercompany basis, the borrowers are not exposed to the risk that the bank will not renew the borrowing facility or the market may prevent a commercial paper programme being rolled over.

The liquidity management structure will direct cash to particular locations within the business, such as a centralised bank account held in the name of the group headquarters, or a regional treasury centre. It will also determine how much cash will remain with local subsidiaries, and therefore the degree to which local entities are responsible for investing surplus cash. This will include identifying the local subsidiaries that will remain outside the liquidity management structure, whether for strategic reasons (the entity is about to be divested from the group) or regulatory reasons (local exchange controls make participation too difficult to achieve), or from a need to ring-fence (a project or joint venture subsidiary may have contractual obligations to maintain its separation from the group, or this might be imposed by a regulator, as is the case for some utilities companies).

Centralised versus decentralised companies

The focus of this book is on large (perhaps multinational) companies that have centralised their cash management to a greater or lesser degree. Centralised treasuries now have to assume the responsibility of managing pools of cash, often of significant size, which have been concentrated into a small number of locations. In the largest organisations, these pools of cash may be managed by regional treasury centres, under the direction of central treasury.

The question of investing short-term surplus cash is just as important in smaller or decentralised companies. In these cases, responsibility for investing short-term cash is devolved to the operating companies. Security of the invested cash is just as important in these companies.

The costs of being a simultaneous borrower and depositor

There are a number of reasons for trying to avoid being a simultaneous external borrower and depositor, the most obvious being the differential between the cost of borrowing and the interest rate offered to depositors. Banks and other lenders will always need to add a margin to the base reference rate. When investing in money market instruments, there will always be a difference between the bid and offer rates (the rates at which an instrument is bought or sold) in the market.

Consider an A-rated company that has a bank facility that allows it to borrow at LIBOR + 100 basis points. Its deposits earn LIBOR – 40 basis points. LIBOR is 45 basis points. The company has GBP 5 million of borrowings and GBP 6 million on deposit. Its annual cost of borrowing is GBP 72,500 and it earns GBP 3,000 in interest, a net cost of GBP 69,500. If the company netted its positions, it would have GBP 1 million on deposit, earning annual interest of GBP 500.

This applies to negative interest rates, too. If LIBOR is 0.25%, then placing deposits costs 15 basis points. In these circumstances, the company's annual cost of borrowing is GBP 62,500, but it is also charged GBP 9,000 for the deposits, a net cost of GBP 71,500. If the company netted its positions, it would have GBP 1 million on deposit, so its net cost would fall to GBP 1,500. As with the first illustration, this is a net benefit of GBP 70,000.

When replacing external borrowing with intercompany loans, the borrowing entity should always be charged an arm's-length rate to avoid tax implications. In the case of cross-border intercompany loans, treasurers must also consider the relative credit risk of the different participating entities to address tax authority (and, in some cases, auditor) concerns over value shifting. However, within these constraints, treasury will be able to apply a slightly lower margin on any intercompany loans than what would be available from the external banking market.

There are also opportunity costs: without access to intercompany loans, group companies will have to arrange their own back-up funding, perhaps in the form of overdrafts or more formalised unused facilities, to cover unexpected cash shortfalls. These will be expensive to arrange, especially when calculated as a group expense, particularly if no group guarantees are available to the lenders.

Finally, if the group is a net borrower, central treasury will usually be able to arrange more preferential borrowing terms than the individual operating companies.

That said, it is important to consider the potential impact of Basel III on centralised treasury entities. First, some banks have already responded by withdrawing, or reducing the availability of some pooling techniques, which may affect the efficiency of any existing or potential pooling structures. Second, regulators may require banks to treat deposits from corporate treasury companies in the same way as deposits from other banks. This could affect the deposit-taking bank's liquidity coverage ratio calculations, requiring them to set aside assets to cover a greater percentage of the deposit, with a consequent reduction in appetite to accept deposits from companies with treasury entities. Note that Basel III rules are being applied slightly differently by each jurisdiction, so it is important to understand how regulations apply in each jurisdiction.

Besides cost efficiencies, there are other benefits to intercompany loans. If a group can avoid grossing up both its borrowings and investments, it will minimise its counterparty credit exposure on the investments. In presentational terms, the group's balance sheet will be

stronger if the netting is effective for accounting rules. Third, during periods when borrowing facilities are in short supply, increased borrowing lines may simply not be available.

However, although theoretically less efficient, a company may choose to be a simultaneous borrower and depositor for a number of reasons. First, given the short-term loss of liquidity in the money markets, many companies will not pay down all available debt to ensure they have access to cash in any future period of market liquidity loss. Second, companies with surplus cash in countries with tight exchange controls may decide that any savings arising from repatriating that cash may not justify the cost of doing so. Many US multinational corporations have taken the decision to invest foreign earnings outside the USA, rather than pay corporation tax on the repatriated proceeds. For example, some companies have borrowed locally to fund payments to shareholders, among other things, while retaining substantial cash balances outside the USA. A change in the US corporate tax code could encourage companies in a similar position to repatriate cash. Finally, a company may take a strategic decision to secure longer-term funding via, say, a bond issue, while continuing to generate short-term surplus cash. In all such circumstances, the treasurer will then need to manage the additional funds.

Case Study

A US mining corporation with Latin American subsidiaries

A US mining corporation manages the development of new copper mines in Chile and Peru via a local subsidiary. The funds necessary to finance the exploration and development process were advanced from the corporate headquarters to the subsidiary at the beginning of the project. The subsidiary had two major issues to manage. First, because the development of mines can take three or four years, the subsidiary had to manage significant volumes of cash over this period. Second, because most exploration expenses are denominated in USD, the subsidiary decided to hold the funds in that currency. However, because of the size of the local market, the subsidiary could not place USD on deposit with local banks without exposing itself to significant counterparty risk.

The solution was to place the funds in three separate USD-denominated money market funds. The use of money market funds gives the subsidiary the diversification it requires, which is enhanced via the use of different asset managers. The company is then able to draw down the funds when they are needed without having to manage an unnecessary foreign exchange risk at the same time.

The issues outlined above must be considered in the implementation of any liquidity management structure, particularly when considering the benefits of physical versus notional cash pooling. Some groups choose to implement a hybrid structure to overcome some of the intercompany/accounting reporting factors.

Managing the supply chain

In some companies, there may be clear and significant financial gains from the design and

implementation of a major liquidity management structure. However, implementing a new liquidity structure is time-consuming, and can require significant expenditure on internal systems to make it work efficiently.

In other companies, there may not be major gains from a new liquidity management structure itself. However, implementing associated related changes, such as the adoption of a new treasury management system to manage the structure, may provide significant benefits, justifying the expense of the whole project. For example, a new treasury management system may offer greater visibility of cash throughout the business.

Cash management can also be improved without the adoption of a new liquidity management structure. Adopting more streamlined cash collection and disbursement policies may allow the company to gain greater control of its cash, and a reduction in float.

The company has greatest control over the timing of its disbursements. Although all outgoing payments must be made by particular dates, significant efficiency can be achieved by controlling the timing of external payments. Companies can decide to implement a weekly, fortnightly or monthly payment cycle, such that non-urgent payments, including salary and supplier payments, are only paid as part of a regular cycle. In addition, the company may also be able to negotiate improved payment terms with its suppliers: e.g. discounts for early payment (although the treasury should assess whether it is in the company's interests to take advantage of such discounts).

Managing outgoing payments more closely will allow the treasurer to forecast these transactions much more accurately. This will reduce the level of precautionary balances the company needs to hold in current accounts. With most electronic banking systems, treasury will be able to prepare a single payment file for submission every cycle. This will benefit the company, as it will be able to negotiate reduced fees for payment processing, and reconciliation will therefore be much simpler.

It is more difficult to control the collection process. However, treasury, working with the company's sales team, may be able to improve the efficiency of the process, ensuring it gets control of the receivables as soon as possible. Techniques will vary according to the nature of the company's business, but may include measures to ensure that invoices provide customers with the information they require to ensure a speedy approval for payment. One of the most efficient techniques is the use of electronic bill presentment and payment. Where available, direct debits allow the payee to initiate the collection of cash from its customer's bank account, giving the beneficiary certainty over the timing of receipts.

Together, these changes should have the effect of improving control of cash, reducing float, ensuring that the group benefits from the availability of the funds, and also maximising the number of days' return on interest income.

Selecting an appropriate liquidity management structure

As we have seen, there are many factors to evaluate when considering the cost/benefit of implementing a liquidity management structure.

Other factors can also come into play, ranging from the countries in which the company operates, to the culture and future plans of the company itself. From an investment perspective this will determine:

- ▶ whether cash is concentrated, and if so, to where;
- ▶ whether cash is concentrated physically or notionally (or via a hybrid structure);
- ▶ how frequently cash is concentrated;
- ▶ how frequently cash is disbursed from the centre;
- ▶ whether cash remains with group entities;
- ▶ the denomination of the concentrated funds.

If treasury decides to implement a group-wide liquidity management structure, it is important that this reflects the nature of the company's cash flows. Treasury should concentrate on managing the majority of the cash to reduce the associated risk. Almost by definition, cash balances can be transitory. There is little reward for treasury chasing small amounts of cash to ensure they are being efficiently used.

The liquidity management structure will need to reflect three key factors:

- ▶ The destination of any concentrated cash. Cash may be concentrated to particular locations. Depending on the company, cash may be pooled on a national, regional or global basis. The company may also concentrate one or more currencies. This will require a decision to be made about whether (or when) to translate cash in other currencies.
- ▶ The frequency of the liquidity management cycle. Treasury will also want to determine how frequently (typically daily or weekly) cash is concentrated to each location, and when regular disbursements are made. The cycle may work more frequently for some locations than for others.
- ▶ The locations that remain outside the liquidity management structure. Treasury must be aware of any bank accounts that are not included in a centralised liquidity management structure. The reasons for non-participation vary. Local regulations often make pooling of non-resident funds difficult, and foreign exchange transactions will add further complications. Company culture may also be a factor. Treasury must also determine how best to control those locations outside the structure. Can they manage funds centrally? Do they set guidelines for local management to follow? Or is the local entity able to manage the funds themselves? Even if an entity cannot participate in the group-wide structure, there will still be advantages to implementing a more efficient liquidity management structure in that country.

Treasury must then assess the relative importance of individual cash pools to the company as a whole, to consider whether or not they are part of any concentration.

Liquidity management techniques

Every company has a process for managing its internal liquidity. Some companies decide, for cultural or regulatory reasons, to allow local subsidiaries to manage their own liquidity, with perhaps a quarterly or annual repatriation of cash or profits to the group headquarters. Other companies adopt a more centralised liquidity management structure controlled by the group headquarters or a treasury centre.

There is no ideal structure. Large companies, with entities in a number of locations around the world, could select a number of different liquidity management structures, all of which could improve efficiency. In these circumstances, the most important element of any structure will be its flexibility. The company will not want to be forced to redesign its structure every time it makes an acquisition or expands its activities into a new territory.

There are two main techniques companies use to manage their liquidity centrally: physical cash pooling and notional cash pooling. It is quite common for a mixture of central and local techniques to be used within the same group, as the efficiency of the structure depends on external factors such as bank regulations, exchange controls and tax just as much as group cash flows.

Physical cash pooling structures

In a physical cash pooling structure, accounts held by the participating entities are linked to a central group bank account (usually, but not always, held in the name of a different group entity), known as the pool header or master account. On a periodic basis (perhaps daily or weekly), debit or credit balances are transferred to the header account. (Some companies transfer all surplus balances, returning the local account balance to zero; others transfer any balance above a threshold, which may be the local entity's monthly outgoing payments.)

The header account will either receive interest income or be charged interest expense by the company's bank. The treasury department (or the department overseeing the liquidity management structure) records the cash transfer as a movement on intercompany accounts and then pays interest to the entities that transferred credit balances, and charges interest expenses to the entities that transferred debit balances. These interest figures should be charged at an arm's-length rate, to avoid concerns of transfer pricing on the underlying intercompany loan created by the cash flows. One way to do this is to establish a borrowing rate and a lending rate that both apply consistently across the pool, assuming all the entities have broadly similar financial strength. If any company is particularly weak, then its borrowing rate from the lead company should be correspondingly higher, to reflect the credit risk. This policy should be clearly documented and consistently applied, as tax authorities will often want to review this. This structure benefits companies by providing visibility and control through cash centralisation, while also reducing debit interest costs.

Notional cash pooling structures

In a notional cash pooling structure, cash is retained in accounts owned by the entities participating in the structure. However, the balances are notionally pooled by the bank for the purposes of calculating interest expense or income, while also enabling the offset of balances.

This is a commonly used liquidity management solution, and many permutations of the notional structure are available. In most cases, banks will require cross-guarantees from all participating entities before a notional cash pooling structure can be implemented. Companies will need to ensure any cross-guarantees meet the jurisdiction's thin capitalisation and transfer pricing requirements, and do not cause any breach of undertakings given in loan agreements.

Because cash is not physically transferred to the structure's header account, banks will want some right to offset credit and debit balances. (This means they can effectively reduce the interest spread on balances of participating entities.) In some jurisdictions, where banks are not permitted to offset credit and debit balances for regulatory reasons, these structures may be difficult to implement. More recently, changing bank regulation has raised questions about the future of notional cash pooling. This is primarily a result of regulatory concern over the stability of bank balance sheets, as cash is not physically transferred. This means that, while notional pooling solutions are unlikely to disappear, the offering may become more restrictive (due to the additional capital charges applied because of Basel III) or banks may only offer the service to a smaller number of clients.

Note that, in the case of cross-border notional pools, funds will physically remain in the country in which participating bank accounts are held. Treasurers may want to consider whether holding balances in particular locations represents too much of a country risk. Physical cash pooling minimises the potential impact of a country risk as funds can be physically transferred out of a country deemed to be at greater risk to a header account located elsewhere.

Multicurrency notional pooling is also sometimes available. This is where banks notionally translate aggregate currency positions into a single base currency. This allows debit and credit balances to be effectively covered and preferential interest rates applied, without the need for any physical foreign exchange transactions. This solution enables treasury to do a draw-down for investment in one currency via a simple transaction. It also reduces the need for frequent foreign exchange swaps for interest purposes.

Hybrid structures

Notional pooling can be set up in conjunction with physical cash pooling to form a hybrid structure. Funds are physically transferred from multiple jurisdictions to a central location where the concentrated position is netted for interest purposes. Each entity can open a mirror account in the central location (resident or non-resident, as applicable), or else the notional pool can be formed in the name of a central treasury entity. Intercompany loan positions are not created under a mirror account structure, since the funds remain under the ownership of each underlying entity. However, if a single entity structure is created, the intercompany lending considerations will apply.

However, because of the regulatory requirements, some countries that permit domestic notional cash pooling do not allow certain non-resident entities to participate in multi-entity notional cash pools. Moreover, tax authorities, especially in relatively high tax jurisdictions, may be concerned that companies use the structures to avoid withholding and other taxes. Double tax treaties can often be used to reduce or eliminate a tax liability. However, care should always be taken to ensure the tax residence status of participating entities allows the efficient operation of the appropriate double tax treaties.

Notional versus physical cash pooling

| Notional Pros | Physical Pros |
|---|---|
| <ul style="list-style-type: none"> ▶ Autonomy of subsidiaries, as funds remain under the ownership of each underlying entity. ▶ Ability to draw down one header account to invest (or repay debt) via a single transaction on both a single and cross-currency net position. ▶ Preferential pool pricing due to cross-guarantees and bank's ability to offset credit and debit balances for central bank regulatory net reporting for both single and cross-currency structures. | <ul style="list-style-type: none"> ▶ Gross debit and credit cross-entity positions are netted for statutory reporting, as funds are physically transferred between entities. ▶ There is no need to provide a cross-guarantee. ▶ Physical transfers mean that balances are removed from the risk of exchange or capital controls, as might happen in the event of a break-up of the euro area. <p>*These pros are not applicable if implementing a hybrid structure in which funds are physically transferred into a notional pool where funds remain in the ownership of each underlying subsidiary.</p> |

| Notional Cons | Physical Cons |
|--|---|
| <ul style="list-style-type: none">▶ Cross-guarantee required covering all subsidiaries up to the extent of funds held within the pool.▶ External guidance required to analyse any impact of gross positions on group's statutory financial reporting.▶ Bank appetite to implement a notional structure due to potential inflation of their own balance sheets.▶ Local tax implications need to be considered for each subsidiary's country of incorporation.▶ Potential for increased charges to clients, as banks face greater capital costs. | <ul style="list-style-type: none">▶ Intercompany loans are created and require group tracking with potential withholding tax implications.▶ Operational risk due to physical funds transfer.▶ Not generally available on a cross-currency basis, requiring multiple currency spot and forward transactions for the group to invest surplus positions. <p>*Intercompany loans are not created if implementing a hybrid structure where, for example, funds are physically transferred cross-border from the subsidiary's local account to a non-resident account in the subsidiary's name in a central notional pool location.</p> |

Where cross-border notional cash pooling is difficult, some entities choose to implement domestic notional cash pools before physically pooling cash on a cross-border basis.

Whilst pooling arrangements are generally set up in order to manage working capital more efficiently, in many cases some longer-term balances are included in such arrangements. Care needs to be taken where there is a core debit or credit balance that does not fluctuate over the longer term, as this could justify using differential pricing according to the nature and characteristics of the loan and the respective counterparties. Moreover, if a long-term debit balance is characterised as a loan, it cannot be included in a pooling structure. To avoid this situation, treasurers should periodically settle their pooling structure. This also helps to simplify statutory reporting obligations, and provides the opportunity to report balances net for their own statutory accounts. To comply with IAS 32, treasurers need to settle the gross debit positions in the pool on a periodic basis.

Accounting issues

Although treasury management systems (and other systems used in the treasury department) may be able to generate accounting entities, ensuring the liquidity management structure is accounted for appropriately remains a significant challenge. This is particularly the case when the liquidity management structure employs intercompany loans denominated in foreign currencies.

Under IAS 21, foreign exchange differences arising on intercompany loans are reported in the income (profit and loss) statement within the individual financial statements of the entity that has a functional currency different to the currency of the intercompany balance.

In the case of the consolidation of a monetary payable or receivable between two group companies, this is an internal balance, which will be eliminated in the group balance sheet and therefore has no impact on group net assets (i.e. shareholder funds). However, unless there is a basis for taking any foreign exchange revaluation arising in the individual income (profit and loss) statement to group equity on consolidation, the result is a position where one side of the foreign exchange revaluation appears in the group income statement and the other (arising from the retranslation of the entity's net assets) arises in group equity.

IAS 21.32 includes an exception that applies to intercompany loans that form part of the entity's net investment in a foreign operation, defined to mean that settlement of the intercompany balance is not planned or likely in the foreseeable future (IAS 21.15). In this case, the foreign exchange difference on such loans must, on consolidation, be taken to equity. Long-term loans (including long-term central funding through the liquidity management structure to cash-poor group entities, or upstream deposits that are not forecast to be repaid) may be considered part of the net investment in the entity's operations. This means that the foreign exchange arising on consolidation of that entity's net assets into the group's reporting currency, and the foreign exchange difference recorded in the individual income statements being consolidated, are both taken to group equity.

Thus, intercompany loans that form part of the entity's net investment in a foreign operation and that net out in the balance sheet (and therefore do not affect consolidated net worth) do not create any effect on the consolidated income statement, which is clearly logical.

However, any liquidity management structure where the intercompany loans are fluctuating, and where evidence suggests that settlement is planned or likely to occur in the foreseeable future, will not benefit from the ability to take foreign exchange differences to equity. In these circumstances, the group would have to record a foreign exchange difference in the consolidated income statement, even though the currency exposures are purely internal and net out in arriving at net assets at the consolidated group level.

Specialist accounting advice should always be sought before a liquidity management structure is implemented.

Physical cash pools can be arranged on a cross-border basis, subject to exchange controls. Again, tax authorities, especially in high tax jurisdictions, will want to ensure a structure is not being used simply to avoid tax.

Determining the location for the pool header is important and will depend on individual facts and circumstances. The choice of jurisdiction for such an account will often depend on commercial business reasons, e.g. the location of the treasury management team, or geographical proximity to the group's core business. The company's chosen liquidity management solution may also depend on business objectives, social factors, legal and regulatory requirements and taxation consequences.

However the cash pool is structured and wherever it is located, it is critical that its operation, especially how interest is applied, is documented clearly and carefully and that these processes are consistently applied. Pooling structures are under increased scrutiny by tax authorities around the world as a source of potential tax avoidance, especially under the OECD's Base Erosion and Profit Shifting (BEPS) initiative.

Tax issues

However a company decides to manage its liquidity, tax advisors should be consulted before a new liquidity management structure is implemented. Generally, two of the most important tax considerations will be ensuring that a deduction is available for any interest paid, and that any withholding taxes or other transaction taxes (VAT, stamp duty and capital taxes) are minimised.

From a tax perspective, the ideal location for the pool leader will often depend on the funds flows. For instance, whether the pool leader is likely to be receiving or paying funds to the pool participants will impact the withholding tax position. When companies choose to locate a cross-border cash pool away from the group treasury headquarters, they will often choose a country that either does not impose withholding tax on interest flows, or that benefits from a good double taxation treaty network to minimise the impact of withholding tax.

Groups are increasingly layering on additional services to their basic cash pooling structures: e.g. a 'Payments on Behalf Of' arrangement (made more economic by initiatives such as the Single European Payments). Further tax issues, such as the VAT analysis of the pool leader providing such services to pool participants should be considered in respect of these types of arrangements.

Depending on the country, there could be a number of anti-avoidance tax provisions that would deny an interest deduction being taken for tax purposes. The most common of these concerns are thin capitalisation and transfer pricing. Thin capitalisation rules, as with transfer pricing rules, are used by many tax jurisdictions to counter tax avoidance through the payment of excessive interest to reduce taxable profits. Companies will need to make sure they comply with any thin capitalisation and transfer pricing rules in the relevant jurisdictions, as well as any other rules that could limit the tax deduction for interest. These rules could be subject to change, and treasury will need to keep them under review and regularly monitor their position, especially in light of the ongoing OECD BEPS project.

Next steps

Assuming the implemented liquidity management structure is effective, the treasurer of a cash-poor company will have to fund the participating entities from an external source. For the cash-rich company, the treasurer will need to invest any surplus cash. In these circumstances, the challenge for the treasurer is to classify the cash available for investment, to identify the most suitable instruments to be used.

Chapter 3

Segmenting cash flows intelligently

Introduction

Utilising a full series of parent and subsidiary cash flow forecasts and an understanding of the mechanics of the business's liquidity management system, the treasurer will be able to identify peak cash surpluses and, more importantly, the expected timings and size of low cash surpluses or deficits. Armed with this information, the treasury can project the amount of cash that will be available for investment at various points into the future, together with the times when funds will be needed by the business.

Short-term cash surpluses generated by the business and recorded via a liquidity management system will typically be required by group entities to finance ongoing activities. Such surpluses cannot usually be invested for more than a few days. On the other hand, there may surplus funds available for investment over longer periods. A company may have sold a business unit, for example, or it may simply be in a cash generative stage.

By assessing the importance of the cash to the company's daily business, treasury can determine how much risk and duration the company can assume within its investment portfolio. This will govern the type of instruments appropriate for investment in each circumstance. One way to achieve this is to classify the cash to be invested.

Cash can be classified in three ways:

▶ **Working capital**

This is cash that will be needed by the business in the short term, such as overnight or within the next three months. This cash may not easily be replaced in the external markets, so security is important. By definition, liquidity is also vitally important.

▶ **Short-term predictable cash**

This is cash that the company holds as it is already required by the business in the short term (within, for example, the next three to 12 months). It may be needed, for example, to meet interest payments for the following month (should sales revenues not be as strong as expected), or to fund dividend payments at a known point in the future, or to fund other known outward cash flows within a 12-month period. Again, security is important. Immediate liquidity is less important, although the company will want to be able to access the cash if it is needed in the future at the appropriate date.

▶ **Medium to long-term core cash**

This is cash that is available to the business for the foreseeable future. It is not needed to fund existing projects. Ultimately, the board will need to decide whether to invest this core cash into a new project or to return it to shareholders. Treasury will need to manage this cash, but liquidity may not be as high a priority.

Figure 3.1.

Diagrammatic divisions of cash into working capital and short-term and long-term cash

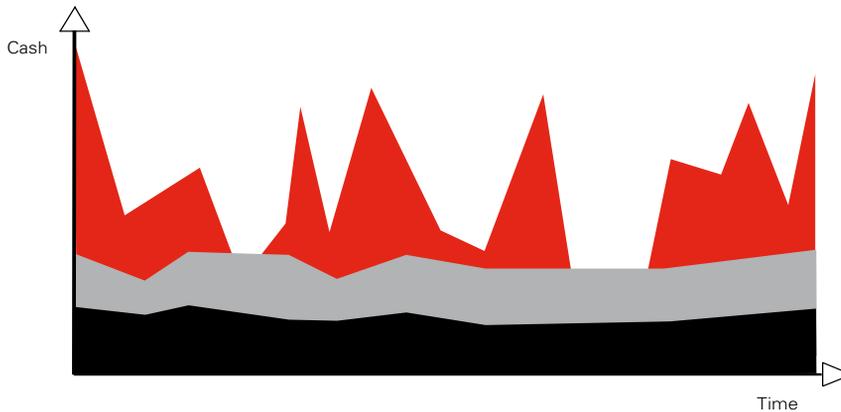


Figure 3.1 shows how a company will have varying amounts of cash to invest over a period of time. Working capital is shown in red, short-term predictable cash is grey, and medium/long-term cash is black.

Evaluating the nature of cash

Whether or not treasury decides to classify cash in this manner, before an investment decision can be taken, four factors need to be known:

- ▶ the location of the cash;
- ▶ the currency in which it is denominated;
- ▶ the amount of cash to be invested;
- ▶ the dates when the cash will be available and will again be required by the business.

Location

Central treasury should be aware of all significant bank accounts in all locations, whether cash is subsequently centralised or not. In particular, treasury should be aware of all header accounts within the business's liquidity management structure. This appraisal will include all central or regional group accounts, as well as in-country pooling/cash concentration arrangements.

Even if the company has a centralised or semi-centralised liquidity management structure,

some funds may remain in local accounts after this centralisation. Treasury must also understand any regulatory or other factors, such as exchange controls, which may prohibit the movement of funds between bank accounts.

Currency

Treasury should also know the currency in which the significant bank accounts are denominated. For example, international companies often establish cross-border liquidity structures for their major operating currencies (typically USD and the EUR). At the same time, they will maintain local currency liquidity arrangements in countries where it is sensible to do so.

Treasury will have to decide whether it is possible and realistic to convert cash physically into another currency for investment purposes. In practice, cash would have to be available for investment for a number of days to make this worthwhile.

Some banks offer cross-currency cash pooling on a notional basis. This allows the company to pool different currencies together for liquidity management and investment purposes, with no requirement to swap out of the underlying currencies, and with any surpluses being made available in the chosen base currencies.

Amount

For every significant bank account, treasury will have a forecast daily balance. Cash flow forecasts usually become more detailed as the forecast date comes closer. For example, a cash flow forecast for tomorrow will be much more detailed and accurate than one for three months' time.

Each day, treasury will need to update and confirm the cash flow forecast before making any investment decisions. The characteristics of an individual instrument will also determine which investment instrument is selected. For example, sweeps into interest-bearing accounts require the funds to be available at the time of the sweep, whereas a bond purchase will only require funds on settlement date.

Available investment period

A forecast of future balances over the next days and weeks will highlight when the cash will be required again by the business, and will provide treasury with the opportunity to invest in longer-dated instruments. It will also remove the need for treasury to reinvest all surplus cash on a daily basis. This absence of any requirement to reinvest funds will reduce the operational risks associated with investing, such as misrouted funds or accounting mistakes. However, treasurers will recognise that any decision to invest for a longer period will reduce liquidity and increase exposure to other market risks.

Classifying cash according to the company's requirements

Using this information, the treasurer can characterise cash into one of the three categories outlined above: working capital, short-term predictable cash or medium to long-term cash.

By categorising the cash, the treasurer will be able to identify when the cash to be invested is likely to be needed again by the business as whole. Working capital may be needed by the business within a few days, for example, so the treasurer will only want to invest this cash in instruments that are accessible overnight (or perhaps within a week).

Short-term predictable cash is cash that will not be needed for immediate business purposes. As such, the treasurer may feel comfortable investing funds for a longer period (e.g. three months) to reduce reinvestment risk and, potentially, to achieve a slightly higher return.

However, the experiences of many companies since 2008, has left treasurers unwilling to assume a liquidity risk on short-term predictable cash. The role of the treasury is essentially a conservative one: the treasurer needs to make sure any invested cash is available when it is needed by the company. Market uncertainty means many companies are electing to hold short-term predictable cash in short-term investment instruments to provide liquidity in the event that cash is urgently required by the business.

In addition, difficulties in the money markets have meant previously reliable secondary markets are no longer as liquid as before. The values of longer-dated instruments have become volatile, as market rates react to economic or political news. In many cases, to avoid having to withdraw at a loss, treasurers have been forced to hold instruments to maturity as they have been unable to sell them on in the hitherto but no longer liquid secondary markets.

Medium/long-term cash will not be needed by the company for a number of months and can be invested in longer-dated instruments. In addition, because this cash is not needed by the company for daily business purposes, the treasurer may be permitted to assume a greater risk when investing the funds (usually in the form of increased duration and a loss of liquidity rather than security) in order to achieve a higher return on the investment.

Where a company forecasts stable levels of surplus medium/long-term cash, it may be appropriate to try to reduce cash levels to lessen investment risk. Any decision to pay down debt or buy back shares from investors will require board approval. Such a decision will diminish the company's ability to take advantage of potential future opportunities: e.g. to fund acquisitions from cash. During periods of low interest rates, a company will need to consider the impact of keeping significant long-term cash on the company's overall return on capital. However, the impact of this should be set against the benefit of holding cash at a time when the availability of future funding is likely to be uncertain.

Classifying cash according to a company's requirements is complex. Reassessment of short-term predictable cash decisions, in the face of uncertainty in the money markets and concerns over counterparty risk, with a view to staying liquid, is just one illustration of this. As a result, it is now more appropriate for treasurers to classify surplus cash for investment in one of two categories: operating cash or strategic cash.

Operating cash

In most cases, operating cash is defined as cash that is likely to be required within a year (although this could vary from company to company). This will include working capital, as previously defined, short-term predictable cash, and additional cash that is expected to be needed within the next year. In effect, treasurers will want to prioritise the same objectives (security and liquidity) when investing both working capital and short-term predictable cash.

There are two significant reasons for this approach. First, many companies will want to have a larger proportion of any invested cash available on a precautionary basis, in order to reduce the immediate impact of any adverse changes in trading conditions. Although companies now perform more stringent credit checks, wherever possible treasurers will want to ensure their companies are not reliant on income from short-term receivables to meet payment obligations. This may require an increase in both the level and proportion of any cash surpluses that can be accessed both on an overnight and on a monthly basis. This might also include the maintenance of a higher level of liquid cash reserves than in the past, to provide an extra degree of comfort to comply with any bank covenants that may refer to cash ratios (or in case a bank gets nervous and changes its conditions). This has the effect of increasing the proportion of cash held as working capital.

Second, treasurers need to consider the impact of International Accounting and Financial Reporting Standards (IAS 39 and IFRS 9) on the valuation and disclosure of investments. International Accounting and Financial Reporting Standards take a qualitative view of whether an investment should be disclosed as cash and how that investment should be valued. For example, the extent that investments exhibit widening spreads, or any uncertainty of recovering principal, means that they are less likely to be disclosed as cash and valued at par.

Strategic cash

The second category is the strategic or medium/long-term cash, for which liquidity is less important. This will be cash that the company cannot envisage using within (perhaps) the next year; the exact timeframe will be determined by individual company criteria, including both business activities and the level of funds held in a precautionary capacity.

From an investment perspective, liquidity and, occasionally, security are less important objectives. Since the company does not expect to use the funds in the foreseeable future, there is a greater pressure to prioritise yield when making the investment. This is because, as non-essential cash, the board will need to evaluate whether to hold the cash, use it to expand the business (through acquisition or research and development) or to return the cash to shareholders.

Figure 3.2.
Division of investments into strategic and operating cash

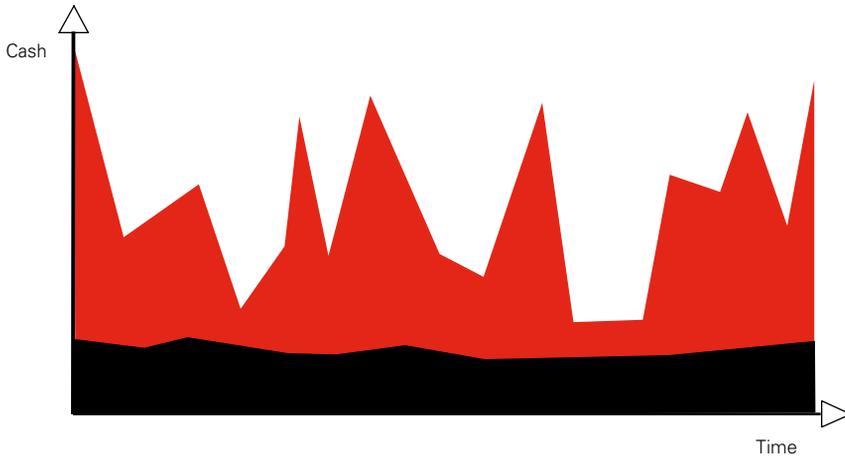


Figure 3.2 shows how the same cash surpluses can now be segmented into two, rather than three, categories. The treasurer would now view the cash in red as operating cash and the cash in black as strategic cash.

Case Study

A European multinational chemical company

With significant cash surpluses in the current low interest rate environment, the company has been under shareholder pressure to reinvest cash back into the real economy.

This company has an effective visibility over cash that allows it to segment its cash into working capital and longer-term strategic cash. It continues to keep its working capital cash in very short-term, highly liquid instruments, including AAA rated money market funds. However, it is prepared to sacrifice some liquidity when investing a portion of its longer-term strategic cash, especially because it has become more confident with the economic outlook.

For longer-term strategic cash, the company has outsourced its investment management under a mandate. The mandate requires the asset manager to replicate the counterparty risk profile used in a triple AAA money market fund. The asset manager selects counterparties on the company's behalf and creates a model portfolio using the same approach to counterparty risk as it uses in its money market funds. This means, for example, that the company's counterparties must all have an A1/P1 credit rating in order to preserve principal.

The company's confidence in its visibility over cash means it is prepared to commit its strategic cash for longer than overnight. As a result, the mandate allows the asset manager to select longer-dated instruments, giving the company an investment portfolio with a much longer duration than is permitted under either the 2a-7 or European Commission rules for money market funds. Even so, most cash is invested in instruments with a maturity below one year.

This solution allows the company to invest its strategic cash for a slightly improved yield without compromising the security of principal. Outsourcing also gives the company an improved return without the cost of managing its own team of credit analysts.

Bank classification will also be important

Treasurers need to understand how banks view corporate deposits. Most importantly, Basel III also classifies cash when assessing the treatment of corporate bank deposits from a regulatory perspective. Under Basel III, corporate short-term deposits are considered to be less sticky when assessing a bank's liquidity coverage ratio. As such, short-term cash deposits (defined as less than 91 days) are treated differently to longer-term deposits. As a consequence, banks offer greater incentives to treasurers to deposit strategic cash for longer than 90 days. Treasurers may also have to document their categorisation of funds between operating and strategic cash in order to be able to place short-term operating cash in bank deposits. There is more detail on the implications of Basel III in Chapter 6.



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Establish

Chapter 4

Establishing an appropriate investment policy

Introduction

Besides having a clear view of how cash flows through the business, and a forecast of future cash balances, the treasurer needs to establish an investment policy. This should establish overall objectives for short-term investment, and detail how the treasury will seek to manage the risks that arise.

This chapter starts by examining how an investment policy fits with other company policies, including the treasury policy. It considers the different investment objectives a company can pursue, and highlights the key sources of risk to those objectives. It identifies the core components of any investment policy, before establishing how tax and regulations can affect decision-making, and how investments should be reported.

It concludes with a sample investment policy to illustrate how these points can be put into practice.

The purpose and scope of an investment policy

Although the precise structure and content of an investment policy will vary from company to company, any such policy should play a central role in allowing the board to exercise control over the company's activities in this area. At the same time, it will provide the treasury department with clear parameters within which it is permitted to operate, as well as a mechanism by which to change these parameters in the future.

In some companies, the investment policy will be part of a wider treasury policy document. In others, it will be a standalone policy, albeit with links to the treasury policy document. This may be appropriate if, for example, the policy is designed to cover longer-term investment decisions, such as the management of the company pension fund. However it is structured, the investment policy (especially a standalone document) must be consistent with other relevant documents. In particular, the investment policy must be consistent with any counterparty risk policies applicable to other financial instruments, such as swaps and foreign exchange transactions.

Similarly, the level of detail contained in the investment policy must be comparable with other documents. Some companies have very detailed investment policies that cover the full range of activities, from setting investment objectives to dealing, while others have a shorter, less

comprehensive investment policy, but which is supported by a more comprehensive guide to operating procedures drafted by the treasurer and agreed by the finance director.

Board-level direction

However detailed the policy is, in order to be effective it must be agreed on by the board both when it is initially drafted and again when any further changes are made. This requires the treasurer or finance director to make a presentation to the board prior to the decision to adopt the policy.

This presentation should explain the main features of the investment policy and then present to the board a series of alternative scenarios representing different levels of risk, both more and less risk averse than the recommended level, to highlight the potential risks and returns that the company could choose, thereby giving board members an opportunity to understand the potential implications of specific decisions. For example, the treasurer could suggest a number of different approaches with alternative permitted instruments and limits, alongside the potential security and liquidity implications of each decision. The treasurer should include a statement of the key benefits and disadvantages of each alternative.

In some cases, the decision to approve the investment policy may be taken by a board-level treasury committee. In these instances, the treasury committee will have been granted the authority to do so by the main board. This is most common when the main board has already approved the core treasury policy.

Demonstrate control and understanding of risk

The board has a responsibility to manage company assets in a way that enhances shareholder value. By approving an investment policy, the board demonstrates to shareholders that it has met that responsibility. By focusing on the efficient management of company assets, a formal investment policy will also impose discipline on the board.

All investment activities entail risk. All companies differ in their approach to, and appetite for, risk. The board must demonstrate to shareholders (and other interested parties) that they understand the nature of the risks being assumed and the expected investment returns. The key point is for the directors to agree an investment policy that reflects the overall risk appetite of the company.

For example, shareholders in a capital-intensive mining business may expect their directors to take less risk when investing cash than, say, shareholders in a cash-rich software company might expect from their directors. This is because the risk appetite is closely linked to the company's future plans. A mining company will typically look to reinvest any earnings back into the company, so a loss of principal will affect the company's growth prospects.

On the other hand, while a software company will also reinvest earnings in development, the overall development costs are usually much lower. In effect, the risk appetite is linked to the impact of a potential loss of principal.

A loss of principal would affect the future plans of the mining business more than those of the software company.

The board should consider whether it is appropriate for the company to assume greater risks when investing cash for longer periods of time. In particular, it must decide whether treasury is permitted to put principal at risk in order to try to enhance the return on investment. Ultimately, a cash-rich company has to decide whether to reinvest cash in a future project, to retain cash because of the financial flexibility it confers, or to return the funds to shareholders.

At the same time, the policy will delegate to treasury operational responsibility for executing investment strategy. The board will continue to be responsible for overseeing the implementation of the policy. Maintaining effective internal and external audit programmes is an important part of that process.

Support for treasury

A board-approved investment policy gives the treasury department the authority to act within agreed parameters. The policy may include operating procedures that govern the day-to-day process of taking and implementing investment decisions, although these procedures are typically set out in a separate document, also agreed at board level (possibly by a treasury committee, consisting of the finance director, the treasurer and perhaps a small number of others). Together, the investment policy and operating procedures will describe the limits of the treasury department's authority, and establish how decisions are to be taken. They do not, and should not, determine what the individual decisions will be (although they may require that exceptional investment decisions; e.g. the investment of any funds in breach of limits detailed in the policy or procedures, are taken by the board).

The treasury department may also be able to use this board-level authority when it seeks to exert control over operating companies throughout the group. Once agreed, the act of approving the investment policy demonstrates the board's view of its importance to the rest of the company. Being able to show board-level approval for the centralised management of cash investment or the establishment of an approved counterparty list will help the treasurer prevent an operating company investing cash with an unsuitable local deposit-taker or issuer.

Review

The investment policy should be reviewed by the treasury department at least once a year, to ensure that it remains fit for purpose and reflects any changes in the company's risk appetite. Crucially, policy must keep abreast of market developments and industry practice. Recent regulations, including Basel III and European Union (EU) and US money market fund reform, have resulted in changes to the characteristics of a number of short-term investment instruments, including bank deposits and money market funds. Market volatility and uncertainty have also resulted in many companies reducing their appetite for risk generally.

Any proposed changes should be submitted to the board for consideration and approval.

Objectives of investment

The agreed policy should reflect the company's overall investment objectives, whilst recognising that the specific objectives of each investment decision will vary according to the circumstances in which they are taken. For example, if a company chooses to segment its cash (see Chapter 3), its investment objectives may vary according to the type of cash being invested.

The core objectives

All investment decisions require a compromise to be made between the three core objectives of investment: security, liquidity and yield. For instance, achieving an enhanced yield requires an investor to accept a higher risk, in the form of either lower security or less liquidity. For this reason, treasurers looking to invest cash will usually focus on security and liquidity.

The investment policy should indicate whether any compromise on security and liquidity is acceptable and, if so, outline the circumstances.

Security

In most cases, the preservation of the principal sum is the core investment objective. Working capital cash is central to the company's operational activity and will be required to meet obligations arising on a daily basis. Any realised loss of principal will be a drain on profits, and will mean that funds will need to be raised from an alternative source, which, at short notice, could be expensive or even impossible.

For long-term cash, such as funds set aside for future strategic acquisitions, daily access may not be required, and the company may therefore be prepared to sacrifice liquidity (i.e. instant access without any material impact on principal) for higher yield.

By identifying the importance of security, treasury will be able to select an instrument that matches its objective. Some instruments, such as bonds, may see the value of the invested principal fall or rise if sold before maturity, while the principal for bank deposits, for example, is secure, as long as the counterparty itself does not fail.

The investment policy should indicate the circumstances when a compromise on the preservation of principal may be acceptable. Companies will differ in their view of this risk.

Some will decide that the risk assumed when investing principal should be the same, whether investing overnight or for six months. Other companies will be prepared to assume additional risk when investing longer-term cash, but only if the risk/reward ratio is appropriate.

Liquidity

Invested cash must be accessible when it is needed. If not, the company may be forced to borrow from an external source, while simultaneously having surplus cash invested in an illiquid instrument.

Again, treasury needs to identify how important liquidity is before making an investment. The categorisation of cash into operating cash and strategic cash is useful. When investing operating cash, treasury will want to choose from the more liquid instruments. These allow investors access to funds without giving notice or, in the case of a non-bank deposit, without having to sell the instrument. Even when investing strategic cash, treasury must be mindful of the need to realise its cash investments, should there be a sudden change in the market environment.

Depending on the amounts of cash held and the likely operating cash needs, it may be possible to create adequate liquidity whilst investing in non-liquid instruments. By including a range of maturities, it is possible to ensure that suitable amounts reach their maturity dates at timely intervals.

The investment policy should indicate how liquidity is to be achieved, by setting a maturity profile or specifying the proportion of cash that must be invested in liquid instruments. This profile or proportion will vary according to a number of factors, including the accuracy of the cash flow forecasting system, the size of the maximum daily cash outflows that might need to be met unexpectedly and the amount of funds available for investment.

Yield

When investing corporate cash, earning an enhanced return from the funds invested is almost always subordinate to the first two objectives: security and liquidity. In principle, there is a trade-off between risk and return: the higher the risk, the higher the possible return. To earn a higher return, treasury would need to compromise on the requirements to ensure the preservation of principal and that sufficient liquidity is available.

The categorisation of cash is useful here, too. Treasury may be permitted to invest longer-term cash in riskier investments or in investments that restrict liquidity, in order to try to generate a higher overall return. The investment policy should indicate the circumstances in which this is acceptable. As an alternative, treasury (and the board) may consider other means of reducing the amount of long-term cash available to invest. These include paying down debt and returning cash to shareholders.

By implementing improvements to the cash flow forecasting or liquidity management systems, treasury may be able to improve the company's working capital and cash position without compromising the requirements of either liquidity or security.

Case Study

A UK multinational with Chinese subsidiaries

The Chinese subsidiaries of a UK-headquartered MNC used to place their short-term cash surpluses in term and structured deposits offered by local cash management banks. Two years ago, the UK headquarters decided to include these subsidiaries in a new in-country cash pool in China, which successfully resulted in a greater cash balance being concentrated. However, because this balance was larger than the individual counterparty limit set by the group's investment guidelines, the China head office could not place the entire balance with a single counterparty. The treasurer had to find new locations for that cash.

The treasurer identified a local, RMB-denominated money market fund with an investment policy that would deliver the company's objectives, namely the preservation of security and liquidity. The fund offers full transparency, providing detailed information on its investments on a regular and timely basis. Initially, the treasurer placed RMB 100 million with the money market fund to help the company diversify its counterparty risk. In the subsequent two years, the company has continued to use the money market fund frequently.

Benchmarking yield

Any treasurer required to measure yield should do so against an appropriate benchmark. Recent controversy over the LIBOR setting process has highlighted how some market interest rates are not solely based on actual transaction pricing, but include a degree of judgement to compensate for any lack of actual trading volumes. Overnight Index Swap (OIS) rates are an alternative to LIBOR and are based on central bank interest rates (such as the Bank of England's Bank Rate for GBP-denominated borrowings, or the Federal Reserve's Fed Funds Rate for USD-denominated borrowings). For longer-term investments, LIBOR rates are based on very few actual transactions, but they nonetheless do serve as independent reference rates. For terms longer than one year, the ICE Swap rate (formerly ISDAfix) is a common benchmark rate.

OIS rates

An OIS is a fixed rate interest rate swap against a floating overnight rate index such as SONIA or EONIA or against central bank interest rates (such as the Bank of England's Bank Rate for GBP-denominated borrowings or the Federal Reserve's Fed Funds Rate for USD-denominated borrowings).

The two parties to the OIS agree to exchange the difference between the interest accrued at an agreed fixed interest rate for a fixed period (e.g. three months) on an agreed notional amount, and the interest accrued on the same amount, by compounding the reference index daily over the term of the swap.

Settlement is made net, at an agreed date after maturity (in the sterling market settlement is on the maturity date), so the principal never changes hands.

Setting the priorities according to the character of the cash

A major challenge for the treasurer is to set the priorities for each investment decision, as it is not possible to target all three core objectives at once. Targeting security, for instance, can only be achieved at the expense (at least) of some potential yield.

This is why characterising cash into two categories – operating cash and strategic cash – is helpful. When investing working capital cash, it is likely that the primary objective will be security. Companies cannot usually afford to risk the loss of any short-term surplus cash. This is less the case when investing longer-term cash, as the treasurer will have more time to arrange alternative funding arrangements, should there be a loss of principal (although a degree of security will always be important). If the loss of principal is derived from market prices rather than a credit default, then holding to maturity is a solution with longer-term cash.

Liquidity is usually a close second objective when investing operating cash. Working capital cash must be available to be recycled through the business. Information is important: the more uncertain treasury is about future cash requirements, the greater will be the importance of selecting liquid investments.

Again, liquidity is less important when investing longer-term strategic cash, although the treasurer will not usually want all such cash invested for maturity at the same time. This is to avoid having to manage the reinvestment of significant funds at once. Instead, the company will usually want to retain a rolling programme of maturing investments over a specified time period (perhaps over six to 12 months), giving treasury the opportunity to manage the duration of the portfolio over time. In particular, this allows the treasurer to gradually reduce the duration of the portfolio, if, for example, the board expects trading conditions to become more difficult, or if the company requires more cash for operational (rather than strategic) purposes. There are, of course, exceptions, such as in the event of the cash being held for a specific acquisition, or to meet a particular balloon payment requirement at a set time in the future.

Maximising the yield on short-term cash is not a priority. Usually, treasury will only use yield to select between alternative instruments with the same security and liquidity characteristics.

The following example illustrates how a company selected an investment instrument to match its risk appetite and meet its objectives.

Case Study

A Mexican subsidiary of a multinational company

To finance business expansion, the Mexican subsidiary of a US multinational company issued a bond to raise USD 700 million. Having raised the funds, the subsidiary needed to invest the cash until it was needed by the business. Prudent counterparty risk management meant that the subsidiary was not permitted to deposit the cash with a local cash management bank. Instead, the subsidiary chose to place the bond issuance proceeds in a USD-denominated, Dublin-based money market fund. This solution allowed the subsidiary to meet two objectives. First, it maintained security of principal via the counterparty diversification offered by the fund. Second, it ensured no loss of liquidity, so that the subsidiary would be able to draw down funds when required frequently.

Nature of risk

All financial decisions involve some risk. The board determines the company's appetite for risk, and this will be reflected in the investment policy. The challenge for treasury when investing corporate cash is to understand how risk arises, so that it can be managed effectively to ensure the investment objectives are met. For example, treasury may be permitted to assume more risk when investing longer-term, strategic cash than operational cash.

For every investment decision, treasury's task is to match risk to expected return. This applies equally whatever the investment objective. For example, if treasury's objective is to maintain principal, treasury must understand counterparty risk and take action to manage it. If, on the other hand, the objective is an enhanced return, treasury should assess the risk of a loss of principal and decide whether the prospect of that potential return is justified.

Where does risk arise?

Credit risk

This is the risk that arises from the failure of a counterparty resulting in the loss of some or all of the invested principal. This applies whether the counterparty is a bank or, for example, a non-bank issuer of commercial paper.

In addition, where a treasury holds investments subject to credit rating limits (see below), there is an additional risk of a downgrade in the rating of an investment below the minimum investment criteria. In these circumstances, the downgrade may trigger a requirement to sell the investment (assuming this is possible), which may result in loss of principal as a result of the forced sale.

How credit ratings can help to manage credit risk

Credit ratings can help to manage credit risk, as they provide an indication of likely credit default.

The Bond Market Association (now the Securities Industry and Financial Markets Association) definition of credit ratings

'Ratings are intended to measure the probability of the timely repayment of principal and interest on municipal securities. Ratings are periodically reviewed and may be amended to reflect changes in the issue or issuer's credit position. The ratings may be affected by the creditworthiness of the issuer itself or from a credit enhancement feature of the security such as guarantor, letter of credit provider and bond insurer. Some rating agencies provide both long-term and short-term ratings on variable rate demand obligations.'

Credit ratings provide a measure of the likelihood of default on financial obligations. They are an opinion on the relative ability of a financial obligor to meet its financial commitments, such as interest, repayment of principal, insurance claims or counterparty obligations. Ratings are intended to be easily understood measures that differentiate between debt instruments on the basis of their underlying credit quality. They are, therefore, focused on communicating the relative ranking of the default loss probability for a given fixed income investment, compared to other rated instruments or financial obligors.

While recovery analysis plays an important role throughout the ratings scale, it becomes a more critical consideration for below investment-grade securities and obligations, particularly at the lower end of the non-investment-grade ratings scale. Rating agencies may publish a separate loss given default rating for these credits.

Rating agencies gather and analyse information on instruments, issuers, obligors and various financial intermediaries. The agencies' specialised focus on credit analysis and related research enables them to produce independent assessments of the creditworthiness of various investment options. Their methodologies are broadly similar and thus their ratings are generally comparable.

In the case of banks, rating agencies may provide a standalone rating, as well as a rating that takes account of possible government support. Rating agencies may also publish an overall assessment of the willingness and ability of governments to support their banks. Together with the home country's sovereign credit rating (for which own currency and foreign currency ratings are usually available), this can help in establishing limits for overall exposure to a country's banks as well as the limit for any single bank.

The table below summarises the international long-term credit rating scales of the three global rating agencies: Fitch Ratings, Moody's, and S&P.

| International long-term credit ratings | Fitch Ratings | Moody's | S&P |
|--|---------------|---------|-----|
| Investment grade | | | |
| Highest quality/Highest quality/Extremely strong | AAA | Aaa | AAA |
| Very high quality/High quality/Very strong | AA | Aa | AA |
| High quality /Upper medium grade/Strong | A | A | A |
| Good quality/Medium grade/Adequate | BBB | Baa | BBB |
| Non-investment grade | | | |
| Speculative/Speculative elements/Speculative – Less vulnerable | BB | Ba | BB |
| Highly speculative/Speculative/More vulnerable | B | B | B |
| Substantial credit risk/Poor quality/Currently vulnerable | CCC | Caa | CCC |
| Very high credit risk/Highly speculative/Currently highly vulnerable | CC | Ca | CC |
| Exceptionally high risk/Extremely poor/Imminent default | C | C | C |
| In default | D | C | D |

Note: Fitch Ratings and S&P may append their ratings with + or – to denote relative status within major rating categories. Moody's may append its ratings with 1, 2, or 3 to denote relative status.

Rating agencies also assign short-term credit ratings to debt obligations that have original maturities of one year or less, such as commercial paper. The table below summarises the international short-term credit rating scales of the three agencies.

| International short-term credit ratings | Fitch Ratings | Moody's | S&P |
|---|---------------|-----------|---------|
| Investment grade | | | |
| Highest/Superior/Strong | F1+, F1 | P1 | A1+, A1 |
| Good/Strong/Satisfactory | F2 | P2 | A2 |
| Fair/Acceptable/Adequate | F2 | P2 | A2 |
| Speculative/Not prime/Speculative | B | Not prime | B |
| High default risk/–/Vulnerable | C | – | C |
| Default/–/Default | D | – | D |

Note: Fitch Ratings and S&P may append their ratings with + or – to denote relative status within major rating categories. Moody's may append its ratings with 1, 2, or 3 to denote relative status.

How rating agencies operate

As mentioned, all the rating agencies use similar methods to analyse creditworthiness. (All the agencies publish their methodologies on their websites.) In order to make the best use of credit ratings, it is important to understand how the agencies operate: to understand what the agencies consider when developing a credit rating and, just as importantly, what the ratings do not measure.

Usually, credit ratings are developed by one or more of the agencies following a request from an issuer (or sometimes a guarantor that has been asked to underwrite the issue). The purpose of the rating is to provide potential investors in the issue (typically, commercial paper or a bond) with an assessment of the creditworthiness of the instrument. In most cases, issuers need ratings to meet the expectation of the particular market, although ratings can sometimes be a regulatory requirement, too.

The analysis process is directed by specialist analysts employed by the agency (this may be country or industry-sector specific). The credit analysts will meet senior executives in the company that is preparing to issue the instrument. Analysts will also consult other sources, before making a recommendation to the agency's rating committee. Once it is satisfied, the committee will approve the rating for publication. The agency will publish the rating (using a point on the respective scale outlined above), as well as a fuller rating report outlining the

Establish

analysts' conclusions. These conclusions are based on information in the public domain and the analysts' knowledge of the market (including the issuers' competitors), as well as information provided on a confidential basis by the company's senior management.

Once issued, ratings continue to be monitored on an ongoing basis. The surveillance method will vary according to the nature of the issue being rated: most issues are formally reviewed once a year. During this process, the analysts will look at a range of market data, as well as assess other company-specific data, such as cash flow forecasts or financial performance, industry or sector performance and competitor position. Furthermore, they will meet with management to review the company strategy. After a review, the agency will either affirm the rating (showing that the rating has been formally reviewed), upgrade or downgrade the rating (if the circumstances warrant the change), or place the issue on credit watch (if the agency wants to perform additional analysis or monitor developments). If an issue is placed on credit watch, the agency may also indicate whether the likely next rating will be an upgrade or a downgrade.

In the meantime, issues with regular public reporting schedules will be assessed after each report (such as bonds issued by public companies) and additionally will be assessed after a material change in the business (such as a change in management, a major acquisition or a change in market conditions).

The major credit rating agencies also generate ratings for money market funds. (S&P uses the term 'principal stability fund' to refer to money market funds.) When rating these instruments, analysts will assess the quality of the underlying assets in the fund's portfolio. The analysts use a variety of tools to try to model the probability of default of all the instruments held by the fund, to weight each one according to its value in the fund, and then to create an overall rating for the fund based on the weighted average of all the securities held by the fund. The analysts will also consider the quality of the fund's own credit analysis, as well as operational factors, before issuing the final fund rating. Because the composition of money market funds' portfolios of short-term investments is crucial, funds will be monitored more frequently, even on a weekly basis. Note that the agencies develop money market fund ratings using specific methodologies. These methodologies differ from those used to develop counterparty credit ratings so that an AAA money market fund rating is not equivalent to a long-term credit rating of AAA.

Primarily in response to problems with redemptions on a small number of funds and principal losses on two funds in 2008, all three major credit rating agencies have reviewed their methodologies for rating money market funds. These events heightened awareness of funds' exposure to both market and liquidity risk (see below), especially with respect to any consequent impact on redemptions. Although the three agencies focus on the same issues, there are differences between their approaches.

As with published ratings of other instruments, understanding the methodology used by the agencies is only one component of the credit risk assessment of a money market fund. Potential investors should also read the accompanying reports, rather than simply rely on published ratings.

Users and uses of credit ratings

The more prominent users of credit ratings include:

- ▶ lenders that extend credit facilities to borrowers;
- ▶ sell-side participants (e.g. investment banks);
- ▶ buy-side participants (e.g. institutional and corporate investors);
- ▶ trade and commodity financiers that assess risk inherent in individual transactions;
- ▶ regulators (e.g. financial institution regulatory bodies determining the extent of credit risk associated with institutions' assets and liabilities).

The more notable uses of credit ratings include:

- ▶ defining investment eligibility;
- ▶ benchmarking default/acceleration triggers in various credit agreements;
- ▶ use in pricing grids by financial service providers;
- ▶ measuring performance on a risk-adjusted basis;
- ▶ as the basis for indices that assess relative value.

From an investment perspective, credit ratings help treasury to assess counterparty risk. The investment policy will set absolute and relative limits to the amount which can be invested with any one counterparty. These limits may differ according to the nature of the counterparty. For example, higher limits may apply to the more strongly rated counterparties. It is vital that all counterparty limits are strictly adhered to. For a bank with several subsidiaries active in the market, the investor will want to set an appropriate limit for each subsidiary individually, plus an overriding cumulative total for that bank group as a whole. It is important that the investor fully understands its exposure to a banking group. The aggregated maximum group exposure should also incorporate any indirect exposures, which may include, for example, support for asset-backed commercial paper conduits.

Group-wide exposure in a decentralised environment

One difficulty for group treasury is managing group-wide exposure to a particular counterparty. As cash management becomes ever more centralised and large international banks merge, local operating entities are increasingly required to appoint a cash management bank from a smaller list of banks.

This can be a danger if significant cash remains invested locally, perhaps for liquidity management or regulatory reasons. In these cases, these local pools of cash may be invested with different parts of the same banking group, giving rise to a significant exposure to this group.

This can be best addressed when appointing the cash management bank, as the largest exposure is likely to arise from the local use of bank deposits. Treasury will also need to consider applying counterparty limits to those entities that invest more than a minimum amount. At the very least, treasury may require local entities to provide details of their short-term investment, so that exposure across the group can be aggregated.

At the same time, treasury may also want to link individual counterparty limits to country limits. For example, if a group is already exposed to the Italian economy because of its business interests, it may prefer to avoid increasing this exposure by investing in instruments issued by Italian banks, regardless of the fact that they may have acceptable ratings. When setting country limits, care should be taken to understand the quality of any bank deposit guarantee schemes or any indication of implicit government support for the local banking sector. Put simply, in the event of a counterparty bank failing, will the local bank guarantee scheme or government support be robust enough to be able to protect all investors' capital? This question also applies to any counterparty to a derivative transaction which might be in place to hedge an underlying position.

Rating agencies may also publish an overall assessment of a government's willingness and ability to support its banks. For example, S&P Banking Industry Country Risk Assessments allocate countries to groups, numbered one (highest) to ten (lowest). Fitch Ratings publishes bank systemic risk indicators in its Macro-Prudential Risk Monitor reports, and Moody's publishes a separate banking system outlook for each country considered when it generates an overall rating of a bank.

It is vital that treasury uses the rating issued for the exact entity it is dealing with. For example, a number of different ratings can be assigned to one corporation; its longer-term security issues and its short-term obligations can be at different rating levels, since different obligations (or classes of structured transactions) may generate different levels of default probability and related losses, given a default. Focusing on the entity may reveal whether it is covered by a group cross-guarantee or whether it has been deliberately left outside the ring fence. In the case of some instruments (usually issued by banks), the investor should also establish whether the instrument is held on or off the sponsor's balance sheet. Whilst a bank may, from time to

time, support off-balance sheet products, that support is not usually guaranteed or legally enforceable, and should not therefore be assumed or relied upon when making an investment.

When considering a combined limit for a country's banks, the home country's sovereign rating can be a guide. For sovereigns, own currency and foreign currency ratings are usually available. The foreign currency rating will tend to be the more prudent, since governments may be able to satisfy obligations in their own currency (if need be by printing it) more easily than they might satisfy obligations in another currency (of which they are not the issuer).

The agencies provide a structured approach to evaluating credit risk. Credit ratings for non-complex investments accurately assess credit risk in the overwhelming majority of cases and have proven to be a reliable indicator for assessing the likelihood of default. This, coupled with their ease of use and widespread availability, makes credit ratings an essential tool for managing credit risk. For more complex structured instruments, credit ratings are less reliable, primarily because of the difficulty in understanding their true exposures. The investor will need to consider carefully the limits on the ability of rating analysts to assess these instruments. Generally, it is appropriate to invest in an understandable instrument and then use credit ratings (and other sources) to help to assess the creditworthiness of each potential individual issuer. However, it is not appropriate to rely on credit rating analyst assessments when selecting an asset class. Investors should only select instruments they understand.

The limits to the use of credit ratings

Treasury must comprehend the limits to the information the agencies can provide. Because of the way they work, the agencies will not always be in a position to predict company failures. As a result, investors should only ever use ratings as a guide. Counterparty limits should always be set in anticipation of a potential loss. The 2008 crash occurred partly because the financial markets regarded ratings as measures of liquidity instead of repayment probability.

A major problem can be that of identifying the nature of the effective counterparties in more complex investments, such as those where derivatives are used. Banks may well use a special-purpose subsidiary as the counterparty to a swap, often to enhance credit standing, but this will need to be clarified.

The role of credit rating agencies has been under scrutiny for some time and was highlighted by the collective failure to predict the collapse of Lehman Brothers, amongst others, in October 2008. Concern has focused primarily on the potential conflict of interest which arises because the issuer pays for the rating generated by the agency. Although such criticisms are fair, they do not necessarily invalidate the use of ratings. Rather, they require investors using ratings to understand fully the information the agencies provide.

Ratings, like other assessments, are only as good as the information on which they are based and the skill of the analysts providing them. In that respect, they are no different from complex computer programs which model market performance (as the models are reliant on good quality

data and human skill – in this instance that of the modeller and programmers). In some cases, such as Enron, analysts are simply deceived by company executives. In other cases, including the collapse of Lehman, circumstances change too quickly for the agencies to respond.

Many companies that rely on credit ratings simply look to the ratings scales, as these are made freely available from the rating agencies through their websites. However, using the ratings scales without looking at the detailed commentaries the agencies provide is to overlook a great deal of the information on which to make a reasoned judgement of the risks. Access to the full detail is normally only available through paid subscription to the rating service. To benefit from it will require a commitment of time and effort by the company's in-house analyst.

Even though ratings have been shown to provide a reliable frame of reference for credit quality, they do not reflect minor differences (in relative value) between instruments with the same ratings, as ratings use an ordinal rather than a continuous scale. Hence credit ratings should not be treated as the final point of assessment, but rather as a starting point. Investors should supplement public ratings and research with other analysis, wherever possible.

Extending credit risk analysis beyond credit ratings

Credit ratings provide the investor with a convenient and straightforward method of reducing the wide range of potential counterparties to a manageable size before more detailed credit risk analysis takes place. Once a shorter list of potential counterparties has been established, the treasurer can use other readily available measures to limit exposure to these counterparties.

There are a variety of measurements that can be used. For example, the treasurer could track the movement of relevant credit default swap (CDS) spreads or, more generally, the counterparty's share price. Whilst not solely driven by credit risk, both of these provide a quicker reflection of market and other events than credit rating agency actions. Both these indicators can be very volatile, so investors will attach the most significance to any large movements that are out of line with overall market moves. When considering a number of money market funds, for example, the treasurer should assess the weighted average life (WAL) of each fund. This provides a measurement of each fund's sensitivity to changes in credit spreads and its ability to cope with an untoward level of redemptions. (This measurement is also useful for treasurers who manage their own investment portfolios.)

The three main credit rating agencies have also developed market implied ratings. These are models that use market inputs, such as share prices and bond yields, to try to create more dynamic credit ratings than those outlined above. By using these market inputs, the implied ratings are constantly updated. Unlike the core ratings, this data is not freely available, and may be too expensive for all but the largest corporate treasuries to access.

As a proxy for these services, some companies now use CDS spreads or stock or bond market movements to measure market views of the perceived credit risk associated with a particular reference entity, providing them with warning signals to consider cutting limits or even removing a counterparty from their list. A CDS is effectively a form of insurance, in which the seller pays out should a credit event affect the reference entity. The buyer pays a series of payments,

known as the spread, over the life of the CDS contract. The payments will increase as the perceived credit risk of the reference entity increases. Although CDS contracts are arranged over the counter, there are a number of information providers that capture and publish pricing. Although this information may reflect changes in creditworthiness more quickly than credit ratings, it is also only as accurate as the models used to model the pricing. CDS spreads can also be affected by specific CDS trading activity in what is normally a very thin market, or by general market volatility. As with other tools, CDS spreads should not be used in isolation to model counterparty risk.

As part of more detailed credit analysis, the underlying instruments should also be examined. When investing in repos, for instance, the transaction is only as secure as the underlying collateral instrument. Money market fund investors will also want to understand the nature of the instruments that are bought by the fund. As discussed above, treasurers should also evaluate the quality of any guarantees that are relied on to protect the security of the investment. If the relevant issuers of the underlying collateral or guarantors are existing counterparties, a treasurer should ensure these exposures are included in any calculation of exposure to the relevant counterparty.

Although there are clear advantages to be gained from performing additional credit analysis, it is important to remember that these cannot fully protect a company against the risk of loss. This is why the adoption of strict counterparty limits remains critical, however good the credit analysis is believed to be.

Larger investors should also set additional prudent limits, based on the size of funds they deposit with each counterparty. For example, a company may not want to deposit more than 5% of the total assets contained in a money market fund, or 5% of the tier one capital held by a bank. In a similar fashion, a minimum degree of diversification can be imposed by requiring that, at any time, no more than 10% of the group's investments be with any one name. However, this sort of rule becomes impractical for small amounts where diversification might reduce the deal size to below practical market sizes.

Resourcing credit analysis

Whilst all these additional checks will help to reduce counterparty risk, the difficulty for many treasurers is finding the resources to perform them. In effect, the treasurer has two choices: to build a team in-house, or to buy services from a third-party provider.

Few organisations other than the largest companies can justify the cost of building a team in-house. Even where an in-house team is available, it may only have the time to analyse the largest potential counterparties. Local investment decisions may still be taken on the basis of relationship, supported by credit ratings, and subject to overall counterparty limits.

The other alternative is to purchase this additional credit analysis. One solution is to outsource either by investing in money market funds or to use specialist fund managers when investing short-term cash. In both instances, the fee paid by the company to the fund manager will include a charge for the credit risk analysis it performs. Evaluating the quality of a fund manager's credit

analysis team is an important part of the selection process when deciding to outsource.

A further alternative is to buy credit analysis from specialist consultants. This is a riskier strategy as, compared with fund managers, the consultants are not as accountable for their advice. It is incumbent on investors to understand the nature and scope of any advice given, which requires the investor to know how the consultants reach their conclusions.

Liquidity risk

Liquidity risk is the risk that funds will not be available when they are needed. In particular, treasury will want to avoid having to borrow in the external market while surplus cash is inaccessible in an investment with a notice period.

A good example of liquidity risk is the loss of USD 1,300 million sustained by Metallgesellschaft in December 1993 because of a stack and roll hedging programme that resulted in significant margin calls when oil became contango (i.e. forward prices exceeded spot prices) in 1993.

The nature of the risk varies according to the instrument. Funds deposited in bank time deposits are inaccessible until the stated maturity date. On the other hand, cash invested in commercial paper can usually be realised before it matures, by selling it in the secondary market. An investor's ability to do so depends on the quality of the paper and the state of the market.

For some investments, there is also a liquidity risk on the liability side. This is the risk that the counterparty cannot meet its redemption obligations. For example, in September 2008, the US Reserve Primary Fund was unable to meet its redemption obligations in full, because of its overexposure to Lehman Brothers debt. Money market funds may be susceptible to such a liquidity risk if the investor profile is unbalanced. Investors will want to assess whether a fund is overdependent on a particular investor or type of investor, or a particular market. Different types of investors have different seasonal cash requirements or liquidity needs. The liability liquidity risk will be lower in a fund with a spread of investors that is broad, in terms of both their market sector and their geographical spread.

In general, investments made by pension funds or retail investors tend to be 'stickier' than corporate cash investments. This is mainly because the funds have a longer-term perspective than companies investing their working capital. However, recent concerns over accounting rules have made company investment activity more volatile as corporate treasurers seek to redeem money market fund investments at quarter or month ends to ensure those investments are considered as cash by their auditors. The key task for the investor is to understand the liability profile of any fund or other counterparty before making an investment.

Another example of liquidity risk arose when institutional investors, including companies and local governments, with deposits in three Icelandic banks (Glitnir, Kaupthing and Landsbanki) lost access to their funds when the three banks were placed in receivership in October 2008. In the case of retail investors, many were covered by deposit insurance schemes, so they did not lose their invested principal (up to the limits of the schemes). However, they did lose the opportunity both to earn interest whilst the banks have been in receivership, and to reinvest their savings whilst the insurers administered the schemes. Similarly, institutional investors lost access to the invested principal during the same period and, although the overwhelming majority of their invested principal has been returned, investors did lose significant reinvestment opportunities over the five year period.

Institutional investors, whose principal may be insured or covered by a guarantee, must recognise that there is a residual liquidity risk, even if credit risk can be reduced or eliminated. It is also important to remember that, in the case of insurance or guarantees, this credit protection is only as valuable as the strength of the insurer or guarantor. In the case of bank deposits, this can include the financial strength of a government, as has been seen with recent problems in the eurozone.

To help manage liquidity risk, the investment policy will set constraints on the maximum maturity/duration of investment, or may even establish a liquidity ladder (i.e. the proportion of funds that should be accessible overnight, with one week, etc.). For example, it may state that a certain proportion of cash must be invested in overnight deposits. Alternatively, it may state that a specific proportion of cash must be invested in instruments accessible within two days. If the policy permits investment in longer-term instruments, treasury should ensure that a certain minimum amount matures regularly (daily, weekly or monthly), in order to provide sufficient liquidity to meet unexpected cash outflows. This figure should be determined by the effectiveness of the cash flow forecasting system.

Margin risk

Some companies may face a margin risk (the risk of having to pay a margin) under European Markets and Infrastructure Regulation (EMIR: EU Directive 648/2912) requirements. EMIR applies to all market participants in the European Economic Area (EEA) and to participants from outside the EEA trading with an EEA counterparty both when trading with financial counterparties (FCs) and their own group counterparties. EMIR was introduced to reduce the risk to the financial system from derivatives transactions.

Under EMIR, non-financial corporations (NFCs) are divided into two sub-categories (NFC+ and NFC-), according to the nominal value of derivatives the NFC enters into as a rolling average over a 30 day period. The thresholds exist for five different classes of derivatives: EUR 1 billion for credit or equity derivatives and EUR 3 billion for interest rate, foreign exchange or commodities and other derivatives. Cash products, spot foreign exchange and derivative transactions used for hedging activities (as defined under Article 4 of EMIR) are exempt from this calculation.

Treasurers should note that there is divergent opinion across the EU member states as to whether forward foreign exchange transactions require reporting and are included in the threshold. They should, therefore, seek advice from the national competent authority in the EU member state of the transaction.

All companies are required to report their derivative transactions into a trade repository, although the reporting role can be delegated to their financial counterparty. Companies cannot delegate the obligation to report and they will continue to be obliged to take part in periodic reconciliations of derivatives outstanding.

Once a company breaches any of the thresholds, it is considered to be an NFC+ and will be required to meet central clearing or risk mitigation requirements for all classes of derivatives. Such companies face a choice between clearing all over-the-counter derivative contracts via an approved central counterparty (CCP) or adopting risk mitigation techniques, which can involve margining (exchanging collateral) or paying a credit valuation adjustment (CVA) charge. In addition, companies considered to be NFC+ have greater trade reporting requirements.

This margin risk compounds the liquidity risk outlined above. In addition, it is of concern for treasurers in companies whose use of derivatives are below, but close to, the EMIR clearing thresholds. Treasurers in these circumstances must consider whether it is appropriate to voluntarily clear derivatives via a CCP (with the associated increase in costs) or to accept the cost of paying a margin or CVA charges.

Treasurers also need to be aware of breaching thresholds during any due diligence process as part of an acquisition. For example, any acquisition involving exposure to commodities can take the company over the clearing thresholds, adding cost to implementing the company's wider risk management policy. More generally, treasurers need to be clear about the purpose of their hedging strategy and policy, which should be clearly documented and followed.

US regulators introduced measures similar to EMIR via the Dodd-Frank Act. This similarly requires companies to clear and report derivative transactions unless they qualify for an exemption.

Market risk

Market risk is the potential for adverse movements in the market to affect the value of the investment or the expected returns on future cash surpluses. There are three main forms of market risk: interest rate risk, foreign exchange risk and credit valuation risk.

Interest rate risk

When investing, treasury will usually have to choose between instruments offering fixed and floating-rate returns. In general terms, when interest rates are falling, fixed rates are attractive. When interest rates are rising, floating rates allow the investor to benefit from these increasing rates.

The difficulty for treasury is that the risk of making the wrong decision increases as the investment term increases. When investing operational cash, any changes in the interest rate

during the few days of the investment will have a minimal effect, but interest rate risk becomes a significant issue when investing longer-term, strategic cash.

Some investment policies define the proportion of investments which should be held in fixed-rate instruments. Others consider investment together with any company borrowing, so that a certain proportion of net debt must be carried at a fixed rate. The concept of weighted average maturity (WAM) helps a treasury to understand an investment portfolio's sensitivity to interest rate movements. To reduce sensitivity to interest rates, an investment policy could state a maximum WAM. This is an important feature of money market funds: Institutional Money Market Funds Association (IMMFA), a trade association representing the European money market fund industry, requires its funds to operate with a maximum WAM of 60 days. Note that when calculating WAM, it is the maturity of the instrument's current rate fixing period that counts. A floating rate note (FRN) might have two years to its final repayment date but be 45 days from its next rate refixing date. It is the 45 days that goes into the WAM calculation. The final maturity of two years goes into other measures: WAL or weighted average final maturity (WAFM).

With longer-term cash, treasury also has to consider the investment term. For example, if treasury knows that some cash will not be required by the business for three months, it could invest the cash in instruments that mature in three months' time. Alternatively, treasury could choose to invest in a shorter-dated instrument and reinvest on maturity. Treasury will be influenced both by the shape of the yield curve and forward starting rates (those implied in forward rate agreements – FRAs). Treasury may also form a view of future interest rate movements.

In most cases, the three-month interest rate will offer a higher return than the one-month rate. In this case, the yield curve (where yields are plotted against time – see Appendix page 213), is said to be normal. An upward-sloping yield curve can arise because investors require a slightly higher rate for longer deposits, to compensate them for the loss of liquidity and for the higher credit risk. These effects are normally outweighed by the market's expectations as to whether rates are expected to rise (with an upward slope) or to fall, in which case the slope will be negative.

Theoretically, if the market's inbuilt expectations exactly match actual outcomes, then an investor will be indifferent between investing in a three-month deposit or in a series of three successive one-month deposits. Treasury will have to assess whether the three-month rate represents a sufficient return for the loss of liquidity and, more significantly, whether their expectations for the trend in rates are different from those implied by the forward starting rates shown on the yield curve.

Consider a company that has USD 25 million surplus cash. Treasury knows it needs the cash to meet a payment in six months' time. Assume the three-month LIBOR rate is 1.15% and the six-month LIBOR rate is 1.42 %; the 3×6 forward rate is then 1.69% (see Appendix to calculate the 3×6 forward rate). The treasurer could invest the funds for six months and earn 1.42%. However, if he or she thinks the market has underestimated the level of future interest rates, the funds could be invested for three months and at maturity. The 3×6 forward rate suggests the treasurer would need to earn a return greater than 1.68% on the second three months to benefit from this strategy. In other words, if the treasurer thinks the three-month LIBOR rate will be above 1.68% in three months' time, it could be beneficial to invest the funds for three months initially.

It is possible to calculate forward rates for different terms, depending on the circumstances. There are risks associated with this strategy, notably that interest rates may not move as the treasurer expects. Bear in mind too, that such an approach may be considered speculation within the terms of the particular treasury policy, something the treasurer may want to address.

Riding the yield curve

For longer-term cash, and depending on the investment policy, treasury may have more flexibility when developing a strategy. When faced with a normal (or upward-sloping) yield curve, treasury may decide to ride the yield curve. This technique involves the investor purchasing longer-dated instruments, such as bonds, and then selling them in the secondary market before they mature. In theory, the investor would benefit by buying the instrument at a low price and then being able to sell the instrument at a higher price.

The risk is that interest rates may not behave as expected, and the investor may experience a loss or not be able to sell the instrument in the secondary market. If secondary markets are experiencing volatility, this strategy represents an additional liquidity risk. The investment policy should indicate whether such strategies are permitted.

Interest rate derivatives can be used to hedge against adverse movements in the rate. However, these need to be used with care, as they may impose an additional cost (in the form of a premium). They also require the company to assume additional risk in terms of a counterparty risk on the derivative instrument and a transaction risk as a result of the derivative's potential impact on the profit and loss account. The investment policy should indicate when the use of interest rate derivatives is approved. It may also state that speculation with derivatives is prohibited.

An example of market risk is the loss of USD 1,700 million sustained by Orange County in California in November 1994 because of structured notes and leveraged repo positions. The treasurer had fully disclosed the positions and had been earning superior returns – indeed, these had been the subject of public debate when he stood for re-election in 1994 – but the Board of Orange County Pension Fund did not understand the market risk.

This case highlights two points. First, treasury should invest in appropriate instruments. Second, the board should clearly understand the risks being taken. In particular, treasury must explain the potential impact on the company of an adverse movement in market rates. This explanation should take place when an investment policy is agreed or reviewed and also as part of the regular oversight of treasury activities by the board (or board level committee).

Hedging an investment position is generally less important for investments over short periods and in stable interest rate and inflation environments. However, the longer the investment period, the more volatile the interest rate or the higher the rate of inflation, the more important it will be for the treasurer to consider hedging an investment position to ensure a particular return. To avoid the need to hedge, the investor can decide to invest for shorter periods (and then reinvest more frequently). This strategy will increase the operational risk associated with reinvestment.

Managing cash in a negative yield environment

The historically low interest rates experienced over the last few years have caused problems for all market participants. For example, the low interest rates have weakened yield as an indicator of relative creditworthiness of different investment instruments. For certain currencies, notably EUR interest rates have fallen to a level where negative returns are offered on deposits. Managing cash in such an environment becomes more difficult as, by definition, any deposit of cash implies a loss of principal.

Having an effective policy for managing cash in a negative yield environment and ensuring compliance with such a policy is important. As with more conventional environments, a treasurer's objective should be to preserve principal and to retain liquidity. Importantly, the policy should not be altered to seek to avoid or reduce the cost of negative yields by accepting greater risk or loss of liquidity.

In a sense, the negative yield is simply a fee for holding cash which is normally hidden in a conventional positive yield environment. Low interest rates simply mean banks and other providers have to levy an explicit charge for this service.

Foreign exchange risk

Investments may also be subject to foreign exchange risk. For example, investments are subject to an effective loss of principal if the investment currency depreciates against the group's operating currency. However, if the company has a defined expected need to make a currency payment, then keeping cash in that currency is a form of hedging.

The investment policy will state in which currency or currencies investments can be made. If treasury has flexibility, it will need to consider the risks associated with investing in particular currencies.

Consider a French-based multinational group with an operating company outside the eurozone that is holding surplus cash for six months. Treasury could decide to invest locally, in instruments denominated in the domestic currency. This may increase counterparty risk and also, if the local market is small, liquidity risk (especially if the company is relying on selling the instrument in the secondary market).

As an alternative, treasury may decide to invest the cash in euro-denominated instruments, to take advantage of the wider range of available counterparties. In addition to the two sets of foreign exchange transaction costs, the local operating company is exposed to any depreciation of the euro over the next six months.

As with interest rate risk, the investment policy should state whether a foreign exchange exposure can be hedged using derivatives. Under this strategy, the company could concentrate, and exchange into one currency, any surplus balances for investment purposes. However, the treasurer would need to ensure the redeemed principal will be sufficient to meet local currency outgoings in the future by entering into an appropriate hedge transaction. This could fix the rate using a forward exchange agreement or protect against an adverse movement in the exchange rate by entering into an option contract. Note there will be a counterparty risk associated with this transaction.

Even if hedging using derivatives in these circumstances is not permitted, companies can use other strategies to protect against the impact of exchange rate movements. One such strategy would be to try to match assets and liabilities in different currencies, instead of converting all surplus cash into one or two currencies for investment purposes (which would leave the company exposed to exchange rate movements when converting the redeemed principal back to make, for example, local salary and tax payments). In this scenario, the company would choose to invest operating cash locally in local currency and only concentrate strategic cash to the centre for investment in the group currency. This has the advantage of reducing the exposure to foreign exchange movements, although it may increase counterparty and liquidity risks, depending on the state of the local money markets.

Credit valuation risk

In addition to the risk of default on an investment (credit risk), there is also a risk that the market value of an investment instrument will change during its life. A change in the perception of a counterparty's risk of failure is likely to affect the market value of the instrument. If the market perceives the risk of failure to have increased, the value of the instrument will fall (the credit spread for the instrument's issuer will increase).

For short-term instruments, any changes in credit valuation are unlikely to be material. However, the impact can be more noticeable for longer-term investments. The credit valuation risk can be minimised within a money market fund (or across an investment portfolio) by ensuring that the WAL or WAFM of the portfolio is not too long. IMMFA requires compliant money funds to maintain portfolios with a maximum WAL of 120 days.

As long as a particular instrument does not fail, any credit valuation changes during its life will reverse by the final maturity when it is repaid at par. However, if cash needs trigger a disposal of an investment prior to its final maturity, a credit valuation market risk will exist. For instance, if a company chooses to invest in a high-quality bond fund, it might be reasonably confident there will be no defaults on the underlying bond holdings. Over an extended time period, there should be minimal credit valuation losses. Over shorter periods, though, price changes in the bond fund from credit effects could be significant. For example, during 2010, funds of good quality government funds suffered short-term losses in value (which subsequently reversed) as various crises in sovereign credit risk spread through the markets.

Settlement risk

This is the risk that the counterparty does not fulfil its part of the contract. For example, an investor may want to realise an investment in a bond by selling it in the secondary market. The counterparty may take delivery of the bond, but not transfer funds to the investor.

An example of settlement risk is the failure of Germany's Herstatt Bank in June 1974. Herstatt had taken various currency receipts, but failed to make corresponding USD currency payments by the end of its working day. Before it could open for business the following day, the bank had been closed down by the German regulator, leaving counterparties with unsecured claims against the insolvent bank's assets. The settlement failure was so great that it, in turn, introduced liquidity risk: i.e. the counterparties with unsecured claims had difficulty obtaining enough liquidity to meet their own obligations. Ultimately, Herstatt resulted in so much systemic risk that banking regulators took it as a cue to develop an international regime of banking regulation, commonly known as the Basel Accord.

Settlement risk can be managed by the adoption of effective custody arrangements and maintaining accurate and timely records. The dematerialisation of many investment instruments has also reduced the associated settlement risk.

An efficient cash flow forecasting system can also help to reduce settlement risk. With a clearer view of the likely future peaks and troughs of available surplus cash, the treasurer is able to invest more funds for longer periods, rather than seeking to redeem and then reinvest funds on a daily basis. Where the cash flow forecast is less certain, the treasurer can elect to deposit funds with a money market fund until the cash need arises.

Operational risk

Operational risks, especially in the form of personnel and systems risks, will also need to be managed when investing.

To protect against the risk of fraud and the risk of error, treasury should adopt an appropriate segregation of duties, including clear authorisation procedures. These duties should be assigned to appropriately trained individuals. This will typically be part of the group's treasury policy.

An example of operational risk is the failure of Barings Bank Plc in February 1995. Barings lost GBP 872 million when a trader, Nick Leeson, took unauthorised proprietary derivatives positions on the Nikkei 225 and Japanese government bonds. Leeson was able to hide the large margin calls that arose as his derivatives positions lost money because Barings' operational controls were weak. Other examples of operational risk are the losses sustained by Daiwa Bank (USD 1,110 million in September 1995), Sumitomo Corporation (USD 1,800 million in June 1996), Allfirst Financial, a US subsidiary of Allied Irish Bank (USD 691 million in 2002) and, largest of all, Société Générale (EUR 4.9 billion in January 2008). All of these cases involved unauthorised trades that were concealed because of poor operational controls.

As treasury departments adopt increasingly complex and automated systems, the associated risks have increased. Systems, such as the cash flow forecasting system, should be subject to regular reviews and back-up procedures tested regularly. An automated dealing system should contain the same authorisation levels as a manual process.

Understanding risk

Being responsible for preserving cash, treasurers usually want to take a conservative approach when investing, although there are circumstances in which more risks might be taken. Understanding risk does not mean the company becomes immune from loss; rather it allows the treasurer to structure an investment policy that matches the likely return to the risk taken. With a clear view of where risk arises, the treasurer can design an investment policy that allows the company to manage its exposure to loss.

Case Study

Using an evolving investment policy to achieve objectives

Corporate treasurers developing an investment strategy and policy to be approved by the Board must ensure that the policy reflects their company's investment objectives and overall appetite for risk. This policy must be reviewed on an ongoing basis to guarantee that it continues to support the company in meeting its objectives given a changing market environment. Carefully considered reforms to an investment policy can help a treasurer manage cash effectively as balances grow or as new investment opportunities emerge.

A UK corporate provides a good example of a company that has been evolving its investment strategy. The company has been growing rapidly and the amount of cash it holds to support the business has been increasing. Given the larger cash portfolio under management, the treasury has developed a more diversified investment strategy and policy to reduce bank counterparty and sector risk of its cash portfolio. The company is in the process of implementing the new strategy and policy, including tri-party repo and direct investment in government securities, exchange-traded funds (ETFs) and other managed funds meeting certain credit and liquidity criteria.

As with most organisations, the company historically has invested all its cash in bank deposits and AAA money market funds. In the case of bank deposits, the company sets credit limits for each bank in its revolving credit facilities, based on credit rating. The company has a large bank group, which helps with diversification. The treasury also uses CDS spreads, market news and feedback from regular meetings with each institution when monitoring credit limits and will reduce credit limits when there are any concerns.

To assess liquidity requirements, the treasury uses forecasts as well as historical data to assess operational cash requirements in the short and medium term and how much cash is strategic. This is then used to determine the term structure of the cash portfolio. Subject to meeting security and liquidity requirements, investments are then competitively bid to achieve best yield execution.

In addition to bank deposits, the company has been investing in AAA-rated money market funds, including the HSBC Liquidity Fund. The company uses eight approved funds, all accessed from a single online portal. The funds provide good short-term liquidity and built-in diversification. The company requires all funds to have assets under management (AUM) of at least one billion in the relevant currency, with the company's participation limited to 5% of total AUM. However, the company believes it is important to recognise that the underlying investments are largely bank investments and so represent exposures that are additive to banking sector and individual bank deposit exposures. The company is looking at solutions to enhance monitoring of underlying money market fund bank exposures. It has also been monitoring forthcoming money market fund reforms and their potential impact, including mark-to-market accounting treatment, liquidity fees and redemption gates.

As a first step in its diversification plan, the company started collateralised tri-party repurchase agreement investments. In practice, the company still manages these investments within its bank counterparty limits. However, risk is reduced by virtue of the collateral with minimum collateral rating requirements, a cap on non-government collateral (GC) and a lower cap on financial institution collateral.

The company is currently implementing the next phase of its policy to invest in direct government securities and, potentially, ETF and separately managed accounts. The company is in the process of putting in place its own custodial arrangements to support this. These investments will need to be marked to market, a key change from historical investments in bank deposits and money market funds. The investment policy sets parameters to limit the average tenor and duration of these investments and the treasury function will be developing supporting processes for managing and limiting the amount of interest rate risk taken.

In the case of separately managed funds, it is envisaged these would include corporate credit risk subject to credit rating limits, but, recognising that the company does not have the expertise to manage corporate credit risk, the key feature of these investments is that they are managed by external fund managers.

The implementation of this more diversified investment strategy and policy is expected to reduce bank counterparty and sector exposure of the company's cash portfolio.

Content of policy

An investment policy would typically deal with the following issues:

Instruments

The policy should indicate which investment instruments are acceptable. There is a full examination of the advantages and disadvantages of different types of short-term investment instruments in the Appendix.

List permitted instruments

The investment policy should list the permitted instruments. The addition to the list of any new instrument should be carefully considered and treasury must satisfy the board that any new instrument is appropriate. The full implications of any new investment instrument must be formally analysed and approved before any investment can be made. This consideration also allows treasury and the board to set limits to the tenor and weighting of each instrument when adding it to the list (see Maturity of instruments and the portfolio, below).

This strategy provides certainty and clarity to the treasury department, as they may only invest in permitted instruments. However, just because an instrument is on an approved list does not mean that it is necessarily less risky than an unlisted instrument.

Currencies

The policy should indicate whether there are any restrictions on the currency of the investment instrument.

This section could also include a statement on the circumstances, if any, in which foreign exchange derivatives can be used.

Maturity of instruments and the portfolio

The policy should state any limits on the maximum maturity of individual instruments or of the portfolio as a whole. It may also set limits for the proportion of cash to be invested in different categories of asset. A certain proportion may be required to be held in immediately available cash, for instance.

Given the process of investing corporate cash, companies will be wary of investing in long-dated instruments, even where there is a relatively liquid secondary market. More precisely, treasury will need to ensure that it has sufficient liquidity to meet expected cash demands, plus a margin. When some surplus cash is expected to remain available for a longer period, treasury may feel able to invest in some slightly longer-dated instruments. If longer-dated instruments are used, the policy should require that a proportion of any investments must mature regularly. This will help to manage liquidity and reinvestment risk.

Where possible, the preferred maturity should be related to the information generated by the cash flow forecast.

Interest rate management

Companies differ in their sensitivity to changes in interest rates. The investment policy should also reflect the group's approach to managing interest rate risk. This should ensure any investment decision is taken in the context of any policy to maintain a particular ratio between fixed and floating rates.

For example, the underlying business of a building company will be very sensitive to interest rates. As rates rise, the demand for new houses will drop. Such a company would not want to hold any surplus cash in fixed rate deposits for long periods. This is because, if interest rates rise, it will start to lose business, as well as the opportunity to earn an increased return on the surplus cash. A better hedge would be to invest any surplus cash in floating rate instruments, as the increased interest income from higher interest rates will at least partially compensate for any loss of underlying business.

Counterparties

The investment policy will also need to identify a set of approved counterparties.

Banks

For many instruments, the company's counterparty will be a bank. The policy will need to strike a balance between encouraging investment with more highly rated banks, whilst retaining a good spread of counterparties to prevent concentration risk.

To do this, the policy should set limits for the company's maximum exposure to any one counterparty bank. These may vary according to each bank's published credit rating, with greater limits for more highly rated banks.

Establishing a policy on the permitted bank counterparties has implications for the company's bank relationship management. Banks that provide the company with credit lines may want to be rewarded with a higher counterparty limit than other similarly rated banks. Companies will want to consider whether such an approach is appropriate, given their existing exposure to those banks.

The policy will need to assess how to measure exposure to a particular banking group across the whole company, especially if a significant proportion of short-term investing takes place at a local level. Problems may arise if all local operating companies select the same banking group, as the company as a whole would be highly exposed to that group. Where the central treasury has the ability to do so, it should impose counterparty limits on all group subsidiaries. If not, the policy could require operating companies to provide information about their investing activity, which treasury could consolidate on a group-wide basis.

In these circumstances, treasuries also need to be wary of the differing standards of banking supervision and levels of government support for banks throughout the world. It may also be prudent to limit counterparty risk by jurisdiction, as well as by entity.

Although the counterparty policy may be heavily dependent on ratings, it is prudent to give the treasurer authority to make an immediate reduction in a bank's limit, or even to remove a name from the permitted list, if signals reveal an increased risk. Triggers that can provide warning signals include press reports, ratings being put on negative alert for a possible downgrade, a sudden drop in share price, increases in CDS spreads over and above overall market changes, or a significant fall in the market implied ratings.

The counterparty limit itself should refer to the invested principal. If an investment is made with a bank at the limit of, for example, USD 50 million, any accrual of interest will cause the limit to be breached. A pragmatic approach is for counterparty limits to ignore accrued interest or any changes in the principal's market value as market rates change, but, depending on materiality, a more sophisticated policy could be adopted.

Consider these alternative approaches to counterparty limits:

Example 1: counterparty limits

The investment policy of ABC Inc takes a detailed and prescriptive approach to counterparty limits:

'The following counterparty limits shall be observed at all times against instruments with prescribed long-term and short-term credit ratings:

| Long-term credit rating: | AAA/ Aaa/AAA | AA+/ Aa1/AA+ | AA/Aa2/ AA | AA-/ Aa3/AA- | A+/A1/ A+ | A/A2/A |
|---|-----------------|-----------------|---------------|-----------------|--------------|--------|
| Short-term credit rating: | A1/P1/F1 | | | | | |
| Total counterparty limit (USD million): | 400 | 350 | 300 | 200 | 100 | 50 |
| Counterparty limit, per instrument (EUR million) | | | | | | |
| Sovereign debt | 350 | 300 | 200 | 100 | 10 | 5 |
| US sovereign debt | 400 | – | – | – | – | – |
| Non-US sovereign debt | 350 | 300 | 200 | 100 | 10 | 5 |
| Bank deposits | 325 | 275 | 175 | 75 | 50 | 25 |
| Certificates of deposit | 200 | 175 | 150 | 100 | 50 | 25 |
| FRNs | 200 | 175 | 150 | 100 | 50 | – |
| Commercial paper | 200 | 175 | 150 | 100 | 50 | – |
| Repos | 200 | 175 | 150 | 100 | 50 | – |
| Money market funds | 400 | – | – | – | – | – |
| Asset-backed securities | 375 | 325 | – | – | – | – |

Instruments not specified above can only be purchased with the express written consent of the group treasurer.

The maximum maturity of any instrument shall be: three years in the case of US sovereign debt; two years in the case of non-US sovereign debt; three months in the case of bank deposits; one year in the case of certificates of deposit or commercial paper; three years in the case of FRNs with put options; three months in the case of repos; and five years in the case of asset backed-securities.'

Example 2: counterparty limits

The investment policy of XYZ Inc. is much less prescriptive, and reads:

‘This investment policy establishes global counterparty limits for the purposes of investing XYZ Inc.’s surplus cash.

Counterparty limits shall apply to cash investments (comprising all approved instruments converted to GBP using the daily Reuters rates).

Counterparty limits for cash investments are:

AAA: GBP 750 million

AA: GBP 500 million

A: GBP 250 million

BBB: GBP 50 million

Cash investments with short-term ratings shall be subject to the counterparty limit of their corresponding long-term rating.

Investment in a money market fund is only permitted for those rated AA and above and shall not exceed more than 10% of the total value of the fund, and in any event shall not exceed GBP 750 million.

These counterparty limits may be multiplied by two times in the case of investments with global relationship banks.

The chief treasurer of global treasury in London has authority to make investments outside these counterparty limits, but only for specific, exceptional transactions (such as in an emerging market where there is no realistic alternative). Such investments shall be reported to the board, with an explanation of why the counterparty limit was felt to be inappropriate.

The chief treasurer of global treasury in London has authority to establish and impose regional counterparty limits, taking account of the needs of subsidiary companies and the markets in which they operate. The chief treasurer of global treasury in London will inform the board where those regional guidelines establish larger counterparty limits than those set out in this investment policy.’

The examples here only cover investing exposures. In addition, most companies will enter into foreign exchange and other transactions with banks, such as interest rate swaps or FRAs. The credit exposures from these instruments must, in practice, be consolidated with exposures from investments. The financial instrument exposures will normally be assigned some risk weighting other than 100%. For example, on a foreign exchange deal for GBP/USD three



months forward, if the bank defaulted, the loss to the company would be equivalent to the movement in exchange rates during the three months that was no longer covered, and not the full principal. Depending on the expected volatility of the exchange rates, a credit risk of, say, 20% might be assigned to foreign exchange deals less than one year in maturity. Alternatively, rather than giving the exposure a percentage weighting, it could be based on the mark-to-market value of the instrument at any instant.

In the case of an FRA, a credit exposure may arise if interest rates move after the agreement is reached. If interest rates fall, the investor will be owed a payment on the FRA (to compensate for the fall in interest rates). Based on the volatility of interest rates, one could create a rule of thumb that the credit exposure should be treated as, say, 3% multiplied by the period, multiplied by the notional amount, assuming that there is a 95% confidence limit that rates will not move by more than 3%. Alternatively, if we assume interest rates do not go negative, the maximum credit exposure could be calculated as the impact of a fall in interest rates to 0%.

Non-banks

For other instruments, notably commercial paper the company's counterparty will be a corporate issuer. Again, as the company will be assuming counterparty risk when investing in such instruments, similar counterparty limits should be set.

Although most US and Euro commercial paper issues are rated by one or more of the credit rating agencies, counterparty risk management in some local commercial paper markets is often name-driven. In such circumstances, the policy should set clear guidelines on approved counterparty issuers.

Where an issue is backed by assets or supported by credit lines, treasury should also consider the creditworthiness of the supporting assets.

Breach of limits

If a counterparty's credit rating is downgraded, this may mean an instrument issued by this counterparty may exceed the applicable limits. The policy should consider what should happen in such a circumstance: the treasurer could seek to dispose of any liquid investments, possibly taking a loss, or there could be a derogation to hold the instrument until maturity, notwithstanding the breach. Theoretically, it is possible to hedge the credit position by buying a CDS; however, the company will need to take its own view on the balance between risk and cost.

Breaches caused by carelessness or mistakes by staff will be taken very seriously in many companies, and may lead to dismissal in the case of repeated occurrences.

Tax and regulatory issues

Tax issues

Judith Daykin, Deloitte LLP

In the context of investing corporate cash, tax impacts on decisions in two significant ways. First, as discussed in Chapter 2, multinational companies of all sizes are increasingly using cash pooling techniques, both domestically and on a cross-border basis. The tax regime in the jurisdiction in which the liquidity management structure is headed could affect how such a structure operates (e.g. physical versus notional pooling) and, consequently, the quantity of funds available to invest, or needed to be borrowed, in that location. In addition, the local tax and regulatory regimes in every country will determine which of the group entities are permitted to participate in a cross-border structure and whether, if permitted, it is worthwhile for these entities to do so; in some cases it may be appropriate for group entities to participate as depositors in the structure but not as borrowers.

Second, whether or not any surplus cash to be invested has been concentrated via a liquidity management scheme, the return on the investment may also be affected by the prevailing tax regime. This section examines the main tax issues that arise when investing cash or drawing on pooled cash.

However, because tax rules are continuously changing, companies must ensure they understand the implications of any reforms on their business.

How tax issues arise when investing

When making an investment, the treasurer will need to consider the tax implications of the decision. The taxation treatment will primarily depend on the tax rules in the jurisdictions where the business operates, and the entity classification of the participants (separate legal entities or branches). There are, however, many generic tax issues that are applicable to a number of jurisdictions.

Withholding tax

Many jurisdictions impose withholding tax, either on interest paid to resident companies or when interest is paid from one jurisdiction to another. The tax is so named because the bank or party paying interest is obliged to deduct tax from the interest income when it is paid.

There may be various withholding tax rates for differing interest payments; a domestic rate applicable to general companies, a domestic rate for banks, a treaty rate or preferential rates or exemptions for payments of interest between certain related companies within the EU.

When applied to cross-border payments, withholding tax may be reduced or eliminated by use of relevant double tax treaties, which may require tax treaty clearance applications to be completed in order to benefit from a preferential treaty tax rate. It is important that

groups ensure they have procedures in place to ensure clearances are submitted on time and in the correct fashion. If this is not the case, such groups potentially expose themselves to tax, interest and penalties. In general, to benefit from a tax treaty it is necessary for the recipient to have a real business and beneficial ownership of the interest income in that jurisdiction, not simply a 'brass plate' office. Therefore, tax will often be considered in the context of the existing group structure, rather than introducing new entities that would require substance.

In some cases, where a double tax treaty does reduce or eliminate a withholding tax, the company may still find tax is withheld at source, so that a reclaim or tax credit will have to be sought at a later date. In these circumstances, the group as a whole will lose control of the withheld funds until a refund is received. This has implications for both cash flow (as a result of the time delay) and administration (in terms of the costs of reclaiming the withheld funds). These additional costs should be considered when comparing the return from alternative investment instruments, as they affect the overall expected return. Clearly, where double tax relief is not available, the post-tax return should be compared.

Thin capitalisation

Thin capitalisation rules, which generally operate to restrict the level of interest that may be deducted for tax purposes, may apply when pooled cash surpluses are invested centrally. The tax authorities are concerned if equity capital is disproportionately low compared to debt levels. If a company receives excessive debt funding from affiliates, their profits will be largely sheltered by interest expense and this could result in a loss of tax take. These rules, which are currently in a particularly rapid state of flux as a result of the OECD's Base Erosion and Profit Shifting (BEPS) programme, will need to be considered, not only when the company establishes its liquidity management structure, but also on an ongoing basis.

Transfer pricing

Many tax jurisdictions have adopted transfer pricing legislation to protect against groups artificially diverting profits to low-tax jurisdictions or tax havens. In order to manage transfer pricing rules, the group must generally establish a clear policy in order to demonstrate that interest earned on pooled funds is distributed between participating group entities on an arm's-length basis and reflects the relative differences in credit risk between those entities (particularly important in the context of notional pooling). The header company will often need to demonstrate commercial terms and rates when reallocating interest earned from any centralised investment activity between participating group entities. Where cash is invested centrally on behalf of all participating group entities, each entity will usually need to contribute towards the costs of any centrally provided services (such as counterparty credit management).

These decisions and all arrangements between entities should be clearly documented on every occasion, particularly where notional pooling is used with no actual physical movement of funds and no intercompany loans are created. Care will need to be taken to

ensure the required documentation is both contemporaneous and acceptable to all relevant fiscal authorities, in order to avoid interest and penalties on undeclared profits.

Foreign exchange

In some jurisdictions, the taxation treatment of foreign exchange differences on cash balances arising due to the individual financial statements of an entity having a functional currency different to the currency of the balance will follow the respective accounting treatment. However, this is by no means uniform, and certain jurisdictions have specific tax rules relating to the translation of foreign exchange differences, which will need to be considered to mitigate the risk of any potentially one-sided tax impact.

Controlled foreign company (CFC)

The definition of a CFC will depend on the legislation in the individual jurisdiction, and can be complex. There may also be specific exemptions from the legislation. If an entity is deemed to be a CFC, the taxation authorities may require income to be taxed on a real-time, rather than remittance, basis in the hands of its shareholders. The concern of the tax authorities in the shareholder's country is typically that any interest income that is artificially earned in a low-tax area may never be remitted back.

This is a potential high-tax risk area, especially if the entity managing the investing process of any pooled funds is tax resident in a lower-tax jurisdiction and is controlled by a company in a higher-tax jurisdiction.

Selection of jurisdiction

When making an investment, the treasurer should consider the jurisdiction that governs the instrument. In most cases, this will be determined by operational considerations, such as the preferred currency of investment and the state of the local secondary market for the specific investment instrument. However, the treasurer should also consider the tax treatment of particular investment instruments, which can vary significantly between jurisdictions. In particular, some instruments, such as government paper in some jurisdictions, do not attract withholding tax.

Consideration should also be given to a jurisdiction with little or no domestic withholding tax on interest or a comprehensive double tax treaty network. This may be considered desirable as it may reduce withholding tax obligations and, more importantly, result in minimal tax leakage to the group as a whole. However, in order to benefit from such treaties, sufficient substance in the relevant jurisdictions will be required.

The potential imposition of stamp duty or other forms of tax on financial transactions by certain jurisdictions should be carefully managed.

Although a plan to introduce a financial transaction tax (FTT) in the EU has stalled, a proposal to introduce a harmonised FTT in participating EU member states (collectively

referred to as the FTT Zone) remains under discussion. Because negotiations are ongoing, any legislation could capture non-financial services entities, such as a group treasury company, at least for some financial transactions.

Depending on the outcome of the FTT proposals, consideration should be given as to whether the activities of such entities could bring them within the scope of the rules, in order to quantify any potential financial impact on the group treasury activities.

Anti-avoidance tax legislation

Groups implementing cash pooling and surplus cash management structures should always ensure that the purpose of any arrangements is driven by business and commercial requirements.

Generally, one would not expect the implementation of a centralised cash management structure to fall foul of anti-avoidance legislation that considers the business purpose of such arrangements. However, note the more common considerations such as thin capitalisation and transfer pricing rules discussed above. More careful consideration will be required where tax-favoured jurisdictions/entities/instruments are included or involved in any surplus cash management arrangements.

The regulatory environment

The legal and regulatory environment also influences the drafting of an investment policy and the investment decision-making process.

Regional treasury centres

Regional treasury centres often enjoy preferential tax treatment, subject to meeting certain regulatory conditions. Treasurers who make use of regional treasury centres will therefore need to understand whether those regulatory conditions constrain the investment decision-making process.

Accounting rules

Accounting standards determine how investments should be disclosed in companies' year-end accounts. Treasurers typically prefer to hold assets for which their accounting disclosure mirrors the economic substance, particularly over the balance sheet date.

For example, International Financial Reporting Standards (IAS 7 para 6) allow holdings of constant net asset value money market funds to be disclosed as cash and cash equivalent assets (rather than as securities, as is common in a number of local country accounting standards) assuming the holding is short-term, highly liquid, readily convertible into cash and not subject to a significant risk of change in value from the initial amount of investment, enabling them to be held over a balance sheet date without fear of distorting a financial analyst's understanding of a company's accounts.

Highly regulated entities

Some treasurers work for highly regulated entities whose investment decisions are strongly influenced by regulatory considerations. For example, treasurers of banks and insurance companies are subject to capital adequacy and solvency regulations, which can give rise to greater or lesser capital requirements, depending on the type of investment that they hold. Similarly pension funds, local government agencies, insurance brokers etc. are subject to regulatory regimes that can influence their investment decision-making.

Impact of regulation varies

The impact of regulation varies significantly from country to country. In addition, some investors are subject to additional or different regulation. There is further discussion of the impact of regulation on banks and other financial institutions in Chapter 6.

Decision-making and reporting responsibility

Finally, the investment policy must address individual responsibilities both for decision-making and reporting. This should not be too prescriptive. Treasury should not be required to go back to the board every time there is a change in personnel, in order to change responsibilities.

However, the policy should set clear limits to the authority of the treasury department as a whole. It will also determine when the policy should be reviewed (e.g. annually) although this could be contained in a broader treasury policy document as well. Other occasions triggering an update may include a change in the finance director or treasurer, or the completion of a major acquisition or divestment.

Implementation of policy

The policy must determine responsibility for its implementation. There are three main alternatives, which are not mutually exclusive:

▶ **Manage in-house**

If investment is managed in-house, the investment policy must relate to other treasury policies to ensure appropriate internal treasury management, such as an adequate segregation of duties.

▶ **Automate**

It is possible to automate the sweep of surplus cash into pre-determined instruments, such as deposit accounts and money market funds. As with other investments, automated sweeps should be subject to a maximum limit. These automated sweeps are most suitable for smaller balances, where the potential return would not justify manual intervention.

▶ **Outsource to a specialist investment manager or agency treasury**

If a specialist investment manager or agency treasury is to be used, the policy should set out how those services will be used. This will determine how the manager is to be selected and

how this activity will be overseen. Once the decision is taken to outsource some or all of the investment to a third party, the treasurer will need to set clear investment guidelines (including appropriate counterparty limits). The third party will then use these guidelines to manage the funds on a daily basis. Some companies use investment managers to manage segregated funds or separately managed accounts. These allow the company to set the investment objectives, risk appetite and policy. The segregated fund manager will then manage cash for that company in line with the agreed policy.

A significant reason for outsourcing is to take advantage of the investment manager's credit analysis capabilities. Most companies do not have the resources to monitor continuously current and potential counterparties. This is often a significant factor in companies choosing money market funds.

Case Study

US MNC with Belgian in-house bank

This company evaluated its investment approach and decided there was no significant added value from the in-house management of short-term cash. It took the decision to end all active management of short-term cash and to place all surplus cash in money market funds instead.

Today, the company manages its short-term cash, on average about USD 3.5 billion, via an investment portal. The portal gives the company much-improved visibility over its investments. The treasury can track investments by fund and also aggregate positions across all funds. This means, for example, that the treasury can view its exposure to particular instruments, such as ABCP, as well as to particular countries or regions and ensure all specific counterparty limits are maintained.

The decision to end active management was driven by the desire to improve operational efficiency. Investing short-term cash is now a 15-minute task each morning, rather than a whole morning's task each day. Despite this, there has been no significant impact on yield.

Using money market funds also allows the in-house bank to meet any requirement from the US corporate headquarters to repatriate cash. Such requests often come at relatively short notice to allow the headquarters to make acquisitions. Had the company chosen to outsource investment management via a mandate, it would have not had the same easy access to cash.

Low duration mandates: a solution for managing longer-term cash surpluses

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Liquidity funds are the obvious solution for investors who wish to delegate credit analysis duty to a professional institution when placing their daily operational cash.

A liquidity fund is an alternative to bank deposits, although the nature and the risks of these instruments are very different. A liquidity fund is an investment product that is not guaranteed. Credit risk is also more diversified than a single bank deposit, which is a bank liability instrument with a return known in advance, barring any impairment of the bank (see, article 'Comparing money market or "Liquidity" funds to deposits' in HSBC Global Asset Management, March 2012).

Assessing different cash investment horizons

Liquidity funds usually state that their investment objective is to maximise security and liquidity. But should an investor always target full liquidity for its cash? Not necessarily. When investors define their cash needs, there might be a part of these assets that may be needed on a much longer horizon than a day or a month. This is known as cash tranching (see Figure 1 below).

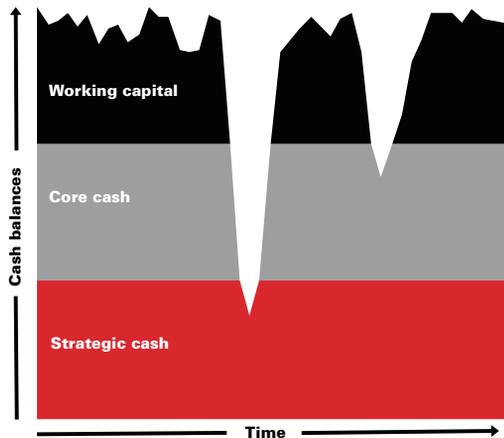


Fig. 1: Segmenting cash (Source: HSBC Global Asset Management)

While the strategic cash usually has no anticipated use over the medium long term, the core cash component is usually linked to forecasted drawdown requirements at particular points in time, typically within the next 12 months, such as dividend payments or bond repayments.

Managing additional risk in core cash mandates

Liquidity funds are probably the most suitable investment vehicles when placing working capital, i.e. the cash used in daily, weekly and monthly operations. Indeed, high levels of liquidity and capital preservation are fundamental to this highly fluctuating cash segment. But, is it possible to transform the longer investment horizon of the core cash component into investment opportunities, i.e. into an expected return surplus over liquidity funds?

Let us examine which type of risks can be marginally increased when placing core cash (for example having an investment horizon of one year) compared with a starting point such as a liquidity fund.

The main investment risks liquidity funds aim to mitigate are:

- ▶ credit risk (linked to a capital preservation investment objective);
- ▶ liquidity risk (linked to the fund objective of serving all client redemptions on any day);
- ▶ interest rate risk.

Interest rate risk

Interest rate risk is linked to the variability in an asset value stemming from unexpected swings in interest rates. Generally, such swings are generated by unexpected central bank decisions on their key interest rates. This risk in liquidity funds can be measured by the WAM of the fund's investments, counting as maturity for this purpose the date of the next interest rate reset of each security. WAM is a proxy measure for duration. This risk is linked to the fact that the market value of securities fluctuate with the level of interest rates in the following way; taking a Treasury bill as an example (where P is the price of the bill, i is the interest rate level, and t is the time remaining to the Treasury bill maturity expressed as a fraction of one year):

$$P = \frac{100}{1 + i \times t}$$

As is widely known, a security's price declines when interest rates rise and vice-versa. In order to minimise this risk, liquidity funds have a regulatory maximum WAM of 60 days.

When investing core cash, the investor does not need to sell any security before the investment horizon (provided cash needs have been correctly forecast at the inception). In this sense, an investor can allow for holding this Treasury bill until maturity without worrying about intermediate variations in the security's price when the security is reimbursed at par. This holds true as long as other investors within the same investment vehicle do not massively redeem shares forcing the investment vehicle to sell part of the securities in the fund and realising a potential loss. To mitigate this risk when investing core cash, investors should segregate their investment from other investors in order to protect the investments

from any forced sales before the investment horizon linked to the core cash segment.

In conclusion therefore, when investing core cash, an investor can marginally increase the interest rate risk (measured by the WAM) if:

- ▶ the WAM is lower or equal to the core cash component investment horizon;
- ▶ the investor holds segregated assets (i.e. is not invested in a pooled investment vehicle).

Liquidity risk

Financial markets are sometimes under strain and it might be difficult or impossible at such times to find a bidder for a money market security at a reasonable price (i.e. at a price close to the one stated by the formula above). This risk, known as liquidity risk, is generally triggered in a fund when investors en masse redeem a large portion of the fund shares, thereby forcing the sale of part of the fund's assets. This risk in liquidity funds is managed by keeping minimum amounts of instruments in the fund maturing within stated timeframes. For example, 2a-7 (i.e. US domestic money market) and IMMFA (i.e. Constant NAV UCITS liquidity) funds are required to hold a minimum of 30% and 20% respectively of their assets within a one week or shorter maturity. Highly secured and liquid treasury bills can be counted in these liquidity buckets even if they have a longer maturity, as these instruments are deemed to be liquid in all circumstances.

As when managing the interest rate risk, when investing core cash, the investor does not need to sell any security before its investment horizon (provided cash needs has been correctly forecast at the inception), provided other investor actions within the same investment vehicle do not force early asset sales. Hence, when investing core cash, an investor can marginally increase the liquidity risk (measured by liquidity bucket guidelines) if:

- ▶ liquidity buckets reflect the core cash outflow schedule;
- ▶ the investor holds segregated assets (i.e. is not invested in a pooled investment vehicle).

Credit risk

Credit risk is linked to the possibility that assets invested might be impaired, i.e. to the probability that the nominal amount of a security is not repaid at par at maturity by the issuer. A good proxy for measuring this risk in liquidity funds is the WAL of the instruments in the fund. For this purpose, the life of a security is its maturity date. In order to minimise the credit risk, liquidity funds have a regulatory maximum WAL of 120 days. However, managing credit risk cannot be marked down to an average maturity profile; issuer selection is key in this regard. That is why investment managers must have a well-resourced credit analyst team with a robust issuer selection process in order to avoid, as much as possible, credit impairments in liquidity funds. An important additional risk mitigation is achieved by internal diversification rules at the group issuer level, in order to

limit the impact of a potential group issuer impairment on the fund net asset value.

When investing core cash, it is not obvious to see why investors would accept issuers that would not be eligible to liquidity funds. Indeed, an investor could accept to look for riskier names if the average surplus in yield is higher than the probability of impairment losses linked to these investments. This can be debated for multi-year investment horizon, such as those suited for the strategic cash, but is likely to be turned down for a one year or more investment horizon, especially in the current low interest rate environment. Hence, we would call for having a similar issuer selection list for liquidity funds as for core cash investments, in order to follow appropriately individual issuer creditworthiness. This does not mean that credit risk will be identical in core cash solutions and in liquidity funds. Indeed, by simply allowing more concentration risk (i.e. lower diversification target) and extended average maturities, the credit risk in some core cash solutions will be higher than in liquidity funds even if it is borne on the same issuers. Intuitively, everybody understands it is more risky to invest in a one-year note than in a one-day certificate of deposit issued by the same bank. In fact, on short tenors (e.g. one year or less), specialists generally agree that, for a same issuer, credit risk can be assumed to rise in straight proportion with an instrument's maturity, hence WAL being a proxy for measuring credit risk in liquidity funds. A core cash investor should therefore evaluate its risk (particularly credit risk) tolerance and set commensurate investment guidelines. A natural upper limit for WAL is the core cash investment horizon. On the investment manager side, a natural upper bound is defined by slightly looser diversification, the individual issuer maximum maturity guidelines and by limiting investments to issuers eligible for liquidity funds.

In summary, when investing core cash, an investor can marginally increase the credit risk (measured by WAL) if:

- ▶ eligible issuers are similar to those allowed for liquidity funds;
- ▶ the portfolio WAL is lower or equal to the core cash investment horizon.

Assessing expected additional rewards versus increased risk

Having given thought to, and established guidelines on different risk extension, what benefits can the investors expect? There is actually no easy answer. Investment managers can only develop model portfolios (with their respective expected returns) through many iterations that would fall within these guidelines and that would be acceptable in terms of overall and specific risks to the investor. These simulations are obviously very time dependent and can vary quite rapidly, especially in terms of specific issuer selection. Indeed, quality issuers are not always offering attractive prices everyday on the markets.

We can attempt though to give an order of magnitude, currency by currency, on the general levels of premia offered against different risks. Let us take for example the sterling money market as at close of business 7 March 2017 as shown in Figure 2.

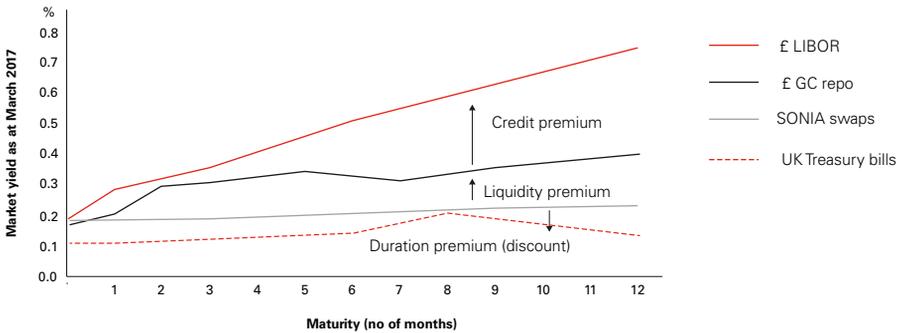


Fig. 2: Sterling money market rates as at 7 March 2017 (Source: Bloomberg)

First, we define a risk-free asset as a reference point. This investment would be the shortest and the most liquid instrument issued by the most creditworthy borrower; in sterling, this would be a UK Treasury bill or bond maturing the next business day. However, as there is no such investment regularly offered by the UK Debt Management Office in the market, the next best proxy is an overnight reverse repurchase agreement (repo) with general collateral (i.e. UK Treasury bills and bonds) collateralised at 102%. This is considered to be a less risky asset. Indeed, this investment is a one business-day loan to a bank, which is secured at all times with UK government securities kept at a third party (e.g. a clearing house) to a value of 102% of the nominal amount. If the counterparty bank fails during the day, the UK GC is seized and sold, with the view that the 2% collateral premium will suffice to cover transaction costs and potential negative variations in market prices.

As at 7 March 2017, the overnight repo traded at 0.19%, close to the 0.21% level posted on SONIA, which is an average overnight daily interest rate traded in sterling. If we assume (this might not be true all the times) that the overnight repo rate will trade closely with the SONIA level in the next 12 months, then the projected yield of the risk free investment would be the SONIA swap curve. A SONIA swap is an agreement with a bank to exchange every day the differential interest rate set by SONIA (a floating rate) and a predetermined fixed-rate (the quotation rate). For example, the ten-month SONIA swap traded at 0.23% on 7 March, meaning an investor, by entering such a deal, would agree to exchange a fixed rate of 0.23% for the next ten months in exchange for a SONIA capitalised return. Hence, 0.23% is the market expectation of the average SONIA level (which in our assumption is very close to the return of a rolling overnight repo) over the next nine months.

From this starting point, we can add pure interest rate duration to this less-risky asset by investing in a UK Treasury bill. Indeed, we can reasonably assume a UK Treasury bill bears minimal credit risk and liquidity risk; history shows these bills can be sold with minimum market friction in almost any market circumstance. However, the market value of the bill

will fluctuate day after day depending on the general interest rate in the market. For example, the bill could lose a percentage of its value in a shot if the Bank of England decides to raise its key rate by 1%, whereas the market anticipates no movement or lower rates at this stage. As an example, in March 2017, a six-month UK treasury bill was trading at 0.18% while the less risky asset expected return was close to 0.22%, indicating a 4bps discount in the duration premium.

What then could be similar to a UK Treasury bill investment, bearing similar duration and (minimal) credit risk but with a full liquidity risk? Answer: a term repo of a similar maturity. Indeed, the repo agreement is non-transferable, and, if we assume the over-collateralisation is high enough to equalise its credit risk, then investing in a repo compared to a Treasury entails a sole increase in liquidity risk. In this case, in March 2017, a six-month term repo was trading at 0.33%, while the corresponding maturity UK Treasury bill was yielding 0.18%, representing a 0.15% liquidity premium for a six-month investment.

Credit risk can be calculated as the difference in yield between the LIBOR curve and the GC repo yield curve. Indeed, LIBOR for a given maturity is the average interbank rate (i.e. non-transferable, illiquid instruments) between a panel of banks. This has the same liquidity and WAM and WAL profile as a GC repo, the only difference is the credit risk (banks versus UK government equivalent risk). Again, in March 2017, the six-month LIBOR rate was standing at 0.50% when the GC repo rate was 0.33%, indicating a 0.17% credit premium at six-month maturity.

This calculation can be summarised as:

| | |
|------------------------------|--------------|
| Six-month LIBOR rate: | 0.50% |
| Less-risky asset rate | 0.22% |
| + Duration premium: | -0.04% |
| + Liquidity premium: | +0.15% |
| + Credit premium: | +0.17% |

Of course, the above rates and calculations do not exactly reflect pure target investment returns and premiums associated with different risks. First, certain instruments, like SONIA swaps, are not extensively used in the markets, so this might be reflected in their pricing. Even for more liquid instruments, bid-ask spreads and quotation timing can alter calculations. Second, there are short-term market technicalities that can distort the relative pricing of overnight GC repo and very short-term Treasury bills, whereas our assumption was that they were similar investments. Third, LIBOR is not exactly a reflection of the

purchase yields that can be achieved within low-duration mandates as LIBOR are offered (not bid) rates, they are non-transferable (in contrast to short-term securities held in mandates) and the average LIBOR bank panels could not be replicated in a mandate as some members might not be eligible to such solutions.

However, these calculations help in assessing the order of magnitude of the expected returns associated with different types of risks according to the investment maturity. In particular, they highlight the fact that, in the current European (including UK) environment, the most highly remunerated risk is the six-to-12 months credit risk, and that, conversely, the duration risk is poorly remunerated.

Investing core cash requires a full and comprehensive evaluation of future outflows, of the investment horizon (which could be the date of the next sizeable future outflow) and of the credit risk quantum the investor is ready to take. A plausible investment solution would be:

- ▶ a segregated mandate;
- ▶ a WAL and WAM lower or equal to the investment horizon;
- ▶ liquidity bucket guidelines mirroring predicted cash outflows.

This would ensure that, with a reasonable increase in risk, the investment solution is adapted to the investment objective of a suitable level of capital preservation at the investment horizon date. The different risk parameters should be assessed against their likely additional expected returns over liquidity funds.

One caveat is that investing with segregated mandates requires relatively large investments in order to maintain a reasonable pricing power when acquiring the portfolio's instruments.

Of course, should the investor need cash flows before the expected dates, then there is much higher probability of a capital loss linked to the evolution of interest rates and/or market liquidity. That is why such a low-duration mandate solution can only be in the variable NAV form, illustrating greater market-linked variability of the assets value between the investment start date and the investment horizon date.

Reporting requirements

The final element of the policy should include details on how investment activities will be reported and audited. This needs to be similar, in terms of detail, to the reporting and auditing of other treasury activities.

This section of the policy should outline the various reports that should be generated, stating to whom and how frequently each report ought to be made, whilst also maintaining an appropriate segregation of duties. This means no individual should receive a report on an activity he or she performed. In companies with large treasury organisations, it may be appropriate to send regular investment management reports to the treasurer on a daily or weekly basis, possibly as part of a regular set of reports. The finance director and other members of a board-level treasury committee should then receive monthly or quarterly reports as part of their overall review of treasury activity. In smaller organisations, where the treasurer is directly involved in daily investment decisions, management reports should be sent elsewhere, either to the finance director or perhaps a financial controller or accountant who is not directly engaged with treasury activity.

Checking deal confirmations is a key internal control. All deal confirmations received from the outside party should be promptly checked against the records generated from the treasury deal recording system. This check should be carried out by individuals outside the treasury department, with suitable exception reporting and escalation procedures.

The company may also want to include a regular formal review and appraisal process. This may include a regular assessment of performance against specified market rates. There may also be reference to the audit process, although this should be detailed in a more general treasury policy.

The purpose of the reporting requirements is to ensure that there are appropriate checks in place on the treasury team as a whole.

Checklist for investment policy

Scope of policy

- ▶ The policy should state how it relates to other policies, including the treasury policy.
- ▶ It could contain a brief explanation of the role of investment within the company.
- ▶ It should state which entities are covered by the policy. In particular, does it only apply to central treasury, or does it allow central treasury to instruct operating companies?
- ▶ It should identify the sources of corporate cash that are subject to the policy. Does the policy apply to all group investments or to short-term investments only?

Investment objectives

There should be a brief overview of investment objectives. This will be partially determined by the scope of the policy. It should cover the three core objectives:

▶ **Security**

At what point is the company prepared to accept a risk to principal? Does the company draw a distinction between acceptable risk for working capital and for long-term cash?

▶ **Liquidity**

The policy should set minimum standards for the liquidity of the portfolio. It may determine a minimum proportion of investments maturing within a certain period, e.g. a week, or it may direct a liquidity ratio relative to the cash flow forecast.

▶ **Yield**

The policy may set benchmark figures for an acceptable yield. If so, this will usually be related to a market rate. It may also state whether a proportion of investments should be held in fixed rate instruments.

Investment guidelines

The policy should provide clear investment guidelines:

▶ **Instruments**

The policy should state the names of approved investment instruments. In addition, it should state which body has the authority to add or remove instruments from the approved list.

▶ **Currencies**

The policy should state the currencies in which investments may be made. This could include an entity's local currency plus named international currencies. The policy should also state whether hedging of investments with foreign-exchange derivatives is permitted.

▶ **Maturities**

The policy should set limits on the maximum maturity of any instruments and may set a limit for the maturity or duration of the portfolio as a whole. The policy may also require a proportion of any investments to mature regularly, perhaps every week or month.

▶ **Interest rate management**

The policy should reflect the group's approach to managing interest rate risk.

▶ **Counterparties**

The policy should either state the names of approved counterparties, or set a list of approved criteria (e.g. credit ratings) that all counterparties must meet. The policy should state which body has the authority to add or remove counterparties from the approved list. It should also state who has the responsibility to set counterparty limits.

▶ **Tax**

The policy should state how tax calculations should be included in any decision to invest.

▶ **Decision-making responsibility**

The policy must state who has decision-making responsibility, and refer to the company's

segregation of duties and policy on individual authorisation limits. The process for amending the policy will also need to be stated.

► **Breach of limits**

The policy will specify exception reporting of breaches of limits, along with the sanctions imposed for such behaviours. A period will be specified in which to effect a remedy or (if a remedy is not possible) to provide explanation for any breaches caused by market movements.

► **Reporting**

The policy should outline how treasury reports on its investment activities. This will include reference to any audit process, and should contain reference to a regular investment appraisal.

Sample investment policy

This is a sample investment policy for use by a typical company. It has been written to reflect the level of detail an investment policy should contain, and to provide a start for any treasurer who is looking to establish or review their company's investment policy. It should not be adopted by any company in its current form; rather the treasury team should debate the points in the context of the company's approach to risk before setting out the appropriate detail. Companies often debate how much detail should be included in the policy, and how much should be kept back to include in the more detailed procedures. In this sample policy, the approach taken is to go for greater detail, rather than just giving the main policy objectives.

When managing counterparty credit exposure, an integrated approach is required as exposures can arise from both investing and other financial instruments (such as foreign currency transactions and swaps). In this policy example, the exposures from other financial instruments have been ignored.

For the purposes of the illustration, the company is a European consumer goods manufacturer. It has production sites in five countries around the world and sells into about 50 countries. Cash is managed from three regional treasury centres; these are located in France, Singapore and the USA, although the policy is set by the group treasurer who is based in the company's French headquarters. Wherever possible, cash is physically concentrated to pool accounts held in the name of the appropriate regional treasury centre, which also is responsible for managing the short-term investment process.

Scope of the short-term investment policy

This investment policy covers all investment of short-term operating cash, defined as cash with a maximum investment term of one year. It forms part of the group treasury policy and applies to all entities within the group.

Objectives of short-term investment

The primary objective is to ensure the preservation of principal when investing. Liquidity should

also be maintained such that the group should seek to avoid having cash investments whilst it has any short-term external borrowing.

Yield should only determine an investment decision when deciding between two or more instruments that satisfy the first two objectives.

Instruments

The company can invest in the following investment instruments, subject to the counterparty and maturity limits set out below:

- ▶ sovereign debt, which is listed on a regulated market or exchange;
- ▶ bank deposits, with banks that are approved by the relevant local regulator;
- ▶ certificates of deposit, issued by banks that are approved by the relevant local regulator;
- ▶ floating rate notes;
- ▶ commercial paper, issued by entities with a listing on a regulated market or exchange;
- ▶ repurchase agreements, on sovereign debt (as above);
- ▶ money market funds, managed under 2a-7 rules or within the IMMFA Code of Practice.

Investment sub-limits by instrument type are given in the table on page 93 and are intended to ensure a degree of diversification and to minimise any systemic risk from problems over one instrument type.

Currencies

All funds invested by the treasury centres should be denominated in EUR or USD.

Funds invested locally should be in local currency or USD or EUR-denominated instruments.

Funds can be swapped into USD or EUR for the purposes of investment. Any swap should be for a maximum of one year.

Maturity of instruments and the portfolio

Investment decisions must be taken with the cash flow forecast in mind so that access to cash to meet forecast liquidity needs is not impaired. Short-term operating cash is defined as cash that is likely to be needed within the next year.

A secondary objective is to ensure that access to cash is not unduly restricted and to reduce the risk of being locked into an investment whilst the rating of the counterparty is deteriorating. Limiting maturities will help towards this objective. At all times, 50% of the invested cash should mature within three months, 25% within six months and 25% within one year.

In addition, the following maturity limits apply:

- ▶ Sovereign debt: the maximum maturity for any instrument is one year.
- ▶ Bank deposits: the maximum maturity for any deposits is one year.
- ▶ Certificates of deposit: the maximum maturity for a CD is one year.
- ▶ FRNs: may only be bought when the time to maturity is less than a year.
- ▶ Commercial paper: any commercial paper must have a maximum maturity of three months.
- ▶ Repurchase agreements: the underlying instrument should have a maximum maturity of one year.
- ▶ Investments with maturities over six months must be with a counterparty rated AA-/Aa3 or better.

Interest rate management

The determination of the interest rate profile of investments should be based on the overall interest rate policy of the group, taking into account debt, financial instruments and the dynamics and requirements of the underlying business operations. The interest rate exposure may be managed independently of the maturity of the actual investments through the use of swaps or FRAs. Speculative interest rate transactions are not permitted; in other words, there must be an underlying cash position being hedged.

Counterparties

The group treasury is responsible for overseeing the group's global counterparty limits and will maintain a list of approved counterparties. The group treasurer is authorised to add names to the approved counterparty list, subject to their meeting the conditions in this policy. Any changes to the approved counterparty list must be reported to the next board treasury committee.

Limits apply to all cash investments and are calculated by converting all instruments to EUR using the daily Reuters rates. Where a counterparty has more than one rating, the lowest rating will determine what overall limit applies to each counterparty. If an entity is on credit watch negative, then the limit to be applied should be taken as the limit for one rating notch lower.

The limits for any counterparty will be limited to no more than 10% of shareholders' funds or, in the case of a bank, its Tier 1 capital. The board treasury committee shall from time to time consider if it is appropriate to introduce a greater correlation of limits to the size of the counterparty: e.g. allowing only 75% of the normal limits for medium-sized entities and 50% of the normal limits for smaller entities.

Counterparty limits for cash investments are:

| Long-term credit rating: | AAA/ Aaa/AAA | AA+/ Aa1/AA+ | AA/Aa2/ AA | AA-/ Aa3/AA- | A+/A1/ A+ | A/A2/A |
|---|-----------------|-----------------|---------------|-----------------|--------------|--------|
| Short-term credit rating: | A1/P1/F1 | | | | | |
| Total counterparty limit (EUR million): | 400 | 350 | 300 | 200 | 100 | 50 |
| Counterparty limit, per instrument (EUR Million) | | | | | | |
| <i>Sovereign debt</i> | 350 | 300 | 200 | 100 | 10 | 5 |
| <i>Bank deposits</i> | 325 | 275 | 175 | 75 | 50 | 25 |
| <i>Certificates of deposit</i> | 200 | 175 | 150 | 100 | 50 | 25 |
| <i>FRNs</i> | 200 | 175 | 150 | 100 | 50 | – |
| <i>Commercial paper</i> | 200 | 175 | 150 | 100 | 50 | – |
| <i>Repos</i> | 200 | 175 | 150 | 100 | 50 | – |
| Money market funds | 400 | – | – | – | – | – |

However, operating counterparty limits by instrument may be too restrictive an approach for many companies, in which case the above table need not be observed.

Cash investments, even if short-term, shall be subject to the counterparty limit of their long-term rating. Where an entity only has a short-term rating then, if it is A1/P1/F1 or better, the limits applicable to AA-/Aa3/AA- will apply.

The group treasurer may propose additional country or sector limits to avoid undue concentration of risk or to mitigate risk from any perceived problem areas. These will need the approval of the board treasury committee.

In the event that a limit is exceeded because of a downgrade after the original investment was made, the group treasurer will review the risks and possible flexibility to come back within limit. Any investments remaining in excess of limit will be reported to the finance director as part of the monthly report.

Group counterparty risk management

In order to manage overall group exposures, the three treasury centres and other group entities

with responsibility for short-term investment are permitted to invest with approved counterparties within sub-limits agreed with group treasury and that will be deducted from the central limits available. Locations that are able to view and report limit usage on a real-time basis will have the central limits available to them.

The three treasury centres must report all investment decisions to group treasury. Prior approval should be sought from group treasury for any investment decision that accounts for a quarter or more of the total counterparty limit outlined above.

The group treasurer in France, with the prior approval of the finance director, has authority to make investments outside these counterparty limits, but only for specific, exceptional transactions. Such investments must be reported to the board treasury committee, with an explanation of why the counterparty limit was felt to be inappropriate.

The group treasurer in France, with the prior approval of the finance director, has authority to establish and impose regional counterparty limits, taking account of the needs of subsidiary companies and the markets in which they operate. For example, limits may be allocated to the subsidiary of a bank that itself is not rated.

The group treasurer can reduce any limit if the specific counterparty risk worsens.

Tax

Investment decisions should be evaluated on a net tax basis.

Operating procedures

The group treasurer has overall responsibility for group investment policy. Procedures for monitoring credit ratings or any changes to the perceived credit standing of counterparties: e.g. checking credit default spreads, will be put in place. Operating procedures must be in place and agreed by the group treasurer for all group entities permitted to manage short-term investment decisions. These procedures should set clear guidelines for the segregation of duties, such that no single individual is able to authorise any deal that he or she has initiated. Each individual must have separate authorisation limits, capping his or her ability to transact. Procedures will also be implemented for the exchange of deal confirmations and the prompt checking of details by persons not involved with the dealing and recording.

Settlement (daylight) exposure

This policy does not specifically address the exposure that exists when moving funds between banks on a given day and which can be in excess of the limits in the table above. No separate daylight limits are imposed, but instead the risks are mitigated by the following procedures:

- ▶ Only major money centre banks are used as a centralised clearing bank.
- ▶ Treasury must approve the opening of all new bank accounts within the group and will consider size of expected transactions and creditworthiness.

Reporting

All investment decisions should be reported to the group treasurer by the day after execution.

The group treasurer will prepare a monthly report for the finance director and the treasury committee members detailing the group's short-term investment holdings. Any breaches of limits should be flagged. For every meeting of the board treasury committee, the group treasurer will prepare additional reports showing compliance with this group investment policy, with the group's investment operating procedures, and with any changes to the list of approved counterparties. Records should be kept to allow compliance with the policy and procedures to be audited on a regular basis.

All investment decisions should be appraised on an annual basis.

Implement

Chapter 5

Implementing effective investment management

Introduction

With an investment policy in place, the treasury needs to establish a set of operating procedures to follow when taking individual investment decisions. These procedures should set out, in detail, the precise steps that should be taken, from identifying the funds available to invest, through the process of selecting the appropriate instrument and counterparty, to dealing and final settlement, before outlining how to monitor the investment from settlement through to maturity.

Standardising the processes helps reduce the level of operational risk within the department, as it allows individuals to understand the limits of their authority (this is especially valuable for new team members). It also formalises the audit process by creating a trail, which helps to protect both the company and the team members.

This chapter identifies the main stages in the investment management process and outlines the procedures the treasury team should adopt at each point.

Identifying investment circumstances

The first stage in the investment management process is to identify the circumstances in which the investment is being made. This then allows the treasury team to select an investment instrument to match the objectives and risk appetite for the particular circumstances. The circumstances to consider include the currency in which the funds are denominated (and whether foreign exchange transactions are permitted), the time period for which the funds can be invested (and whether the company is comfortable with investing for that period), as well as the relative importance of security, liquidity and, if appropriate, yield as objectives.

The conditions in which each investment decision is taken will differ. However, it is likely that the treasurer will have access to a wider range of investment options if the cash to be invested is characterised as strategic cash, rather than operating cash (see Chapter 3).

Selecting the instrument

Having identified the circumstances of the investment, the next stage is to select the preferred instrument that best reflects the company's objectives in this instance.

Characteristics

The investment policy should set out guidelines, including permitted instruments and counterparties, for specific circumstances. These may vary significantly, especially if the cash is characterised as being either operating or strategic cash. Given these constraints, the treasury team should identify all instruments that meet the company's objectives and reflect the risk the company is prepared to assume. The shortlisted instruments should all reflect the company's approach to both market and liquidity risk. The treasury team will then be mindful of credit risk when selecting the counterparty or issuer for the specific transaction.

It is possible that a combination of instruments (including, for example, a foreign exchange transaction) from a number of counterparties or issuers might offer a better solution than a single instrument.

There is more detail on the characteristics of individual instruments in the Appendix.

Precise instruments and markets

It is important to recognise that not all investment instruments are available in all markets. For instance, some governments do not issue short-term debt instruments. In other locations, there are no local money market funds, although investors may be able to access international money market funds.

Where particular instruments are available, the liquidity of local markets also varies from one country to another.

Consider a British company with GBP 1 million to invest for three months. Invested locally, this would earn a return of 1.13%, or GBP 2,825 over the three months.

Alternatively, the company could invest in US commercial paper (USCP) issued by Company M, which would pay an annual equivalent return of 1.6%. As USCP is denominated in USD, the British company would have to buy USD at the prevailing spot rate (GBP 1 = USD 1.2796) and then sell them three months forward (at GBP 1 = USD 1.2769).

The British company would invest USD 1,279,600 in Company M's USCP. Over the three months, this would earn a return of USD 5,118.40. The principal and the return (USD 1,284,718.40) would then be exchanged into GBP at the pre-agreed forward rate, giving GBP 1,006,122.95. This represents a return for the British company of GBP 6,122.95 over the three months. This is an equivalent annual return of 2.45%, significantly above that available directly in GBP.

In reality, such arbitrage opportunities may only exist between two less commonly traded currencies. When investing in a foreign currency, the treasurer may want to use the investment to hedge other open positions.

The size of the respective local markets also affects the availability of instruments. Money market funds are popular in the USA, and, increasingly so, in Europe. However, local mutual funds differ in

the investment approaches they follow, primarily as a result of local regulation and the instruments available in the local market. It is important that investors understand the nature of these approaches and recognise that different funds in the same market may have significantly different risk profiles. Moreover, money market funds outside the USA and the EU (see Chapter 6 for information on regulatory requirements in these locations) may not be subject to the same restrictions as funds in those locations.

Finally, some instruments have different terms and conditions depending on the market in which they are issued. Typical factors that vary include:

▶ **Interest**

The calculation of interest payments varies from currency to currency. Most interest is calculated on a 360-day year basis, although there is some use of a 365-day year basis. (For detail, see the Appendix.)

▶ **Minimum investment period**

Local banking regulations may prohibit the payment of interest on investments made for less than a minimum period.

▶ **Maximum investment period**

Some instruments are issued subject to a maximum investment period. This is often due to local securities regulations. For example, USCP offered for sale to the public is limited to a maximum maturity of 270 days; otherwise it would be required to be registered with the US Securities and Exchange Commission.

▶ **Tax liability**

Tax liabilities vary in different locations. It follows that specialist tax advice is necessary before making the decision to invest.

▶ **Investor eligibility**

Finally, some investors may be prevented from investing, due to local restrictions. For example, in normal circumstances, US investors are prohibited from investing in European money market funds. Some countries, including Russia, place restrictions on access to local bank accounts.

The availability of different instruments in selected markets is detailed in the Appendix.

Standalone or part of a portfolio

In some cases, treasury will be able to take a standalone decision. This may be appropriate if, for example, a company has concentrated its cash to a single account.

At other times, treasury may have to take a wider perspective. An investment decision will have an impact on the group's portfolio, especially if the group has significant sums of cash invested. Any large-scale investment, such as the management of the proceeds of a major corporate sale, will also have to be considered from the perspective of the impact on the group as a whole. When

selecting appropriate investment instruments, treasury will have to model the impact of all potential instruments on the weighted average maturity (WAM) and duration of the portfolio as a whole. This is an important tool in modelling interest rate risk (see page 60).

In all cases, care will need to be taken to ensure counterparty limits are not breached and that sufficient liquidity is available by ensuring different instruments mature at different times (see page 58 for more on liquidity risk).

Counterparty mandates

As well as being included on the approved counterparty list, treasury must have appropriate mandates or contracts in place with a counterparty before the transaction is agreed.

► Deal mandate

Any potential deposit with a bank must be covered by a bank mandate. This should detail the preferred method of transacting (whether via electronic banking or over the telephone), as well as a back-up process. It will also determine who is authorised to initiate deals on behalf of the company, including the terms of any automated sweeps. During any dealing or depositing process, it is important that treasury complies with the conditions of the mandate.

Any bank dealing mandate should address the following details:

- the group entities covered by the mandate;
- the transactions covered by the mandate, including limits on amounts;
- individuals permitted to agree and confirm transactions, including any permission to give instructions by phone;
- standard settlement instructions (to cover each group entity, one per currency);
- action required to agree and confirm a transaction outside the scope of the established mandate;
- action required to change the mandate to include any changes to standard settlement instructions. The ACT suggests it is good practice to reproduce the entire list of names or accounts, to avoid confusion after any change to standard settlement instructions.

The Bank of England's Non-Investment Products (NIPS) Code provides additional guidance on the relationship between participants in the foreign exchange, money and bullion markets. The NIPS Code states that 'a dealing mandate should [not] attempt to transfer or outsource [the responsibility for the actions of their own staff] to a counterparty'. The full NIPS Code can be found at www.bankofengland.co.uk

During 2017, the NIPS Code will be superseded by a number of replacement codes drafted in response to inappropriate market behaviours. As with the NIPS Code, all the replacement codes are voluntary, but the UK Money Markets Code will be of particular relevance to corporates investing cash.

There are differences between what a company might want from a mandate and what a bank is prepared to accept. As long as the core details are contained in the mandate, the key is for the company to retain control of its own internal processes and its standard settlement instructions.

▶ **International Swaps and Derivatives Association (ISDA) and similar documentation**

If a company expects to enter into over-the-counter derivatives transactions, it is usually prudent to agree an ISDA Master Agreement with all potential counterparties. This agreement will reduce the time (and cost) taken to negotiate standard terms and conditions before every derivative transaction. It includes standard settlement instructions.

The International Foreign Exchange Master Agreement (IFEMA) is a standardised agreement between two parties for the exchange of currency. The International Foreign Exchange and Currency Option Master Agreement (IFXCO) is a similar document covering foreign exchange and currency option transactions. IFEMA and IFXCO were developed by the New York Federal Reserve Bank's foreign exchange committee, the British Bankers' Association, the Canadian Foreign Exchange Committee, the Tokyo Foreign Exchange Market Practices Committee (IFEMA) and the Japanese Bankers' Association (IFXCO). The Global Master Repurchase Agreement (GMRA) is a standardised agreement for repurchase (repo) agreements.

In most cases, these mandates should be in place before a transaction is initiated. Standard documentation, such as the ISDA Master Agreement, makes it relatively straightforward to agree terms with a new potential counterparty. However, it is prudent to add counterparties to the approved list only once agreement has been reached.

In some cases, especially when investing strategic cash for a longer period, negotiating the counterparty mandate may be an integral part of the investment decision. This is especially likely to be the case when investment managers are appointed to manage a pool of funds for a particular period of time, such as in the use of a separately managed account.

Dealing

Once the preferred instrument has been identified, the treasurer will have to invest with one of the company's approved counterparties or in an approved issuer. Each treasury should have a set procedure that details the process from selection of instrument and counterparty/issuer, through to the post-trade administration.

Every time an investment decision is taken, it should be clearly documented. This provides protection for treasury (in case, for instance, a dispute arises later) and as a means to evaluate the decision itself.

Deal process

The deal procedures should be designed to be as standard as possible. If local entities invest their own surplus cash (typically in overnight deposits with local banks), they should do so following standard group-wide procedures.

Research transaction

The objectives for the investment having been determined, the treasury team must research all the instruments identified as suitable for the transaction. For more complex scenarios, this may require the analysis of a number of alternative instruments, to see which would best meet the company's objectives. The decision must be based on the level of credit, liquidity and market risk the company is prepared to assume.

For larger amounts, the treasury team will want to consider the number of individual transactions which will need to be made. For funds to be invested for longer periods, the team could also select a number of instruments with a range of maturities, to reduce both liquidity and reinvestment risks.

Authorise transaction

Once the appropriate instrument(s) has been identified, an outline transaction should be authorised. Individual treasury team members will have their own deal limits, which may vary according to the instrument type. Any authorisation procedures should be followed carefully.

An automated sweep should also be subject to an authorisation procedure if it breaches a preset limit. In addition, automated transactions should be subject to regular and spot audit checks.

All transactions must be the subject of a regular post-trade review. This must be performed by the internal audit department (or a similar group), and should assess whether all procedures have been followed and whether each transaction was appropriately authorised.

Quote

The dealing procedures need to indicate how many quotes are required to identify the best, or a market benchmark, quote. This may depend on whether a published market rate is available. It will also state in which circumstances treasury can rely on data from a dealing platform or from its Reuters or Bloomberg screen. All quotes should be recorded, so they can be reviewed in the event of a dispute. These records will be available during the regular review of investment activity and performance. Some treasurers may also then use these reviews to evaluate bank relationships.

If the transaction is large relative to the particular market, treasury should avoid asking too many banks to quote, because of the possible impact upon that market. In these circumstances, treasury may choose to employ the services of an asset manager.

Agree transaction

Once the preferred quote has been identified, someone with appropriate authorisation should agree the transaction. The terms of the agreement must conform to the terms of the mandate or other contract. It must not breach counterparty limits. Although this suggests three separate

authorisation stages, in practice these will often be completed by just one individual.

The authorised dealer should produce a deal ticket, providing the full detail of the agreed transaction. This should include the details of any quotes as well as the relevant authorisations. These tickets are increasingly likely to be electronically generated.

Many companies have been taking a more sophisticated view of counterparty limits in recent years. In the past, companies ranked their approved counterparties by yield. Many would then simply invest funds with the counterparty at the top of the list up to the limit, and then move to the second on the list, and so on. This course of action would introduce a, possibly unintended, bias towards poorer credit quality investments. Today, companies are taking a much less simplistic view. They want to understand much more about the counterparty, a bank's exposure to particular markets or the contents of a money market fund portfolio, before deciding to invest. Investors are also not investing up to counterparty limits in every instance; rather they are looking to diversify their own exposures first.

Confirm transaction

Once the deal ticket has been produced, it is passed to the back office for confirmation. It is here that there should be a clear segregation of duties. This means no one party to the deal agreement (dealer, or anyone who authorised the deal) should be involved in confirmations. In companies with a small treasury department, it may be necessary to use a member of the accounting (or another) department to perform confirmations.

To confirm a transaction, the back office will ensure the details of the agreement on the company deal ticket match those sent by the counterparty. For standard transactions, these are increasingly automated, either through the treasury management system or by using a dedicated deal-matching service. In these cases the deal is entered into the treasury management system (ideally as an automated feed from the dealing platform), which then automatically generates trade confirmation data. The confirmation matching system will receive this data and equivalent data from the counterparty financial institution. If the data matches, the system will send a report as evidence. If there are any discrepancies, the system will automatically identify them to the treasurer.

At their simplest, confirmations can be managed by an exchange of messages on a single bank dealer platform. Companies with direct access to SWIFT (via Alliance Lite2, for example, as well as users of some treasury management systems, can process SWIFT MT 300 message types, which permits real-time direct confirmations with counterparty banks. Most of the other treasury management system vendors have built interfaces to third-party confirmation and matching systems. These interfaces allow corporate treasury confirmation matching systems to read messages initiated by financial institutions, and vice versa.

It cannot be stressed enough how important this control is. It is impossible to devise a system that can ensure fraudulent or malicious deals are not initiated. (See page 66 for more on

operational risk.) However, through prompt checking of confirmations, any errors or false deals can be detected swiftly, and steps taken to reverse or neutralise them. In the UK, the Bank of England NIPS Code specifies that good practice is to exchange confirmations within two hours. The Codes of Conduct, which will replace the NIPS Code, strongly recommend the use of automated confirmation matching systems, which provide the opportunity for improved control.

Settlement instructions

Although the Bank of England NIPS Code does not apply to investment products officially, its dealing practices are equivalent to a market agreed best practice.

It sets out clear responsibilities for all market participants, including the importance of agreeing dealing principles and procedures. It recommends the necessary controls, including the need to have clear dealing mandates in place as part of the checks of counterparties. Finally, clear confirmation and settlement procedures should be agreed and followed, and there should be a mechanism to resolve discrepancies that are identified at the confirmation stage. The NIPS Code suggests the level of detail that ought to be included on foreign exchange and money market confirmations. The same level of detail is appropriate for all dealing transactions.

After confirmation, the deal should be prepared for settlement. Detailed settlement instructions should be part of any mandate or other contract. The back office should check that any changes to these instructions have been prepared by an authorised member of staff. Equally, checks must be undertaken of any new or changed settlement instructions from the banks, to ensure they really have come from the bank. Care should be taken with instructions received by email, given the greater cybersecurity threat posed by business email compromise (BEC) scams. Checks can be made via cross-reference to the bank's website or by call-back to the bank to be sure the details are bona fide.

Maintaining current settlement instructions is an important tool in reducing settlement risk (see page 65).

Reconciliation

Once the transaction has been settled, the back office team must reconcile all the relevant documentation for accounting and audit purposes.

In today's treasury, many of these activities can be automated. Most treasury management systems now include dealing modules, which permit payments to be initiated and then create accounting and management reports.

Where back office activity is automated, transactions should be subject to regular as well as spot manual checks to help to prevent fraud. Reconciliation is an important tool in reducing operational risk (see page 66).

As an illustration of the process, the British company investing in USCP (see page 62) has worked to reduce headcount within the back office of the treasury department. When agreeing a spot foreign exchange transaction, the deal process is as follows:

The dealer will seek quotes. The company has access to one of the information screens, which records the current GBP/USD rate. It also participates in one of the foreign exchange portals. Both these systems provide the company with the current market rates. However, because of the complexity of the deal, the dealer also prefers to seek two voice quotes. This allows him or her to discuss the nature of the foreign exchange market with two bank dealers.

Once the quotes have been received, the dealer executes the transaction with the most competitive bidder either by telephone or through the foreign exchange portal. The deal is entered into the treasury management system, which then automatically confirms the trade with the bank. On receipt of information from the counterparty bank, the system carries out an automatic matching and exception reporting process.

The treasury management system also initiates the payment, permitting the payment of euros for settlement for, in this case, same-day value, since the USCP market operates on a same-day basis.

At the same time, the system also generates a deal report, which is part of the group treasurer's end-of-day reporting. This also describes the treasury manager's authorisation of the deal. The information is also used to update the cash flow forecast, on both the GBP and USD sides.

After settlement, another set of reports is generated, confirming the actual cash flows. The treasury management system will automatically create the cash book and accounting entries for posting to the company's main accounting systems.

Automation in treasury

Increasing numbers of treasury activities can be automated through the use of a treasury management system; a system can either be installed locally or hosted by a systems provider, and accessed using a web browser. Treasury management systems, or other enterprise resource planning systems, provide significant advantages to treasurers at all levels of activity.

From an investment perspective, treasury management systems allow the treasurer greater visibility to cash balances, through cash flow forecasting modules. They manage the operation of group-wide liquidity management schemes and they allow for the automation of much of the company's investment activity.

Treasury management systems are particularly valuable for record keeping and report generation, although care needs to be taken to ensure back-up systems and controls are in place. Some

systems can embed a level of additional controls, such as clear authorisation procedures, and ensure a clear audit trail exists for future reference. These must be checked and audited on a regular and irregular basis to reduce operational risk.

Using portals when investing

Portals are increasingly used by investors both to access information and to make money market investments. Investment portals can be standalone, in other words used for the single purpose of managing cash investments. Of these, some portals link only to money market funds, whereas others provide access to a wider range of instruments, including bank deposits and commercial paper. Some broader service platforms offer the ability to manage cash investments alongside other services, such as foreign exchange transactions. A number of banks also offer either a portal or an automated sweep service to access certain investments, especially money market funds.

The benefits for the investor derive from the single point of access the portals provide. These reduce the time spent searching for and accessing information. This information can also be used when initiating a transaction, reducing the level of manual intervention in the deal process and, as a result, bringing a lower risk of fraud and error.

When using a portal to make investments, the same processes as outlined above should be followed. The exception will be that some stages will be automated, such as the recording of quotes and the deal transactions themselves. Importantly, rules about counterparty risk management should still be adhered to. Treasurers should only deal with counterparties if an appropriate mandate is already in place, and care should be taken to evaluate all the fund providers before entering into a transaction.

Linking cash management to investment execution

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Introduction

Treasurers will naturally look for the most efficient channel through which to invest short-term cash. There is significant use today of treasury management systems to support the process, in some cases managed on an end-to-end basis within the broader responsibilities of the treasury function. In addition, investment portals represent a relatively common channel for investing, giving the user a single access point to make their regular trades, most commonly into money market funds and deposits given the relative simplicity in terms of executing instructions in these products. Investment portals can also include limited access to other asset classes in some cases.

One area of increasing interest and usage is the ability to embed investment execution to a greater degree within an underlying cash and liquidity management solution provided by banks, especially in the case of linking a money market fund to bank accounts. This can be achieved through the use of fully automated two-way sweeps, operated by the banking partner, that link cash management accounts and even notional or physical cash pools to money market funds, providing a relatively simple level of integration that can have potential operational, control and financial benefits for treasury.

Linking cash management and investment policies to drive efficiencies

As a result of cash management activity such as accounts payable/receivable and the use of cash pools, excess liquidity can be generated, which requires efficient ways to invest. Shifting markets and evolving business requirements dictates the need for treasurers to have a well-written cash investment policy to meet their liquidity and investment objectives. In a changing market, a cash investment policy guides an organisation to focus attention on long-term goals while providing financial transparency and serving as a mechanism for internal control.

Companies can deploy their cash investment policy via an automated sweep set-up with rules and parameters in adherence to such policy. Significant cost savings can be realised by integrating investment execution with cash management.

Automated sweeps can support and enhance execution

Setting up a money market fund sweep effectively means outsourcing the daily cash investment execution to your cash management bank, with the corresponding reduction in time, effort and systems at the corporates' end to place these trades. This can be defined as a bank-managed extension to a cash management service rather than discretionary management of your cash – the corporate is still responsible for deciding which investments are permitted, which money market funds it will use and where to open

accounts, what limits are to be applied, and so on, reflecting its own investment rules and policies. The bank becomes responsible for calculating the available and investable balance, resulting in a surplus balance to be invested or a shortfall to be funded, and in turn ensuring that the corresponding trades (subscriptions to or redemptions from the money market funds) are executed in line with pre-agreed rules. The service and the corresponding rules should be formally documented in terms of roles and responsibilities, investment parameters, and also service levels.

The bank provider also becomes a consolidation point for both transaction information and potentially rich information on investment balances and holdings (within a single or several money market funds, and even potentially across bank deposits and these off-balance sheet investments), further supporting the treasurers own monitoring in terms of decision making and ongoing validation of exposures, cash flows and investment policies.

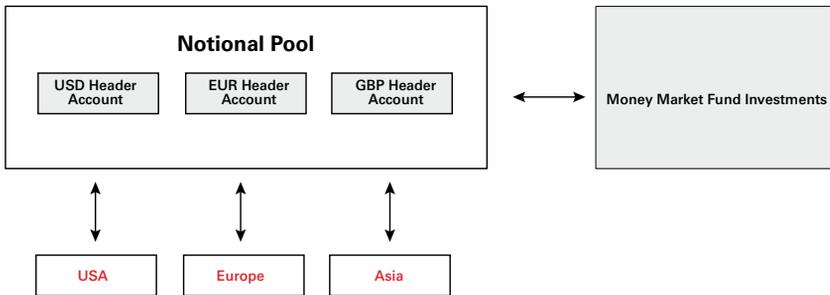
Automated sweeps can be set up to match the client's specific investment parameters: e.g. the defined money market fund(s) that are to be accessed; a minimum residual or target cash balance to leave on the bank account, which could be zero or a set value (e.g. to support late day payments); and setting a maximum size of individual trades or setting a maximum holding per fund (which might be an absolute level or percentage of the total assets under management of each money market fund). These automated sweeps can be linked to individual cash or payment accounts, providing a one-to-one link. Some providers can also further integrate sweeps by linking to more than one cash account through liquidity management structures and cash pools: e.g. to sweep the net surplus balance from the header account of a physical or notional pooling structure to/from a money market fund. Such an approach can provide the treasurer with a consistent approach for group cash, and the corresponding level of financial control that delivers, and in turn has the potential to maximise the amount of investable cash that can be accessed and deployed.

The ability to link to multiple accounts and cash pools can also help the solution become more universal in application i.e. it could potentially be delivered through key cash management centres if available from the banking partner (e.g. through regional hubs for the Americas, Europe, and Asia). For the companies that need investment sweeps in different markets, a key element of the service from the cash management bank is access to the most relevant investment options in those regional hubs. That might mean having global currency (e.g. USD, EUR, GBP) money market funds on the platform that are available to international investors in a broad a range of jurisdictions, domestic USD money market funds that need to be available for US investors, as well as potentially local currency funds in key trading markets, for example for Asia in jurisdictions such as Hong Kong or China.

The benefits of automated sweeps

- ▶ Optimisation of resources
- ▶ Access to investment options
- ▶ Transparency of investment policy application
- ▶ Compliance with internal policies
- ▶ Visibility and control across investment options
- ▶ Maximised access to and deployment of investable cash

Example of integrating money market fund investment with a notional cash pool



A multinational corporate uses a global transaction bank for its cash management services. The corporate has cash across multiple regions and relies on the bank to provide global liquidity solutions to centralise balances via cross-border cash concentration sweeps. The client’s global consolidated balance positions are included in a notional pool. The client has a cash investment policy that permits the use of money market funds. Historically, the client allocated treasury resources to forecast cash and make investments into various instruments on a manual basis. By using the capabilities of the cash management bank to link its investment execution of money market funds via an automated sweep, the client achieves cost efficiencies.

Increased integration is driven by several factors

This type of integration is of interest given companies’ increasing focus on efficiency and cost, not least at a time of low interest rates. In addition, its seamless connection can support a treasurer’s focus on diversification, capital preservation, and liquidity. This at a time when corporate cash levels continue to remain high by historical standards, and companies need access to high-quality investments and counterparties.

Implement

It is no surprise that money market funds lend themselves neatly to this level of integration, given the relative ease with which they can be traded, the daily liquidity offered to support the daily ebbs and flows of cash management, and the professionally managed and diversified investments they provide.

Those banks that offer investment sweeps as part of a package of cash and liquidity management service recognise the value it provides their clients. However, an additional driver from the banks' perspective is generated by their own capital and liquidity requirements. As is increasingly understood by corporates, and covered elsewhere in this guide, Basel III rules mean that the value banks can assign to short-term deposits from different client segments is changing, and not all cash is treated the same. Investment sweeps can provide benefits to the bank client and can help to support that new environment, offering a viable option in addition to balance sheet deposits whilst ensuring this option is delivered in as seamless and integrated a way as possible.

Back-up systems

The dealing procedures will include reference to any back-up processes in the event of a failure in the preferred systems. These must be reflected in the agreements with counterparties. For example, if deals are usually agreed online, the back-up process will usually be to agree the transaction by telephone. The procedure should establish when the back-up process is to be used.

Protecting and monitoring the investment

The final stage in the investment process is to ensure the security of the investment itself. Treasury has a number of tools that will assist in this process.

Reports

Treasury must pay close attention to the regular cash flow forecasts. This is important not only in developing the investment strategy, but also to allow treasury to plan the realisation of current investments to meet unexpected cash demands. The treasurer (or finance director in a smaller organisation) should receive a daily deal report, providing details of all the transactions performed on a particular day. Treasury should also receive regular reports on the performance of their current investment portfolio. These should cover:

- ▶ the value of, and return generated by, each investment;
- ▶ a clear summary of maturing investments (both to ensure adequate cash flow and to manage reinvestment);
- ▶ a counterparty report detailing the exposure to particular counterparties.

These reports should be prepared in a timely fashion, to allow the treasury time to act if necessary.

Case Study

A US MNC with European treasury centre

This US-headquartered multinational chemical company manages its international (non-US) cash management activities from its Swiss treasury centre. Its core structure is a USD-denominated cash pool, which has an average balance of USD 5 billion.

Historically, the company favoured its core bank relationships when placing this short-term cash. The treasury centre would tranche the cash, with most then placed on deposit with the core banks for terms from overnight to up to 90 days. The remainder was invested in money market funds.

More recently, the company made the decision to invest a higher proportion of its cash in money market funds. On an operational basis, they have found money market funds easy to use, and this allows the company to manage its short-term cash through a team of only three Swiss-based dealers. The funds' transparency, including the selection of plain-vanilla instruments, has made it easy for the company to track its own exposures.

From a risk management perspective, the company is reassured by the size of the major AAA-rated money market fund portfolios and the fact that the funds are ring-fenced from any sponsoring institution. The company's policy is to limit its participation in any fund to 5% of that fund's assets under management. Via a strict due diligence process, the company also made sure it understood each fund's approach to investment. The company did not want to chase yield; instead, it selected funds with investment policies that reflect its core objectives of maintaining liquidity and security of principal.

This approach has allowed the company to generate significant cost savings, while also diversifying its investment portfolio. These factors more than compensate for any relative loss of yield that might have occurred.

Custody arrangements

For some money market instruments, including government bills and commercial paper, companies will need to appoint a custodian bank to hold their investments. Increasingly, instruments are being issued in a dematerialised form (as electronic documents), so investors need to ensure prospective custodians are committed to the business. A number of players have withdrawn from this market over recent years as the investment required to develop and maintain the appropriate level of technology (to perform delivery against payment, for example) has been, and continues to be, significant. These costs have also meant that some of the custodians that have remained in the market are no longer keen to provide services to corporate treasury departments. This is primarily because corporate treasury departments do not have the volume of business to generate sufficient fees to justify the custodian's costs.

In some cases, such as repurchase agreements and secured deposits, companies take collateral when making investments, as a way to minimise counterparty risk. In these circumstances, the company will have to hold the collateral (often a government or high-quality corporate instrument)

securely and separately. While holding the collateral, the company may need to make arrangements to pay any accrued interest on the collateral instrument to the other party. Also, if the collateral is held with a third-party custodian (via a triparty agreement), the investor will be required to place cash with the custodian to compensate for any appreciation of the collateral asset during the agreement (this is known as a margin call). The custodian will revalue the collateral and, if necessary, call for additional cash daily, which may place an additional cash forecasting requirement on the investor.

That said, it has also become difficult for corporate treasurers to find banks to act as a third-party agent in triparty repo agreements. This, too, is largely a cost concern: triparty repo agreements are expensive to set up (and so are only potentially of interest to a small number of the most active treasury departments) and few banks are prepared to make the investment in technology and personnel necessary to provide this service. Although there are alternative trading platforms offering repo and other collateral lending services, these are relatively new and it may take some time for them to build sufficient volume to be of value to corporate treasurers.

Dematerialised money market instruments are held in accounts with organisations called securities depositories, such as Clearstream and Euroclear in Europe, or the Depository Trust Company (DTC) in the USA. These accounts are held by agents, called custodians, who hold the instruments in their clients' names. When an investor purchases an instrument, its ownership is recognised by a book entry across the account of the investor's custodian at the securities depository. Delivery of the instrument is against payment and, again, is processed through the depository. When realising the investment, the settlement process works in reverse, with the investor receiving payment on delivery of the instrument (also as a book entry at the depository).

For many corporate and institutional treasurers, the need to establish custodial arrangements as well as dealing capabilities for each instrument type (let alone the resourcing of investment research and analysis) has led such treasurers to utilise money market funds as an outsourced alternative, as the funds themselves have a custodian.

Changes in counterparty creditworthiness

Even when treasurers devote significant resources to assessing the strength of their counterparties, these assessments can change once the company has invested in a particular instrument issued by an approved counterparty. The longer the term of the investment, the greater the chances of this happening.

The challenge for the treasurer is how to respond if a current counterparty is placed on credit watch or its rating is downgraded, especially if this action would lead to it being taken off the company's counterparty list or suffer a reduction in the relevant counterparty limit.

If a counterparty is placed on credit watch or faces a rating downgrade, appropriate revisions to counterparty limits should be immediately applied. Action should be taken to reduce an exposure

if a new limit results in a breach. Depending on the remaining life of an investment, its size and the deemed risk, companies may decide to run any existing deposits through to their maturity. Equally, they may be forced to do this if the investment is not tradable or immediately liquid. The company's investment policy should already have set parameters for dealing with the circumstance of a downgrade and consequential breach of limits.

No new investments should be placed with this counterparty before additional credit checks are made. This should continue at least until the credit rating is affirmed or changed. As well as following the rating agencies' decisions, treasury teams should also analyse outlook reports and other documents to identify relevant trends. These should always be taken into account when reviewing the company's counterparty list. It is important that treasurers should not rely only on changes in published credit ratings when reviewing their counterparty lists.

If, on the other hand, a counterparty fails, the position for an institutional investor is more complex. In some countries, certain deposits made by institutional investors are covered by deposit insurance schemes, although in most cases these are restricted to retail investors. Even if these deposits are not restricted to retail investors, the thresholds are generally low, and so are largely irrelevant for an institutional investor. One of the major exceptions is the USA. There are a number of different schemes that give institutional investors access to deposit insurance by dividing large investments among enough banks to keep the amount placed with each bank below the FDIC threshold. Investors can use money market demand accounts (via, for example, Federally Insured Cash Accounts – FICA) or certificates of deposit (via, for example, the Certificate of Deposit Account Registry Service – CDARS) to access FDIC insurance. In some cases, a number of governments have taken action to support their banks by guaranteeing certain liabilities. If investments in a failed counterparty are covered by a deposit insurance scheme, the treasurer should apply to the scheme for compensation. If not, the treasurer should apply to the failed counterparty's administrators, who will treat the claim in accordance with the regulations in the relevant jurisdiction. Even if the company is successful in reclaiming some or all of its invested capital, no interest (on deposits) will have been earned from the date of failure. In addition, any repayment of principal may be made much later than the maturity date of the held investment. The treasurer will need to ensure sufficient cash is available to replace the funds held with the failed counterparty.

Investment appraisal

All investment decisions should be subject to a regular appraisal process. Performing an appropriate appraisal process that does not alter behaviour in an adverse way is not easy.

For example, of the three core objectives when investing operating cash, treasury will usually want to prioritise security and liquidity. However, yield is easiest to measure. The appraisal process should avoid concentrating on yield, as it may result in dealers selecting a higher yielding but less liquid instrument, when making an investment.

Any appraisal process needs to include the following:

▶ **Check compliance**

At the very least, all investments should be subject to an audit which ensures all investment policies and procedures are complied with.

▶ **Assess forecasts and models**

The appraisal process will give treasury the opportunity to assess the use of any forecasts and models. Although the cash flow forecasting model may be assessed separately, the investment process should be incorporated in this assessment to identify any weakness. Also, if the company uses a value at risk (VaR) model, its predictions can be assessed after the event and the model improved. It is important to recognise that any model or forecast, including VaR, is only as good as the assumptions made and the historic data used when building it. Some models, including VaR, generate an expected loss over a given period that has a probability of occurring on, typically, 5% or 1% of occasions. If the model generates a VaR at a level beyond the company's limits, the treasurer will need to consider taking action to minimise the potential risk of loss.

▶ **Improve performance**

Finally, appraisal should seek to improve investment performance. As discussed, in this context yield may not be the most appropriate indicator. Instead, the appraisal process should concentrate on security (was there any loss of principal in any investment over the appraisal period?) and liquidity (was there any point when the company had net cash, but was borrowing from the external market?). Should either case be answered in the positive, the appraisal process should seek to identify why this was.

Any performance measurement should use appropriate benchmarks. For example, it is possible to measure the efficiency of the dealing process. Did treasury manage to obtain the best investment rate? This can be assessed with reference to published market rates. Understanding the appropriate market rate to use is also important. There is information about the calculations of the different LIBOR rates on page 218. Was the transaction completed in a timely fashion? This can be assessed by tracking the time between the identification of the cash surplus and the completion of the transaction. Security can be measured by reference to counterparty limits, for example. Liquidity can be assessed simply by establishing whether any short-term external borrowing was required whilst the company or group had a cash surplus. Operational control can be assessed by looking at timeliness of confirmation matching, and dealing with any discrepancies.

However, there is a risk that reliance on too few, or inappropriate, benchmarks will distort treasury activity. For example, it may not be best if some transactions are completed in a timely fashion. Some large transactions will require planning to ensure they are appropriate. Assessing security with respect to counterparty limits does not suggest whether the counterparty limits themselves are appropriate.

To be effective, the appraisal process must recognise these limits.

Accounting

The final stage in the process is to account for all the transactions. There are two aspects to this: recording the data and preparing reports, be they for internal management or external accounts for tax and other regulatory reasons. Treasurers will find that reporting accountants classify their investments as financial assets.

Most treasury management systems will be able to generate accounting entries automatically, minimising the back office work required in the treasury or finance team. This can be more complicated when a variety of systems are used within the company, as the treasurer will need to ensure appropriate interfaces are developed and work effectively.

For external accounts, the first requirement for the treasurer in a company that reports under IFRS is to have a clear set of accounting policies. (The requirements for entities reporting under different national accounting standards will vary, but all demand the use of accounting policies.) These will set out the basis under which accounts are published, and state how the use of financial instruments are presented, measured and disclosed and how the company's exposures to credit, liquidity and market risk are disclosed. They will also state whether financial assets are recorded on the trade date or the settlement date.

Under the terms of IAS 39, short-term investments are usually classified as 'financial assets at fair value through profit or loss, held for trading': i.e. the investments are recognised on the company's balance sheet at fair value. IFRS 9 is replacing IAS 39 for reporting periods starting after 1 January 2018, although earlier adoption is permitted. Under IFRS 9 the definition of assets being held for trading is being withdrawn and most short-term financial assets will be measured at amortised cost. One task for the treasurer is to establish whether the short-term financial assets made are considered as cash equivalent under the terms of IAS 7. Most short-term investments (with a maturity of less than three months), including European (IMMFA, or French OPCVM de trésorerie) and US (2a-7) money market funds, are considered cash equivalent, although companies should check with their external auditors before preparing their accounts. For cash equivalent instruments, the original cost is considered to be the same as at fair value, because they are, by definition, liquid.

Treasurers will also need to ensure that any instruments held to hedge the value of a short-term investment (perhaps to ensure the principal of the investment retains its foreign currency value) are accounted for appropriately under IAS 39 or, in due course, IFRS 9.

Advice should always be sought when preparing accounts.

Chapter 6

Understanding the impact of regulation on different markets

Introduction

Regulation can be an important factor in determining how a treasury can manage its short-term investment activity. However, regulations are constantly changing and evolving, and treasurers need to keep up to date with them.

Regulation is typically applied at national level. This is also true within the European Union (EU), where directives have to be incorporated into national law. In some cases, EU directives are incorporated unchanged into national law and dependent regulations; in others, directives allow local regulation, resulting in differences between countries in the application of a supposedly pan-EU directive. EU Regulations on the other hand become law in member states without the need for local legislation. EU money market fund (MMF) reform is being introduced via an EU Regulation, so it will not need to be ratified by each member state.

Regulation relevant to short-term investment applies in four main areas:

- ▶ It can impose requirements on the decisions the investor is permitted to take. For example, banks and some other financial institutions have to be mindful of capital adequacy requirements (see Basel III below). Public authorities, on the other hand, usually need to comply with rules or legislation limiting the range of approved counterparties and investment instruments.
- ▶ It can set criteria that help investors to understand the nature of a particular investment instrument. For example, US commercial paper has a maximum maturity of 270 days, because longer-dated paper has to meet SEC registration requirements. Also in the USA, to be considered an MMF, fund managers have to meet criteria set out in the 2a-7 rules.
- ▶ It can determine who is entitled to invest in particular instruments. For example, most European-based MMFs are not registered under the 1933 Securities Act or the 1940 Investment Company Act in the USA. As a result, they cannot be publicly marketed within the USA.

It is also applied according to the nature of the investor. Companies, financial institutions, banks and public authorities are all considered institutional investors; however, banks are typically

subject to different regulations from other private companies, and public authorities have their own regulations too.

There is insufficient room within this chapter to discuss the myriad complexities of regulation as applied to short-term investments worldwide. Rather, we will discuss:

- ▶ the impact of Basel III upon short-term investment decisions;
- ▶ developments in MMF regulation in Europe;
- ▶ the ring-fencing of UK banks;
- ▶ the implications of the EU Recovery and Resolution Directive.

It is important to note here that treasurers should always take professional advice and seek regulatory approval, if appropriate, before finalising investment policy. Treasurers must exercise due diligence on any investment. It is very important not to assume that what holds true in one jurisdiction (and can be relied on there) is applicable in any other jurisdiction.

Basel III: A recommended reason to review your cash and short-term investing

Christopher Martin, Global Head of Liquidity Product, HSBC Global Asset Management

In the past, it has been very easy for treasurers to decide to allocate their cash balances without having to be worried about the willingness of banks to accept their investment. Today, the situation is quite different, largely due to the changing regulatory environment under Basel III.

What Basel III is, and how it can affect treasurers' short-term investment activity

Since the credit crisis of 2008, a number of financial market reforms have been, and are still being, implemented that will affect treasurers. One critical area of reform is the bank capital and liquidity reforms known as Basel III (from The Basel Committee on Banking Supervision). Basel III is a comprehensive set of banking reforms that are starting to be implemented across a number of global markets. While Basel III joins a seemingly endless set of financial reforms, these new regulations may have a profound effect on treasurers' current and future cash and short-term investing.

Basel III consists of three pillars:

| Pillar I | Pillar II | Pillar III |
|---|--|--|
| Enhanced Minimum Capital & Liquidity Requirements | Enhanced Supervisory Review Process for Firm-wide Risk Management & Planning | Enhanced Risk Disclosure & Market Discipline |

Part of the Basel III framework defines precisely which assets can be assigned to the liquidity coverage ratio (LCR), which helps to measure a minimum amount of liquidity assets a bank can use to withstand a 30-day standardised stress test scenario. Two other ratios that in particular could have an impact on how banks treat customer deposits are: the net stable funding ratio, which focuses on the structural funding of banks, requiring them to limit the short-term funding (e.g. customer deposits) of the banks' long-term assets; and the leverage ratio which, as the name suggests, aims to restrict leverage in the banking system and defines an absolute limit of a bank's balance sheet.

The precise definitions around LCR and other requirements are changing banks' borrowing behaviour significantly, with certain types of deposits being less attractive than in the past; for example, operational deposits will potentially carry more value to banks

than non-operational deposits (e.g. actively placed deposits), and certain deposits from financial institutions (including bank and non-bank financial institutions) will potentially carry less value than corporate deposits. Importantly, there will be strict definitions for operating and non-operating deposits and the regulators – not the banks or their treasury clients – will determine how deposits are classified, directly affecting the value of deposits. The result may be reflected in pricing, but in some cases, due to the classification under the new regulations, banks may actually be unwilling to hold some short-term deposits from clients.

While these regulations target the banking community, they have far-reaching and immediate implications for corporate and financial institution treasurers, as these investors are significant users of bank deposits. Although these regulations are not to be fully implemented until 2019, many European and US banks and local regulators have already moved to compliance. Treasurers therefore need to be taking action now to understand the implications, and adapt their investment practices accordingly.

Recommended three stage process for treasurers in response to Basel III

It is recommended that treasurers use the implementation of Basel III reforms as an opportunity to review their cash and short-term investing. This can be done following a step-by-step three-stage process to: understand the potential impact on their deposits by working with their banks; continue to enhance the segmenting of their cash; and review investment alternatives that reflect the new regulatory and market environment.

1. Explore the Basel III effect of cash held with banks

Institutional investors need to work closely with their banks to understand how their assets will be held and classified (e.g. operational versus non-operational). With deposits representing a significant portion of some corporate and financial institutions' short-term cash, this development has considerable ramifications, so those responsible for investing need to work closely with their banks to understand how their deposits are classified under Basel III, and how their banks' pricing and appetite for cash may change, if at all.

2. Identify or segment different types of cash

Treasurers may need to look to, or enhance, segmenting and forecasting their liquidity holdings into operating cash (for working capital purposes), core cash (buffer against liquidity restrictions) and strategic cash (long-term cash for investment purposes). By doing so, treasurers can better determine the portion of cash for which same-day liquidity is required, and that can be held for a longer term, therefore increasing the choice of investment opportunities and potential overall yield. For non-operational cash this will also help to manage the potentially greater opportunity cost of carrying liquidity. Asset managers can help manage longer-term portfolios that are separated from the shorter-horizon working capital or operating cash, and target potential sweet spots in terms of the issuance of investment instruments, as well as yield.

3. Review the full suite of investment alternatives that reflect the new regulatory and market environment

Given banks' increasing constraints on short-term cash borrowing, it may be desirable or even essential for treasurers to consider alternative investments, whether MMFs, separately managed accounts or investing directly into money market securities, such as commercial paper. Treasurers should determine whether current investment policies support the anticipated changes for non-operating deposits. In addition, banks will inevitably introduce new deposit and investment products that meet their LCR requirement while supporting clients' investment objectives, so it will be important to maintain a close dialogue with partner banks to ensure that investment policies support these emerging instruments.

Case Study:

Bank deposit appetite influencing investment decision

The company, an investment manager, has traditionally kept the majority of its liquidity with cash management banks – both in terms of active placements of short-term cash holdings and daily residual balances. As is covered in detail in this guide, Basel III is having an increased influence on banks' appetite for short-term deposits, and, as detailed in this case study, the implications of the new liquidity and capital rules had a direct impact on the ability of the company to place some of its cash.

Approaching quarter-end, the company knew it would have sizeable temporary cash inflows in EUR that would remain for up to a month, in addition to some increased cash holdings for the medium term across a number of currencies, including EUR and USD. In consultation with their primary cash management bank, it was determined that there was limited appetite for the cash to be held on the bank's balance sheet as short-term deposits – it would in effect cost the bank to take the cash. The discussion did not end there, however. The bank and the company worked closely together to identify viable alternatives that could help the company to deploy the cash, but at the same time would not disrupt the cash management services (and strong relationship) that both parties valued. The need was particularly time critical as the inflows were imminent.

MMFs were quickly identified as a suitable alternative, primarily on the basis that they provide daily liquidity along with a high level of diversification, which the company valued. The company worked in collaboration with the cash management bank and the fund provider (HSBC) to understand the profile of the fund to be used, prior to the solution obtaining approval within the company. An additional benefit in this instance of using MMFs was the ability to open accounts quickly and the ease of transacting, which ensured the cash was fully invested for quarter-end. Since initial funding of over EUR 300 million, further investments are planned in USD.

Whilst the initial situation presented a dilemma for both the cash management bank and the company, the rapid deployment of an MMF as a viable alternative ensured that all parties achieved a workable solution. The company secured an alternative in which it could place these temporary flows and then use for future cash investing. The bank helped the valued relationship while managing its own balance sheet needs. The solution has helped turn a problem into a win-win, and the speed at which it was implemented cemented the positive result.

European MMF reform: a long time in the making

Jonathan Curry, Global Chief Investment Officer, HSBC Global Asset Management

After many years of debate, the new European MMF regulation has been finalised. It was published in the Official Journal of the European Union on 30 June 2017. In this article, we summarise the key aspects of the regulation that will apply to existing funds by 21 January 2019.

The new MMF regulation can be broken down into two parts: structural changes to the industry and changes to the risk profile of MMFs. Here we will tackle structural changes first.

By far the more significant changes that are coming out of the new regulation are the structural changes that it creates for the MMF industry. The key structural changes are outlined below:

1. A new type of MMF is born – the low-volatility net asset value (LVNAV)

| Structure before regulation | Structure post-regulation | Risk profile |
|---|---|--|
| Constant NAV – full amortised cost accounting | Public debt constant NAV – full amortised cost accounting | Short-term MMF only |
| Variable NAV – partial amortised cost accounting and partial mark-to-market | LVNAV – partial amortised cost accounting VNAV – full mark to market | Short-term MMF only Short-term and standard MMF |

The creation of the LVNAV MMF is a key part of the European regulation and, in our opinion, is an attempt by European regulators to strike a balance between ensuring that an MMF that invests primarily in non-government debt is not only attractive to investors but also satisfies regulators' key concerns surrounding MMFs. This hybrid solution represents a fundamental difference between the evolution of regulators' plans in Europe versus the USA (where no such compromise exists between CNAV Government and VNAV Prime funds).

We believe LVNAV MMFs will attract a significant proportion of the cash currently invested in Prime CNAV MMFs, partly because investors will value the similarities between the LVNAV MMFs and the existing CNAV prime funds that many use today.

2. Credit ratings for MMFs will remain

The European Commission's original proposal in September 2013 to prohibit the sponsor of an MMF soliciting or paying for a credit rating for an MMF was a major area of concern for investors in AAA-rated MMFs. The good news for investors is that this proposal does not form part of the final regulation and fund sponsors will continue to be able to offer MMFs that have a credit rating from one or more of the three main credit rating agencies.

3. External support of an MMF is prohibited

The provision of support by a sponsor or third party is explicitly prohibited in the new regulation; there is currently no prohibition of support in regulation, although in practice the probability of a sponsor providing support has changed markedly post the 2008 credit crisis. Changes to accounting rules and new regulation in other parts of financial services means the cost of providing support today has risen significantly and is likely to be financially prohibitive. We are, however, pleased to see this explicit prohibition of external support in the new regulation, as the current situation can lead to ambiguity about who owns the risk of investing in an MMF.

4. Liquidity fees and redemption gates apply to public debt CNAV and LVNAV MMFs

There was a high probability of liquidity fees and redemption gates forming part of the final regulation, given that the majority of CNAV MMFs already contain some form of liquidity fee and redemption gate provision.

Both mechanisms are designed to protect investors. Liquidity fees allow a MMF to manage a severe liquidity event, ensuring that the cost of providing liquidity is borne by any investor that redeems rather than those that remain in the fund. This also means that any investor that wants to remain invested in the fund is not incentivised to follow redeeming investors in the fear that they will pay the cost of providing the liquidity if they remain.

The regulation requires an MMF to follow a specific process in the event of significant redemption activity. Specifically, if the proportion of assets that mature within one week falls below 30%, and the daily net redemptions on a single business day exceed 10% of total assets, the board of directors of the MMF must make an assessment, taking into account the interest of shareholders, whether to apply a liquidity fee or redemption gate. If the proportion of assets maturing within one week falls below 10%, then the board of directors must apply a liquidity fee and/or a redemption gate for up to 15 days.

In practice, what is an LVNAV MMF?

An LVNAV MMF has many similarities to a Prime CNAV MMF. As with Prime CNAV MMFs, an LVNAV MMF is intended to invest primarily in credit (bank, agency and corporate), to follow many of the same key investment constraints and to price to two decimal places. The pricing of an LVNAV MMF to two decimal places is important. By pricing to two decimal places, a Prime CNAV MMF would 'break the buck' if its 'shadow' NAV (the at-least-weekly mark-to-market of the assets) is at or below 0.9950 or is at or above 1.0050:

i.e. if the shadow price moves by + or – 0.50%. In contrast, the new MMF regulation for the LVNAV MMF stipulates that if the daily price is + or – 0.20%, then the fund must switch to four decimal place pricing and thus the price would move. The collar is fixed by regulation, rather than being arithmetic, and is narrower.

A comparison of the investment constraints in the new MMF regulation

To quantify the new regulatory constraints for an LVNAV, we have compared the key constraints in the Regulation to HSBC Global Asset Management’s own internal investment guidelines and Standard and Poor’s Principal Stability MMF constraints for an AAA-rated MMF.

Primary risk constraints

| Risk constraint | New regulation – Short-term LVNAV | HSBC Global Asset Management internal guidelines | Standard and Poor’s principal stability fund constraints (AAAm) |
|-----------------------------|-----------------------------------|--|---|
| WAM maximum | 60 days | 60 days | 60 days |
| WAL maximum | 120 days | 90 days | 90 days |
| Individual asset maximum | 397 days | 397 days | 397 days |
| Overnight liquidity minimum | 10% | 20% | Not applicable |
| One week liquidity minimum | 30% | 30% | Not applicable |

Source: Institutional Money Market Fund Association and Standard and Poor’s, February 2017

Diversification constraints

| Diversification constraint | New regulation – Short-term LVNAV | HSBC Global Asset Management internal guidelines | Standard and Poor's principal stability fund constraints (AAAm) |
|--|-----------------------------------|---|---|
| Per counterparty group (all above exposure) maximum | 15% | <i>5% banks (10% overnight only certain banks) 10% agencies 2% corporates</i> | 15% except for AA- or better rated banks |
| Per counterparty group (reverse repo) maximum | 15% | 25% overnight <i>10% 2-5 business days 5% 5-30 business days</i> | 25% overnight* 10% 2-5 business days 5% > 5 business days |
| Asset-backed commercial paper total exposure maximum | 15% | 30% | Not applicable |
| Public debt per issuer maximum | 100% | 100% Eurozone <A** rated 35% | 100% AA or higher 50% AA- or below |

*A-1 short-term rated counterparties

** A star is HSBC Global Asset Management highest internal credit rating

The tables above illustrate some of the key investment constraints. They also identify where the current HSBC Global Asset Management internal investment guidelines are more (highlighted in italics) or less (highlighted in red) conservative than the new regulation for short term LVNAV MMFs. In essence, HSBC's existing guidelines already meet or exceed the requirements of the forthcoming regulations in most areas, and where not will be easily adapted to do so.

As well as these key features, the regulation also covers areas such as the credit assessment process, transparency to investors and to regulators, stress testing and 'know your customer' policies.

Europe has taken a different approach from the USA in the regulation of MMFs in two key areas

While there are many similarities between the new sets of MMF regulation in the USA and Europe, there are two important differences.

First, the Securities and Exchange Commission's (SEC) 2a-7 regulation prohibits the investment in CNAV Prime MMFs by institutional investors. This type of MMF is now only available to retail investors. Institutional investors in the USA have the choice of CNAV

Government and Treasury funds or VNAV Prime funds. This is a significant difference with Europe where institutional (and retail) investors will have access to the LVNAV Prime MMFs, as well as CNAV Public Debt MMFs.

Second, while both sets of regulation require some MMFs, public debt CNAV and LVNAV in the case of Europe and Prime Institutional in the case of the USA, to have the ability to apply liquidity fees or redemption gates, there are again important differences to note. In relation to the event that would require a board of directors to determine whether to apply a liquidity fee or redemption gate, our interpretation is that the probability of this event occurring would be lower in Europe. In our opinion, that is a reasonable view, because, in practice there has never been a systemic liquidity event for MMFs in Europe; and of course investors in Europe are far more familiar than US investors with these mechanisms, as they have formed part of the toolkit available to managers of MMFs for many years.

Next steps and the timeline

The new regulation comes into force on 21 July 2018, and will apply to all new funds; existing funds will have to be compliant by no later than 21 January 2019. Further work is required on technical areas. An important area where further work is required is to get confirmation that LVNAV and VNAV MMFs will qualify as cash and cash equivalents for reporting purposes.

Case study:

Responding to regulation

By imposing more onerous liquidity ratios on banks, the Basel III regulations have had a significant, albeit indirect, impact on companies and non-bank financial institutions wanting to invest cash. Banks are now required to distinguish between cash deposits for transactional and working capital purposes and deposits available for investment (referred to as short-term non-operational cash), and then set aside more assets against non-operational cash deposits. Consequently, it has become less profitable for banks to hold such deposits.

As a result of the regulatory change, one non-bank financial institution (NBFI) was asked by a number of its banks to remove all its deposits. The treasurer needed to place these funds in assets considered to be cash or cash equivalent. Operationally, the NBFI needs access to liquidity to meet margin calls and, as a regulated entity, the NBFI is required to hold all regulatory capital in liquid assets.

After reviewing the market, the NBFI selected constant net asset value MMFs as the location for its working capital and regulatory cash. The treasurer liked the quality of investments in the fund's portfolio and took comfort from the association of the fund manager to one of the company's relationship banks. From a risk management perspective, money market funds also appealed because the fund manager can run a diversified portfolio while still retaining cash equivalence.

Managing cash in-house was ruled out. Building an investment team would have been too expensive and, by using MMFs, the NBFI benefits from greater liquidity in real cash terms. Moreover, because of the NBFI's regulatory requirements, the NBFI simply would not be able to reflect the MMF's portfolio if investing for its own account.

The NBFI originally rejected variable net asset value funds for being too similar to investments. However, in anticipation of reform, the NBFI treasurer is starting to work with the asset manager on the suitability of low volatility net asset value (LVNAV) funds, not least because board approval will be needed to use the new funds. The treasurer does not expect any regulatory impact from the shift to LVNAV funds, although he or she does expect to maintain cash in CNAV funds for as long as possible.

Using an MMF allows this NBFI to comply with its regulatory requirements as the funds are considered to be cash equivalent. By using an MMF, the NBFI is also able to obtain better diversification than if the cash was managed in-house.

Ring-fencing of UK banks

Another key reform that has significant scope to affect short-term investing decisions is the ring-fencing or legal separation of banks into retail and non-retail activities.

In the UK, the Banking Reform Act 2013 (and other associated legislation) is due to be implemented by January 2019. The reforms, the core recommendation of the Vickers Commission on Banking, require any UK bank with deposits in excess of GBP 25 billion to be divided between a ring-fenced and a non-ring-fenced operation. The ring-fenced entity will include retail operations, including consumer and small business banking. The non-ring-fenced entity will include investment banking activity. Corporate transactional banking may be within the ring fence, although this will vary between institutions. While still part of the same ownership structure, the two entities will be managed separately. The primary objective will be to make it easier for regulators to protect the wider financial system in the event of a bank failure, without having to use taxpayer funds to rescue the failing bank.

From an investor's perspective, ring-fencing will alter bank deposits and other bank-issued instruments as investment propositions. In particular, the credit standing of the two sides of a ring-fenced bank could be very different by virtue of the different sorts of business they undertake and the degree to which wholesale deposits are subordinated to other creditors or even subject to bail-in risk.

There is pressure for similar EU-wide reform, although measures to implement the Liikanen proposals for a regulation separating proprietary trading from other activities of banks have stalled. In the USA, President Trump has stated his support for similar measures, which could take the form of a reinstatement of the Glass-Steagall Act (which required a split between commercial and investment banks) or the adoption of similar ring-fencing rules.

EU Recovery and Resolution Directive

Separately, the EU's Recovery and Resolution Directive places obligations on banks and regulators to have plans in place to enable action to be taken to forestall a bank failure. In the event that a bank failure is unavoidable, processes should be in place to enable an orderly winding down and to provide protection for preferred classes of creditors and payment systems.

The concept of bail-in is of particular significance for investors. If a bail-in is invoked, certain creditors of the failing bank would be forced to take a write-down in the value of their investments. This write-down represents an increase in capital for the bank, and would help the restructuring and rescue of the bank. A new category of funding for banks is envisaged that would include contractual bail-in rights for the bank.

More contentiously, regulators may have the power to impose bail-in on other classes of lender to the banks, including wholesale depositors. As retail depositors are unlikely to be bailed-in, wholesale depositors would be disproportionately more at risk in a bank with a large retail deposit base. In these circumstances, institutional investors, including corporate investors, will need to understand the funding structure of a bank, as their place in the hierarchy of claims will become more critical.

Chapter 7

Summary

This is a short checklist of decisions that need to be taken in any investment process. It focuses on short-term investments, but could be applied to longer-term decisions as well.

Identifying the funds

The first task is to identify the funds available for investment, or that need to be managed.

Forecasting cash flows accurately

- ▶ How does treasury receive information about the present and future contents of bank accounts? Is it available in a consistent format?
- ▶ Is information available in advance, e.g. through a cash flow forecast? Can it be consolidated through the use of a treasury management, or similar, system?
- ▶ Does treasury have access to real-time information about the content of bank accounts?
- ▶ How accurate is this information?

Managing cash flows effectively

- ▶ Does the company operate one or more centralised cash management structures? If so, where is cash concentrated to, and how frequently?
- ▶ Are the accounting and tax implications of the structures fully understood? How frequently are these implications reviewed?
- ▶ Are there any operating units or bank accounts that remain outside any centralised cash management structure? If so, where are they and who is responsible for managing their treasury activities?

Segmenting cash flows intelligently

Once this information is collected, any surpluses have to be classified.

- ▶ Where are the surplus funds?
- ▶ In which currency (or currencies) is (are) the funds denominated?

- ▶ How much is available to be invested?
- ▶ For how long are the funds available to be invested (or do they have to be managed)?
- ▶ Can the funds be classified as operating cash or strategic cash?

Establishing an appropriate investment policy

Treasury then needs to establish an investment policy, setting clear overall objectives for short-term investment and detailing how treasury will seek to manage the risks that arise.

Investment objectives

For each cash surplus, treasury also needs to identify the investment objectives:

Security

- ▶ How much risk to principal can the company assume?

Liquidity

- ▶ How accessible must the invested funds be?

Yield

Can the company afford to compromise the objectives of security or liquidity in order to earn a higher return?

Selecting the instrument

Once the objectives have been identified, treasury will need to identify the most appropriate instrument(s) and market:

Constraints on investment

- ▶ Are there any constraints that prevent treasury investing in particular instruments?

Internal

- ▶ What limits are set by the treasury and investment policies?
- ▶ Are there restrictions in terms of which instruments can be used?

External

- ▶ Are there any regulatory restrictions on investment?
- ▶ What are the tax implications of particular investments?
- ▶ Are there any practical restrictions (cut-off times, transmission issues) preventing access to particular markets?

Selecting the counterparty

- ▶ Does the counterparty fit within the group policy?
- ▶ What counterparty limits are in place?
- ▶ Will the transaction comply with existing counterparty limits: e.g. is there sufficient unused headroom within the limit?
- ▶ Does treasury have an appropriate dealing mandate or other contract in place with potential counterparties?
- ▶ Has the appropriate credit rating been used to assess counterparty credit risk, and has it been checked recently for any changes or alerts?

Implementing effective investment management

Who makes the decision?

- ▶ How is the segregation of duties applied?
- ▶ What individual authorities are applied within the treasury?
- ▶ Does central treasury have the authority to direct or require local operating companies to behave in a particular way?
- ▶ Has an automated investment strategy (e.g. a sweep to a money market fund) been adopted?

Appropriate instruments

Given these restrictions, treasury may have to choose between different potentially suitable instruments:

Characteristics

- ▶ Does the instrument match the investment objectives, without exposing the company to unacceptable risks?
- ▶ Is the instrument available in the desired market? If so, is the market sufficiently liquid?
- ▶ How would an investment in such an instrument affect the investment portfolio as a whole?

Transaction

- ▶ Have the dealing procedures been followed?
- ▶ Were sufficient alternative quotes sought?

- ▶ Has an appropriate record been kept of the transaction?
- ▶ Has the transaction been confirmed?
- ▶ Are there sufficient authorised personnel in the office to effect the necessary funds transfers?

Post-transaction

- ▶ Has the transaction been reconciled properly?
- ▶ Is the investment instrument sufficiently safeguarded? Is a custodian required?
- ▶ How is the value of the investment measured?
- ▶ Will the investment need to be realised early?

Appraisal

- ▶ How is the investment decision appraised?
- ▶ Was the initial identification of funds accurate? If not, why not, and can anything be done to improve the process?
- ▶ Were the objectives appropriate at the time of determination and in hindsight? If not, why not?
- ▶ Did the chosen investment instrument match the investment objectives? If not, why not, and should that lead to a reassessment of the appropriate use of that instrument?
- ▶ Was the dealing process conducted in accordance with established procedures? Were any weaknesses in the procedures identified and, if so, what action can be (or has been) taken?

Instruments

Cash held with banks

Large companies have traditionally held cash with their banks as balances in current accounts and sight and term deposits. Groups of companies have been able to net off bank accounts across entities by notional or physical pooling, thereby efficiently using surpluses in one account to offset overdrafts in another.

One effect of the changes in bank regulation necessary to meet Basel III is to make it less efficient for companies to hold cash with banks. Netting and pooling can result in corporate cash balances being treated by banks in the same way as interbank deposits and, therefore, requiring 100% capital retention against maturity. Similarly, short-term deposits may require 40% to 100% capital retention. This is achieved by the banks purchasing high-quality liquid assets, normally government bonds, and the return available to the corporate depositor is therefore small, and in some jurisdictions negative.

Banks can only fully use deposited funds for lending purposes if they have a remaining maturity in excess of three months. This does not mean companies will not hold cash with banks. There are still many benefits from doing so, including to support a bank relationship, for the collateralisation of credit facilities, and in liquidity and counterparty exposure management. However, the yield earned from bank deposits has reduced compared to yields available pre-2008.

Interest-bearing current accounts

Core characteristics

Key features

Interest-bearing current accounts are the simplest form of short-term investment instrument. Banks will pay interest on surplus balances in designated current accounts.

Availability

Interest-bearing current accounts are available in many countries. Current accounts are available in local currency and, depending on location, in many international currencies, as well.

In other locations, interest is not commonly offered on current account surpluses. In these jurisdictions, companies may be able to negotiate for the current account to be interest bearing, or establish some sort of sweep arrangement into an interest-bearing account. Whether the bank agrees will depend on the nature of the bank relationship. In a small number of jurisdictions, the payment of interest on current accounts is prohibited.

Nature of the return

To qualify for interest payments, the company may need to maintain a minimum balance. The precise terms and conditions can vary:

- ▶ **Daily balance.** This minimum balance may be calculated on a daily basis. In this case, interest is accrued daily only if the account is in credit or the balance is above a threshold level.
- ▶ **Average balance.** Alternatively, the minimum balance is calculated as an average over a predetermined period. In these circumstances, treasury will need to understand how interest accrues.

Treasury will need to identify how interest is calculated and to select terms and conditions that match the company's likely account balance profile. Interest is usually paid in fixed intervals, typically monthly, quarterly or annually.

The rates of interest are low relative to many alternative investments. The offered rate may increase as the balance on the account increases.

Banks may levy a monthly or annual management fee.

Accessibility

Investors access their current accounts through their banks. These accounts are typically used for payments and collections, and their balances will fluctuate daily. Investors will need to comply with account-opening procedures. These vary in complexity, both between countries and between banks.

Main variants

As well as standalone current accounts, many banks offer a range of cash concentration and cash pooling structures. These can be single or multicurrency structures and domestic or cross-border arrangements.

- ▶ **Cash concentration.** In some cases, balances from a number of linked accounts are concentrated in one or more header or master accounts. These header or master accounts may be interest-bearing accounts, although usually the surplus balance is then invested in higher yielding instruments, such as money market funds.
- ▶ **Cash pooling.** In other cases, linked accounts are notionally pooled to a master account. Interest may be offered on any surplus on this account, although again the surplus may be invested elsewhere.

Benefits

Ease of use

One of the key benefits of investing in interest-bearing current accounts is their ease of use. Because cash will flow into these accounts as a result of all cash management activity, there will be no need for additional work by treasury to identify the best location for the surplus cash. Treasury's key task will be to ensure that the correct amount of interest is credited by the bank. This can be achieved by keeping accurate records, perhaps as part of a treasury management system.

Liquidity

Because cash remains in current accounts, there is no loss of liquidity. This cash continues to be available to meet short-term obligations, whilst simultaneously earning a return while invested.

Local investment opportunities

Although interest-bearing current accounts are prohibited in a few jurisdictions, they do offer companies the opportunity to generate a return in most locations on even small amounts of surplus cash.

For groups of companies operating in a number of locations, such accounts allow subsidiaries to earn a return without having to participate in a group-wide cash management structure. As a result, these subsidiaries avoid the need to comply with sometimes complex local regulations.

Where a local subsidiary does participate in a group-wide cash management structure, an interest-bearing current account allows the entity to generate a return on any funds that remain locally.

Potential problems

Low return

The main disadvantage of investing in interest-bearing current accounts is that the return is usually low. Treasury will need to decide how important even a moderate return is on any investment. In those locations where there are limited short-term investment opportunities, treasury may consider alternative investment instruments to represent too great a risk.

In periods of low market rates and heightened concerns over credit risk, highly rated banks will not want large current account balances. In such circumstances, some offer a negative rate of interest or apply a holding charge on large balances (which has the same effect).

Counterparty risk

Treasury will need to be wary of counterparty risk when leaving cash in interest-bearing current accounts. Where the company uses a small number of cash management banks, it is likely that any cash in current accounts will remain with those banks. It is important when seeking to manage counterparty risk to include any cash remaining in current accounts.

Inefficiencies

Because security and liquidity are often the main objectives when investing short-term cash, treasury can be satisfied with the small return generated when cash is deposited in interest-bearing current accounts. Reviewing cash management structures and treasury organisation could provide access to higher-yielding alternative instruments.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

Current account surpluses are relatively secure investments. The level of security will vary from bank to bank. Published credit ratings provide a good indication of the relative counterparty risk. It is important to recognise that different entities within the same bank group may have different credit ratings. The level of bank supervision is also an important determinant of counterparty risk.

Liquidity

Current account surpluses are highly liquid. In most cases, there will be no restrictions on access to funds. In a few cases, the terms and conditions of operating the current account may require a minimum credit balance to be maintained.

Yield

Relative to other instruments, bank current accounts offer very low rates of return. In some jurisdictions, banks are prohibited from paying interest on current account balances.

Suitability

Current accounts are most useful in the following circumstances:

- ▶ for the investment of small surplus balances, especially when current accounts are interest bearing;
- ▶ for the investment of small surplus balances denominated in different currencies, to avoid foreign exchange transaction costs;
- ▶ if the accounts are part of a group liquidity management structure, whether physical concentration or notional pooling is used;
- ▶ for the investment of local surplus balances in the period between generation and repatriation to group treasury;
- ▶ when exchange controls require local subsidiaries to invest locally, and alternative short-term instruments expose the entities to unacceptable levels of risk;
- ▶ as a destination for overnight investment when cut-off times for higher-yielding instruments have passed;
- ▶ as a tool to maintain short-term liquidity, especially where the cash flow forecast may be inaccurate;
- ▶ as part of the pattern of managing the duration of the group's investment portfolio within acceptable limits;
- ▶ as a counterparty risk management tool.



Bank demand deposits

Core characteristics

Key features

Sometimes referred to as sight deposits, a bank's demand deposit account is a form of bank account that pays interest, but is not available to be used for cheques or other similar payments.

Availability

Apart from some locations where payment of interest on demand deposit accounts is prohibited, demand deposits are widely available. Subject to exchange control rules, deposit accounts are usually available in the local currency, as well as major international currencies.

Nature of the return

Demand deposit accounts are interest-bearing, although investors may need to maintain a minimum balance to qualify. The rates of interest are low relative to many alternative investments. The offered rate may increase as the balance on the account increases.

Interest is usually paid in fixed intervals, typically quarterly or annually, although it may accrue daily.

Banks may levy a monthly or annual management fee.

Accessibility

Investors typically access demand deposit accounts through their banks. In some cases, any investment decision will be implemented manually. In many others, a company will arrange for surplus current account balances to be swept into a demand deposit account on a daily basis. Investors will need to comply with account-opening procedures. These vary in complexity, both between countries and between banks.

Main variants

The pure demand deposit allows the investor to have access to the funds at any time.

In addition, banks often provide a range of alternative deposit accounts to companies. There are two main variables:

- ▶ **Notice period.** By agreeing to a notice period, the investor will be compensated by receiving a higher rate of interest on the deposited funds. The investor sacrifices some liquidity for a greater yield. This will suit subsidiaries that only submit funds to group treasury or make payments on a regular weekly or monthly basis.
- ▶ **Graduated rates.** Some deposit accounts pay increasing rates of interest as the balance level increases.

Benefits

Ease of use

Moving funds to a demand deposit account is usually the easiest alternative to leaving surplus cash in a current account. Interest-bearing demand deposit accounts are available to companies in most jurisdictions. They usually offer a higher rate of interest than interest-bearing current accounts.

Where there are difficulties in repatriating funds, or the volume of surplus cash is uncertain or low, it is often easiest for the treasurer to arrange to transfer funds to a deposit account at a predetermined time. Some higher-yielding instruments impose early cut-off times and often apply a minimum investment amount.

Availability

Demand deposits can be used to invest short-term surplus funds in a variety of locations. They are widely available, even in countries with relatively few alternative investments.

They are suitable for companies with subsidiaries in locations outside the scope of the main group-wide cash management structures.

Counterparty risk management

Because they are relatively accessible, demand deposits can be used as a means of managing counterparty risk. By depositing with a number of banks, treasury will be able to reduce exposure to counterparty risk.

In a group of companies, especially a group in which local subsidiaries retain responsibility for short-term investment decisions, care should be taken to ensure all counterparty limits are adhered to at all times.

Bank relationship management

Leaving funds on deposit with one of a group's cash management banks, whether centrally or locally, may be one way to compensate those banks for the services they provide.

Potential problems

Low return

The key disadvantage of investing in bank demand deposits is that they usually offer a relatively

low rate of return. As mentioned, this return can be enhanced if the investor accepts certain restrictions, notably that of a notice period before funds can be withdrawn.

Treasury needs to determine the company's objective when making the investment. If the funds are deposited for a short period, perhaps to allow for compliance with exchange controls, the company may accept a relatively low return in exchange for the liquidity benefits.

Restrictions

Although bank demand deposits are one of the simplest forms of short-term investments, there may still be some restrictions. Sometimes, interest-bearing demand deposits may not be available to companies. Where they are, a number of other restrictions may apply:

- ▶ **Term.** Companies should be aware of demand deposits where the bank specifies a minimum period of investment before interest can be paid. Although most demand deposit accounts pay interest on a quarterly or annual basis, some may only apply interest once funds have been deposited for a minimum period. These accounts would be unsuitable, for example, for the overnight deposit of short-term cash surpluses.
- ▶ **Minimum balance.** Treasurers should also be aware of any minimum balance requirement before interest can be earned. In addition, some accounts apply interest rate thresholds, with the rate increasing with additional deposits. Treasurers will need to understand how these rules apply, especially if the minimum balance must be maintained for a period of time.
- ▶ **Tax.** Treasurers also need to understand how tax rules, especially withholding tax, apply to any interest earned on these investments. When evaluating all types of investment, the treasurer should assess the return net of tax.

Inefficiencies

Although bank demand deposits may be a simple solution, especially where exchange controls exist, their use may mask operational inefficiencies within the treasury.

- ▶ **Cash management.** Treasurers should revisit the cash management structure on a regular basis. Regulations, especially exchange control rules, are continuously changing. Over time, it may become possible to concentrate sufficient cash to one or more locations to make it practical to access higher-yielding instruments, such as money market funds.
- ▶ **Treasury management.** In decentralised companies, local finance teams may be responsible for the investment of short-term cash surpluses. This may well be appropriate in some jurisdictions. However, from a group perspective, this may be inefficient, and the treasurer may consider ways in which the treasury structure and responsibilities could be changed.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

Bank demand deposits are relatively secure investments. This level of security will differ from bank to bank. It is also important to recognise that different entities within the same bank group may have different credit ratings. Balances on deposit may be covered by the local country's deposit protection scheme. The rules governing the eligibility of such schemes vary significantly between countries and may not apply to corporate deposits. A maximum level of coverage may also apply.

Liquidity

Bank demand deposits are highly liquid. This liquidity can be restricted if notice periods apply.

Yield

Bank demand deposits offer relatively low rates of return. Companies can often marginally increase these by depositing into accounts for which a notice period applies.

Suitability

Bank demand deposits are most useful in the following circumstances:

- ▶ for the investment of small surplus balances, especially when current accounts do not pay interest;
- ▶ for the investment of local surplus balances in the period between generation and repatriation to group treasury;
- ▶ when exchange controls require local subsidiaries to invest locally and the other available short-term instruments represent too high a risk;
- ▶ when an unexpected cash surplus is generated, such that cut-off times for higher-yielding investments are missed;
- ▶ as a tool to maintain short-term liquidity;
- ▶ as a counterparty risk management tool;
- ▶ as a means of rewarding cash management banks.

Bank time deposits/ money market deposits

Core characteristics

Key features

Bank time or term deposits require investors to deposit funds for a fixed period. Banks usually offer a range of investment periods, from overnight to over two years.

Availability

Bank time deposits are widely available in most jurisdictions. They are available in local currency and also, depending on the local exchange control regulations, a range of foreign currencies.

Nature of the return

Most time deposits pay a fixed rate of interest, although variable rate deposits may be available. This is typically payable on maturity for shorter-dated instruments. Some longer-dated deposits, especially those with a maturity of over a year, may make interim interest payments. Investors will know the return when making the deposit.

Accessibility

Investors typically access time deposits through their banks or via brokers.

Main variants

Time deposits usually have a fixed maturity, with returns increasing as the term increases.

Some banks offer increasing rates of interest as the sum invested increases. Companies should take care to ensure counterparty limits are not breached.

Because longer-term deposits help banks to manage their own liquidity, some banks offer higher rates on evergreen deposits. These are time deposits that extend indefinitely, but have a notice period, typically of 30 or 90 days.

Benefits

Ease of use

The key benefit for the investor is that bank time deposits are widely available and are easily accessible via the company's banks.

In those jurisdictions that prohibit the payment of interest on current and sight deposit accounts, bank time deposits are the most accessible interest-bearing instruments for most companies.

Local markets

Bank time deposits do give investors access to relatively secure investment instruments in small local markets. This can be important if it is difficult to repatriate cash to central treasury. When investing locally in time deposits, treasury should consider country risk.

Counterparty risk

Because the time deposits are held with banks, counterparty risk is easier to manage. Banks have published credit ratings, although care should be taken to ensure the rating applies to the correct counterparty. In addition, banks are subject to a stricter supervisory regime than most other counterparties, although these regimes vary from country to country.

Bank relationship

As with all bank deposits, investing in time deposits allows treasury to reward their cash management banks. From this perspective, time deposits are of more value to the bank, because the cash is committed to the bank for the term of the deposit. The bank rewards the investor with slightly higher rates of interest than may be available on sight deposits.

Potential problems

Inaccessibility

The major problem with time deposits is the restriction on the withdrawal of funds before the maturity date. In most cases, cash is not accessible until the maturity date, although withdrawal may be possible on payment of a penalty fee. This can result in the company being forced to borrow funds to meet short-term obligations even though it has surplus cash.

Tax

As with all investments, investors should always be aware of the tax implications of any deposit.

Accounting

In order to be recorded as 'cash or cash equivalents' under international accounting rules, any deposit should have a short maturity. IAS 7, paragraph 7, states that a short maturity would be three months or less from acquisition. The limit is somewhat arbitrary and will be subject to some interpretation. The interpretation will also consider the purpose of holding the deposit: to be recorded as 'cash or cash equivalents', the deposit should be held to meet short-term cash needs, rather than as an investment.

Variable return

The return available on time deposits varies according to the credit rating of each bank, as well as the term for which cash is deposited. Once dealt, the rates become fixed for the specified period. The rates being quoted for deals will also vary according to conditions in the interbank market and the balance sheet position of the bank itself. This means that rates can fluctuate

and will vary between banks. For this reason, investors should seek quotes from a number of different banks before making a deposit.

Group-wide counterparty risk

Because of their availability, time deposits are used by groups of companies where operational and regulatory factors result in investment decisions being taken locally. In these circumstances, although central treasury may not have direct responsibility for each investment decision, they should take care that the group as a whole is not over-exposed to any counterparty banking group. This is more important for time deposits than sight deposits, as the cash is not immediately accessible.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

Bank time deposits are relatively secure investments. This level of security will differ from bank to bank. It is also important to recognise that different entities within the same bank group may have different credit ratings. Balances on deposit may be covered by the local country's deposit protection scheme. The rules governing the eligibility of such schemes vary significantly between countries and may not apply to corporate deposits. A maximum level of coverage may also apply.

Liquidity

Bank time deposits are usually only accessible on maturity. For this reason, deposits for less than a week are popular when investing working capital cash.

Yield

The return on the deposit will increase as the bank's control over the funds increases. For short-term deposits, rates can vary between banks.

Suitability

Bank time deposits are most useful in the following circumstances:

- ▶ when the investment period is known and the investor wants to hold the instrument to maturity;
- ▶ to generate a fixed return (depending on the terms of the account);
- ▶ as a means of rewarding members of the core banking group;
- ▶ as a counterparty risk management tool;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments;
- ▶ where a relatively secure investment instrument is required.

Investment in the form of securities

The purchase of securities can allow investors to diversify counterparty risk away from deposit-taking banks. The following sections outline the characteristics of different forms of securities, all of which require a relationship with a custodian that is able to hold the securities until either redemption or sale. The custodian market has become competitive and efficient for high-volume users. Money market funds (MMFs) allow a corporate investor to benefit from the diversification of risk associated with the purchase of securities without the need for a custodian agreement and so may be more suitable for companies with low volumes of cash investment activity.

Investors should remain aware that any form of securities or derivatives investment exposes them to the risk of capital loss, as the value of the investments will vary in reaction to market changes in interest and foreign exchange rates, and other factors. This has been explicitly reflected in recent changes to MMF regulations (already enacted in the USA and China, and coming into effect in the EU), which recognise this capital risk with the requirement for variable fund values. Although MMFs aim to return all the invested capital, investors should not assume this will always be possible. Corporate investors should also acknowledge that they cannot rely on redemption on demand of any securities in the event of a future liquidity crisis. In the case of MMFs, this is reflected in the use of redemption fees and gates that proved a means for funds to constrain redemption in times of liquidity crisis.

Commercial paper

Core characteristics

Key features

Commercial paper is a short-term, unsecured promissory note. It is usually issued in bearer form, meaning it is a negotiable instrument. By issuing the paper, the issuer promises to pay the bearer the face value of the paper on a fixed maturity date. Originally, commercial paper was issued in a physical form, although over recent years it has increasingly become dematerialised.

Availability

Commercial paper is widely available in most local markets and in various currencies. There are many multicurrency programmes available, which allow investors to access favoured issuers in their favoured currency denomination.

Commercial paper is issued with a range of alternative maturities. Local securities' legislation usually determines the maximum maturity. This is usually the point at which a security has to be registered with the local securities' regulator.

There is also a small, but growing, market in extendable commercial paper. The investor has some limited options to extend the maturity of the paper owned, rather than allowing it to mature. There may be a small yield enhancement, as the issuer has longer use of the investor's funds.

Nature of the return

In most cases, commercial paper is issued at a discount. On maturity, the issuer will then pay the paper's face value to the holder. The rate of return is determined by the difference in the two values and the term of issue.

Some commercial paper is issued as an interest-bearing instrument, but this is relatively rare.

In general, good quality commercial paper will yield close to LIBOR and more. It tends to offer a better return than bank deposits.

Accessibility

Investors buy commercial paper from dealers, usually banks. Commercial paper can be sold in one of two main ways:

- ▶ **By the dealer to investors.** Dealers may sell paper in the open market. In some cases, dealers will sell to a small group of investors without alerting the market as a whole. This is known as a private placement. There are different regulations in the US commercial paper (USCP) market covering paper issued by private placement.
- ▶ **By reverse enquiry.** Investors can also approach dealers to see whether an issuer is prepared to issue commercial paper. As a result, the investor may be able to purchase commercial paper issued in a currency (in the case of Euro commercial paper) and with a maturity to match their investment needs.

Main variants

The prime variant of commercial paper is asset-backed commercial paper. Being asset-backed creates a number of characteristics to the investment, so asset-backed commercial paper is examined in the next section.

Aside from this, there are two main forms of commercial paper: domestic, of which USCP is the most significant, and Euro commercial paper (effectively international commercial paper).

Domestic commercial paper

There is some form of domestic commercial paper in most local markets. Domestically, the instrument may not be called commercial paper. For example, French commercial paper is usually known as *billets de trésorerie*. In all markets where commercial paper is issued, however it is known, the instrument is an unsecured promissory note, with a predetermined maturity date.

The use of credit ratings varies from country to country. In some markets, it is only the largest and most well-known companies that issue commercial paper. In these markets, investors tend to purchase paper on the basis of the name of the issuer. A growing number of commercial paper issues are being publicly rated.

In most markets, both issuers and investors tend to be domestic residents.

USCP

The USCP market is the largest domestic market in the world. Commercial paper is an important form of working capital financing in the US domestic market, as overdrafts are not permitted.

The USCP market is different from most domestic commercial paper markets, because almost all commercial paper has a published credit rating from one or more of the credit rating agencies. The agencies also rate the paper itself, rather than the issuing company. This means the paper can enjoy a higher credit rating than the issuing company, especially if the company has put some form of credit enhancement in place.

USCP can be issued with maturities ranging from overnight up to a maximum of 270 days.

There is a significant presence of foreign investors in the USCP market.

Euro commercial paper

The Euro commercial paper market was established in the mid-1980s and is effectively an international commercial paper market (it can be bought by investors in other countries).

Euro commercial paper can be issued with maturities ranging from overnight up to one year. Like the USCP market, most issues are rated by one or more of the credit rating agencies.

Euro commercial paper is primarily denominated in EUR and USD. The GBP is the most common of the other currencies of issue. In practice, many Euro commercial paper programmes are multicurrency programmes. This means investors may be able to request that paper is issued in a currency to suit them.

Technically, Euro commercial paper is issued in one legal jurisdiction, often Luxembourg, and its legal status will depend on the country of issue. An initiative by the European Commission has created a standardised form of paper across Europe, under the Short-Term European Paper (STEP) banner.

Benefits

Ability to match investment requirements

Investors often have the ability to invest in commercial paper issued to a specific maturity. This means the investor can select the maturity either to match a particular cash flow or to realign the duration of the investment portfolio as a whole.

Range of issuers

Because commercial paper is widely available, investors have a broad range of alternative issuers to choose from when investing in this instrument. Both banks and non-banks issue commercial paper. Investors can spread their risk by selecting issuers operating in different sectors of the economy.

Information available

When a commercial paper issue is made available in the open market, many dealer banks make presentations to potential investors on behalf of the issuers. Investors should always do their own research before committing to an investment. Because a successful commercial paper issuance programme relies on the availability of investors, information about specific issues is typically relatively accessible.

Legal basis

For the largest markets (the US domestic market and the Euro commercial paper market), there is standard documentation covering commercial paper issuance. Although this documentation has primarily been developed to benefit issuance, it also ensures that there are common features to almost all commercial paper issues.

Negotiability

Finally, commercial paper is usually issued in negotiable form. This means investors have the ability to sell paper in the secondary market if they need to realise their investment. This

will depend on the liquidity in the particular market. However, most investors keep the paper until maturity.

Potential problems

Nature of the instrument

Because commercial paper is an unsecured promissory note, its nature means it is a less secure investment than a number of alternative instruments. Investors should understand any credit enhancement facilities, such as credit back-up lines, before investing in the instrument. These are important, because many issuers seek to repay maturing commercial paper by rolling over an issue, which means issuing new paper to raise funds to meet these repayment obligations. Credit enhancement facilities are designed to repay investors if market conditions do not permit a rollover.

The rating agencies insist that for any paper to attract a short-term rating of A or better, back-up facilities must be available to provide a liquidity source to cover maturing paper.

Counterparty risk

Just as when investing in other instruments, investors need to manage counterparty risk. Although it is the issue that is rated (rather than the issuer), investors will still need to set, and adhere to, strict counterparty limits. It is important to remember that, when purchasing commercial paper, the investor is fully exposed to the issuer. As a short-term instrument, there are no events of default documented, so unlike a bond or loan agreement, the investor has no rights to demand early repayment should the borrower's financial strength deteriorate.

Operational costs

There are some administrative costs associated with investing in commercial paper. The investor will need to appoint a custodian bank, both because the paper is increasingly dematerialised and to help to manage settlement risk. For more information, see page 112.

Investors will probably want to perform their own credit checks of issuers, especially if the issue is not rated by one of the agencies. This will impose an operational cost within the treasury department.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

The security of commercial paper varies significantly according to the issuer. It is dependent on the maturity of the issue and any additional credit enhancement facilities, especially when the issuer is a relatively weak credit. In some markets, security can be identified using credit ratings. It is crucial to ensure the correct issue's rating is assessed.

Liquidity

Commercial paper is a relatively liquid instrument. It can usually be redeemed early via a sale in the secondary market. Its liquidity is therefore dependent on the size of the secondary market.

In practice, most investors will purchase commercial paper with a maturity to suit their requirements.

Yield

Most commercial paper is issued at a discount. Most investors hold paper to maturity, although it can be sold in the secondary market.

Suitability

Commercial paper is most useful in the following circumstances:

- ▶ when the investment period is known and the investor wants to hold the instrument to maturity;
- ▶ when the redemption point is not known, since it can be traded on;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments, particularly across non-bank counterparties;
- ▶ in smaller markets, as an alternative to bank deposits;
- ▶ to gain a rate advantage over bank deposits.

Asset-backed commercial paper

Core characteristics

Key features

Like standard commercial paper, asset-backed commercial paper (ABCP) is a short-term, unsecured promissory note.

Whereas standard commercial paper relies on the creditworthiness of the issuer to repay investors when the paper matures, ABCP is supported by specific assets. These assets are usually short-term receivables, such as mortgage, credit card and vehicle loan repayments.

Although there are differences, ABCP programmes are usually structured to be bankruptcy remote. This means that a special entity, or conduit, is usually established by the sponsor (typically a bank). The conduit issues commercial paper to buy receivables (or other assets) from one or more borrowers.

To protect the interests of investors, the conduit will put some credit enhancement in place. This should ensure the investors are repaid in the event of any loss in value of the conduit's assets.

Most programmes will also have some liquidity support, usually in the form of back-up lines from the sponsor bank. Like standard commercial paper, many conduits rely on rolling over some or all of their issuance to repay maturing paper. If the market conditions make this difficult, liquidity support will allow the conduit to repay investors.

Availability

Since 2007, ABCP has been less common than standard commercial paper, primarily because many weaker issuers have left the ABCP market.

Nature of the return

Like most commercial paper, ABCP is issued at a discount. On maturity, the issuer will then pay the paper's face value to the holder. The rate of return is determined by the difference in the two values and the term of issue. Rates tend to be slightly higher than standard commercial paper, as investors tend to be rewarded for the higher degree of complexity and the additional specialist credit monitoring.

Accessibility

Like standard commercial paper, ABCP is sold through dealer banks.

Main variants

There are two main types of ABCP programmes:

- ▶ **Single seller.** These programmes are backed by assets generated by a single institution. Single seller programmes tend to be limited to financial institutions and a small number of other companies (including car manufacturers). Only these types of companies are able to generate enough suitable assets for such a programme.
- ▶ **Multi-seller.** Multi-seller programmes are usually sponsored by a bank. The bank will establish a separately owned conduit. The conduit will issue commercial paper in its own name and then purchase assets from a variety of companies.

Benefits

Asset-backed

The core benefit of ABCP from the investor's perspective derives from the nature of the assets purchased by the conduit issuing the paper. The investor will want the conduit to invest in assets that can be readily converted into cash. For this reason, most conduits tend to invest in short-term trade receivables. To avoid unnecessary counterparty risk, the assets will tend to be high-volume assets, such as credit card receivables, that can be easily assessed for their creditworthiness.

Bankruptcy remoteness

A second way in which ABCP enhances security for the investor, is by structuring the conduit to be bankruptcy remote. Unlike standard commercial paper, where the issuer is the entity seeking to borrow funds, a conduit will be structured to be independent of the end borrower. This means that, even in the event of the bankruptcy of a borrower, the conduit should be able to repay any investors when the paper matures.

Potential problems

Counterparty risk

Although ABCP promises additional security over standard commercial paper, all investors should continue to manage counterparty risk carefully.

The investor should analyse the conduit's own counterparty risk management techniques. In a single-seller programme, the assets bought by the conduit will usually be receivables generated by one group of companies. As a result, the investor will be solely exposed to that group.

For a multi-seller programme, the investor should work to understand the conduit's approach to counterparty risk and to determine whether its limits are appropriate.

In either case, the investor should assess the creditworthiness of the conduit itself. This will require an understanding of the types of asset the conduit is permitted to purchase, the extent of credit enhancement and the degree of liquidity support.

The investor should also assess the degree of operational independence of the conduit from the sponsoring bank.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

The security of ABCP varies according to the programme. By being bankruptcy remote, it is designed to be relatively secure. Like many standard commercial paper issues, ABCP programmes are usually rated by one of the credit rating agencies. The credit rating will be determined by the nature and quality of the assets purchased by the conduit, the nature of any credit enhancement and the rating of any bank providing liquidity support.

The choice of custodian is also an important factor in the security of investment.

Liquidity

ABCP is a relatively liquid instrument. It can usually be redeemed early via a sale in the secondary market. Its liquidity is therefore dependent on the size of the secondary market.

In practice, most investors will purchase commercial paper with a maturity to suit their requirements.

Yield

Most commercial paper is issued at a discount. Most investors hold paper to maturity, although it can be sold in the secondary market.

Suitability

ABCP is most useful in the following circumstances:

- ▶ when the investment period is known and the investor wants to hold the instrument to maturity;
- ▶ when the investor wants to invest in commercial paper and benefit from additional security offered by asset-backed paper;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments, particularly across non-bank counterparty risk;
- ▶ in smaller markets, as an alternative to bank deposits.

Certificates of deposit

Core characteristics

Key features

Certificates of deposit (CDs) are bank-issued investment instruments. The certificate itself is recognition by the bank that the investor has deposited funds with it. In many ways, a CD is similar to a term deposit, as the bank is committed to repaying the principal plus interest on a fixed maturity date. From the investor's perspective, a CD is negotiable, meaning the instrument can be sold in the secondary market, allowing the principal plus accrued interest to be redeemed before maturity.

Availability

CDs are widely available in most local markets. They are issued with a range of alternative maturities, depending on the requirements of the issuing banks. They can be issued for terms ranging from under a month to over two years.

Nature of the return

In most cases, CDs pay a fixed return (coupon) on maturity. Longer-dated instruments (typically those with a maturity of over a year) may pay a variable rate of interest, with the rate fixed on an annual basis using a benchmark rate.

Accessibility

Investors can purchase CDs either at issue or in the secondary market.

- ▶ **Issue.** Issuing arrangements vary between banks. In some cases, physical certificates are still issued, although in most markets these have been dematerialised.
- ▶ **Secondary market.** In most countries, CDs can be traded in the secondary market.

Main variants

There are two main variants to the standard fixed rate CD:

- ▶ **Floating-rate CDs.** Some CDs, typically those with a maturity of over a year, are issued paying a floating interest rate return. Investors need to understand how the rate is set, how often it is changed, and decide whether or not to hedge the return.

- ▶ **Call features.** A small number of CDs are issued with a call feature. If exercised, the issuer would pay the principal plus any accrued interest to the investor. As a result, the investor would face a reinvestment risk.

Benefits

Bank issued

From the perspective of the investor, one of the key benefits of CDs is that they are issued by banks. As a result, they will be subjected to greater supervisory scrutiny than other, similar instruments issued by non-banks, such as commercial paper.

Counterparty risk

In addition, because the issuing bank will have a published credit rating, it is usually easy for the investor to assess relative creditworthiness. It is important to ensure that the rating applies to the entity that has issued the CD.

Commonly available

Another key advantage of CDs is that banks tend to issue them in their local market. As a result, they can be useful investment instruments for subsidiaries in countries where repatriation of cash is either difficult or not required.

Negotiable

In most cases, CDs are negotiable instruments. This allows investors to realise their investment prior to the maturity of the instrument. In many markets there is a highly liquid secondary market for CDs. However, investors should be wary of relying on the ability to sell a CD in the secondary market. Some markets are more liquid than others. In addition, the ability to sell in the secondary market is also dependent on the volume of CDs issued, which varies.

In most cases, the issuing bank may be willing to repurchase the CD at market value before its stated maturity, which contributes liquidity.

Bank relationship

By purchasing a CD from a bank, an investor is effectively placing cash on deposit with that bank for a predetermined period of time, providing significant benefit for the issuing bank. In contrast to time deposits, the investor can effectively withdraw the cash at any time (as long as the CD can be sold in the secondary market).

Potential problems

Minimum investment

The biggest problem for investors is the nature of the certificates themselves. Because of local regulations and the cost of issue, CDs are often issued with a large minimum denomination. In companies where a large pool of cash is concentrated to the centre, this may not be a problem. However, in companies where the pools of available cash are relatively small, investing in CDs may be impossible without breaching counterparty limits.

Calculation of return

If a CD is being sold in the secondary market, care is needed when calculating the return from the instrument. This is because CDs are typically sold on a yield-to-maturity basis. When comparing yields against an alternative investment, it is necessary to use a like-for-like methodology.

If market rates have increased since issue, there will be a small risk to the principal value if a CD is sold prior to maturity. The principal value will also be dependent on the credit risk of the issuer, although this will normally not change over the short life of a CD.

Tax

As with all instruments, investors need to assess whether any taxes are applied on investment returns.

Local market

A CD's liquidity is partially dependent on the maturity of the local market. Investors will want to assess the range of alternative investment instruments and the frequency of issue before investing in a CD. This will give an indication of the maturity of the market. This is particularly important if the investor wishes to sell the CD before maturity.

Administration costs

CDs have become dematerialised over recent years. Investors will need to incorporate the custodian costs in the costs of any transactions. For more information, see page 112.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

CDs are relatively secure instruments. This level of security will vary from bank to bank, and can be identified using credit ratings. It is crucial to ensure the correct entity's rating is assessed.

Liquidity

CDs are relatively liquid instruments. They can usually be redeemed early via a sale in the secondary market. Their liquidity is therefore dependent on the size of the secondary market.

Yield

Any interest is usually payable on maturity. Any investor selling a CD before maturity will earn a return, dependent on conditions, when sold in the secondary market.

Suitability

CDs are most useful in the following circumstances:

- ▶ when the investment period is known and the investor wants to hold the instrument to maturity;

- ▶ when the redemption point is not known, since liquidity can be achieved through a secondary market sale;
- ▶ (in the case of fixed-rate CDs) to generate a fixed return;
- ▶ as a means of rewarding members of the core banking group;
- ▶ as a counterparty risk management tool;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments;
- ▶ in smaller markets, as an alternative to bank deposits.

Government paper

Core characteristics

Key features

As part of their debt management policies, governments issue a variety of debt instruments with maturities ranging from a few days to a number of years. A number of terms are used to denote short-term government paper, including treasury bill. Most countries have a local language name for longer-term government paper, such as US Treasuries, UK gilts and French obligations assimilables du Trésor (OAT).

Availability

The availability of government-issued debt instruments depends on the policies of individual governments. Most governments operate some form of debt issuance programme. However, the maturity of the issued instruments will vary according to the government's demands.

Nature of the return

Investors earn a return on government paper in a variety of ways:

- ▶ **Through the coupon paid.** Some instruments are coupon bearing. This means the investor receives an interest payment on a regular basis. Coupon-bearing instruments tend to be issued for terms of a year or more. The interest may be fixed for the entire life of the investment or floating, with a periodic refixing.
- ▶ **Through the price movements in the principal value.** Most short-term government instruments are sold at a discount. The investor will purchase the instrument for a price below the face value and receive the face value on maturity. However, if rates have fallen since the instrument was issued, its price may be above par (the face value) in the secondary market. In this case, the higher coupon will compensate for the loss at maturity.
- ▶ **Through uplifts to the redemption value.** This can occur with index-linked issues.

Accessibility

Investors can purchase government-issued debt instruments either at issue or in the secondary market.

- ▶ **Issue.** Issuing arrangements vary from country to country. Typically, government paper is issued by the central bank or by the ministry of finance.
- ▶ **Secondary market.** Most countries have a secondary market for government instruments. These will normally be highly liquid markets, which allow investors to earn a return on the investment, without being required to hold it to maturity.

Main variants

In addition to bills and bonds issued by governments, other public sector debt instruments are available in a number of countries. Issuers include:

- ▶ **Central banks.** Some central banks issue very short-term instruments, often as a money supply management tool. Because of the reason for the issue, central banks primarily target banks as investors.
- ▶ **Local and state governments.** In some countries, local and state governments can issue their own short-term and longer-term debt instruments. Other public sector bodies may also issue debt instruments. Investors will want to understand whether these instruments are guaranteed by the central government.

Benefits

Availability

Most governments issue some form of debt instrument. In most cases, short-term paper (with an initial maturity of under a year) is widely available. Where governments rely on short-term debt to finance their own borrowing, they will tend to issue new debt regularly to maintain the market. Long-term government paper that is nearing the end of its life effectively becomes short-term paper.

Liquidity

Another feature of short-term government paper is that it is usually widely available in the local secondary market. In effect, this means that investors will usually be able to realise their investment relatively easily, simply by selling in the secondary market.

Portfolio management

Investment in government paper allows treasury to adjust the duration of the portfolio as a whole. In particular, investors will be able to select instruments with maturities that match known liquidity requirements. In most government paper markets, instruments with ultra-long maturities of up to 30 years (or even 50) are available.

Counterparty risk management

In most countries, the government ranks as one of the most stable counterparties. Purchasing government paper usually comes with a government guarantee, enhancing the security of the investment.

In countries where companies find repatriating funds to a central treasury difficult, some investment in government paper will diversify the counterparty risk away from banks.

Potential problems

Low return

Government-issued instruments are commonly characterised by a relatively low rate of return, relative to other instruments with a similar maturity, because of the low credit risk. Investors in government paper will usually be seeking the combination of security and liquidity these instruments provide.

Minimum investment

Treasurers should be aware of any minimum investment requirement. This will be determined by the lowest denomination of issued paper.

Administration costs

Government paper has become increasingly dematerialised over recent years. Investors will need to incorporate the clearing house costs in the costs of any transactions. If the paper is not dematerialised, custodian costs must be met.

Counterparty risk

Although governments are usually stable counterparties, investors should always be wary of two factors:

- ▶ **Country risk.** From time to time, governments encounter financial problems. Although it is very rare, investors should be aware of the risk of government default.
- ▶ **Identity of the issuer.** Investors will need to take care to establish the precise identity of the issuer. If the issuer is not the central government, the nature of any government guarantee needs to be clearly understood.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

Compared with other instruments, government paper is very secure. The level of security will vary according to the issuer of the paper. Published sovereign credit ratings provide a good indication of the relative creditworthiness of individual government issuers.

Liquidity

Government paper is relatively liquid. The liquidity of each instrument depends on the frequency of its issue and the size of the local secondary market.

Yield

Government-issued instruments offer relatively low rates of return.

Suitability

Government paper is most useful in the following circumstances:

- ▶ when a company wants to safeguard the security of the investment principal;
- ▶ as an alternative to bank deposits in smaller markets;
- ▶ as a counterparty risk management tool;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments;
- ▶ when the redemption point is certain.

Floating rate notes

Core characteristics

Key features

Technically, most floating rate notes (FRNs) are not short-term investment instruments. FRNs are typically longer-term bonds, with maturities in excess of a year. They pay interest (a coupon) on a regular basis. The coupon varies in value and is set (fixed) at the beginning of the interest period.

Availability

The availability of FRNs varies between local markets and according to prevailing market conditions.

Nature of the return

Investors in FRNs receive a regular interest (coupon) payment, typically every three or six months. The rate of interest is refixed at the beginning of every interest period. The rate is usually determined with reference to a money market interest rate (e.g. Euribor), although any indicator can be selected as the benchmark rate.

The FRN will usually be issued with a fixed face value and will be sold for this price on the refixing date.

Investors only recoup the full principal if the FRN matures. Dependent on changes in the credit standing of the issuer, they may also do so if they sell the FRN in the secondary market at a refixing date. If the FRN is sold in between refixings, its value will vary according to any changes in the reference rate between the fixing date and the transaction date.

Accessibility

FRNs are sold via dealer banks, both at issue and in the secondary market. The liquidity of the secondary market is dependent on the activities of the dealer banks.

Main variants

There are two main variants:

- ▶ **Reference rate.** Although most FRNs are referenced to a money market rate, such as Euribor or LIBOR, any published rate or index can be used.
- ▶ **Maturity date.** Although most FRNs are medium to long-term bonds, there are some variations. A few FRNs are issued with maturities of up to one year. Others are issued with no maturity date. These are known as perpetual FRNs. Investors can only redeem the principal by selling the instrument in the secondary market.

Benefits

Floating rate

Because the coupon rate is refixed at the beginning of every interest period, FRNs do not expose the investor to as much interest rate risk as a fixed rate investment. That said, the longer the individual interest period (the period between interest rate fixings), the greater the exposure to adverse movements in the market interest rate.

More importantly, the regular interest rate fixings protect the principal of the investment from some of the effects of market volatility. Again, the greater the interval between rate fixings, the higher is the exposure to interest rate volatility; the value of the FRN fluctuates according to the difference between the fixing rate and the current market interest rate.

Negotiability

FRNs are negotiable. This means an investor can sell the instrument in the secondary market to realise the investment. The investor's ability to do so depends on the state of the market.

Counterparty risk

FRNs can be issued by both banks and non-banks. In most cases, the issuer will have a published credit rating, making it relatively easy for the investor to assess relative creditworthiness. It is important to ensure that the rating applies to the entity that has issued the FRN. For example, a subsidiary may not have the same rating as its parent, although any inter-company guarantees or support will be evident from the credit research process.

Most FRNs will be listed on an official exchange and therefore will have to comply with the relevant listing rules. Typically, these require an initial prospectus covering the terms of the notes and providing some details about the issuer. There will be ongoing requirements to file accounts annually. For these reasons, information to assist in the credit analysis process should be readily available.

Potential problems

Interest calculation

There are two elements when calculating the return from the investment:

- ▶ **The reference interest rate.** In most cases, a money market rate is used. If some other rate or index is used as the reference rate, the investor must understand the nature of the investment's exposure to changes in market conditions.
- ▶ **An additional margin.** In addition to the reference rate itself, the investor will earn a margin. This will be determined by a range of factors, including the creditworthiness of the issuing counterparty and the relative liquidity of the local market. The investor will need to ensure the additional margin reflects any additional risk assumed.

Market risk

Whatever reference rate is used, investors will be exposed to a certain degree of interest rate risk. This will affect the regular interest payments. In addition, if the FRN is sold between interest rate fixings, the value of the invested principal may also be affected.

Tax

As with all instruments, investors need to assess whether any taxes are applied on investment returns. In particular, investors should be aware that there may be a difference in the tax treatment of coupon income and any capital gain.

Secondary market

The liquidity of the instrument is dependent on the state of the secondary market. Investors may not be able to realise their principal investment immediately, giving rise to a liquidity risk.

Counterparty risk

Although the interest rates are reset on a relatively short-term basis, the final maturity of an FRN will normally be medium term, perhaps out to ten years. Any changes in credit risk of the counterparty and its credit margin can have a material effect on the market value of the FRN. FRNs are issued with a relatively high minimum denomination (this will vary between markets). This means the instruments are only suitable for larger investors, who can ensure adequate diversification of credit risk.

Operational costs

There are some administrative costs associated with investing in FRNs. The investor will need to appoint a custodian bank, because the notes are held with securities depositories, such as Euroclear. For more information, see page 112.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

An FRN's security is determined by the creditworthiness of the issuer. The use of credit ratings will help to assess the relative creditworthiness. It is crucial to ensure the correct entity's rating is assessed. However, because FRNs are usually longer-term instruments, investors may like to build in their own assessments of suitability, although many investors do rely on credit ratings when assessing counterparty risk.

Liquidity

FRNs are relatively liquid instruments. They can usually be redeemed before maturity via a sale in the secondary market. Their liquidity is therefore dependent on the size of the secondary market, which is determined partly by the activities of local dealer banks.

Yield

The return available from FRNs will depend on the credit risk assumed by the investor, as well as the final maturity of the note.

Interest is paid regularly, usually at three or six-month intervals.

Suitability

FRNs are most useful in the following circumstances:

- ▶ when funds are available to invest for longer than the immediate short term;
- ▶ when treasury is unlikely to need to redeem the funds at short notice;
- ▶ to protect against fluctuations in very short-term interest rates;
- ▶ when treasury is seeking to earn an additional return on non-core cash by extending the maturity of its investments;
- ▶ as a counterparty risk management tool;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments.

Repos

Core characteristics

Key features

A repo (repurchase agreement) is a two-legged agreement involving the sale and repurchase of a security. Repos are usually arranged with a government debt instrument as security, but any mutually agreed instrument can be used.

Technically, a cash investor would enter into a reverse repo agreement. The investor would purchase a security from a counterparty (typically a bank) and then sell the security back to the bank on a predetermined date for the principal amount plus interest.

Availability

Repos are widely available in most local markets. Historically, they have primarily been used as investment instruments by financial institutions, although there is now a growing trend towards large companies using them as a secured investment product. They can be arranged with maturities ranging from overnight upwards. Rolling overnight repos can be used to allow same-day access to the cash deposited. For tax reasons, few have maturities of over a year.

Nature of the return

Interest is usually paid on the maturity of the agreement. The repo seller (usually the bank) pays an interest rate, called the repo rate, when buying back the securities. Technically, the investor is buying the security and agreeing to sell it back to the borrower at a higher price.

Accessibility

Investors arrange repos with counterparty banks on an over-the-counter, bilateral or tri-party (see tri-party repos, below) basis. In most cases, companies will enter into a legal agreement with each counterparty bank. This will act as the framework for all transactions with that bank and is relatively standardised in the form of a Global Master Repurchase Agreement (GMRA). A Collateral Management Service Agreement (CMSA) is also required with each custodian or clearing organisation that will hold the collateral. For tri-party repos the custodian account is opened with the tri-party agent (TPA) to which the securities will be credited. The detail of each agreement will then be negotiated on a case-by-case basis.

Main variants

Open repos

Most repos have a fixed maturity date, although it is possible to arrange open repos. These have no maturity date. Instead, both parties have the right to terminate the agreement on a daily basis.

Tri-party repos

With a tri-party repo, the fundamental transaction is the same, with the addition of a TPA acting as an intermediary. The TPA will also value the securities on a continuous basis and manage all collateral calls on behalf of the investor. It should be noted that, typically, TPA fees are paid for by the collateral provider and not by the investor.

Benefits

Flexibility

The main benefit derives from the fact that repos are negotiated between two parties. As a result, the investor can arrange a repo to match the specific investment requirement. In particular, a repo's maturity can range from overnight to up to a year. Theoretically, repos can be arranged for any period, although tax rules typically limit them to terms of under a year. This flexibility means the investor can invest surplus cash until the cash is needed again.

Standard terms

Repo transactions tend to be governed by a GMRA drawn up by the US-based Securities Industry and Financial Markets Association and the Swiss-based International Capital Market Association. The GMRA provides a template for contracts to be signed by the company and individual counterparty banks, meaning treasury need not spend much time negotiating contracts, and all contracts cover the same issues.

Counterparty risk management

Because the investor receives possession of a security in return for the cash, it is in effect two-name paper. The investor has the added protection that it can sell the security if the counterparty bank defaults on its obligation on maturity. In addition to the credit risk of the counterparty bank, the repo investor needs to be satisfied with the credit quality of the securities being held as collateral. If riskier security is being provided, the investor may insist on paying less than market value, by deducting a discount, called the initial margin (also called a haircut). Poorer-quality securities should attract a larger haircut, and vice-versa. Initial margin is agreed on a trade-by-trade basis.

Portfolio management

Repos are useful tools that help treasurers manage their short-term investment portfolios. As discussed, they can be arranged to match short-term cash flow requirements. They also allow the treasury to spread the risk across a larger range of alternative instruments.

Potential problems

Interest calculation

Although the investor will earn the repo rate on the transaction, there are a number of other details that need to be agreed before the full return can be calculated. As with all transactions, the day-count convention must be understood.

Tax

As with all instruments, investors need to assess whether any taxes are applied on investment returns. Because repos involve the sale of securities, they can attract withholding tax.

Operational issues

There are a number of operational issues that impose a cost on the investment:

- ▶ **Settlement risk.** The settlement risk inherent in both legs of the repo transaction must be managed carefully. Companies will need to appoint a custodian bank to manage the settlement process and to fulfil the administrative tasks, including daily valuation.
- ▶ **Legal terms.** Although there are standard legal agreements available to guide initial contract negotiations, the contracts will still need to be agreed. There is a risk that companies agree different contract terms with different counterparty banks. This would make counterparty risk more difficult to manage.
- ▶ **Administration.** Conceptually, a repo is much the same as a bank deposit, but the security given does introduce an administrative burden and added complexity – the need for a custodian, the need to value the collateral and to adjust the amounts being held by the custodian continuously.

Local market

Repos are not available to companies in all jurisdictions. Treasurers should take care to ensure the necessary infrastructure is available to process repo transactions, to avoid being exposed to unnecessary settlement risk.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

The investor must decide whether it is going to invest in repos on a bilateral or tripartite basis.

Security

Repos are relatively secure instruments, although the level of security is determined by the quality of the asset offered in exchange for the investment. The investor should scrutinise the characteristics of the underlying asset, including the creditworthiness of its issuer, before agreeing a repo transaction. As with other investments, it is crucial to ensure the correct issuer and the appropriate credit rating are assessed. A collateral liquidation plan should be developed upfront, in

case a counterparty defaults. Even so, the primary risk is that of the borrowing counterparty. Investors will want to avoid the 'worst counterparty, best collateral' scenario.

The choice of custodian is also an important factor in the security of investment.

Liquidity

Repos are relatively liquid instruments, although this varies from market to market. Because they are arranged over-the-counter with a maturity to suit both parties, early redemption is not usually required. When necessary, it is possible to arrange an early redemption by agreeing an equal and opposite repo transaction.

Yield

Interest is usually paid on the repo's maturity. The level of the return is usually dependent on market interest rates and the quality of securities held as collateral.

Suitability

Repos are most useful in the following circumstances:

- ▶ when the amount of funds to be invested is relatively large. Overnight repos in the UK typically require a minimum investment size of between GBP 20 and 50 million, depending on the counterparty;
- ▶ when the investment period is known and the investor wants to hold the instrument to maturity;
- ▶ if the investor wants enhanced security;
- ▶ as a counterparty risk management tool;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments;
- ▶ as an alternative to bank deposits.

Money market funds

Core characteristics

Key features

Money market funds (MMFs) are a form of mutual investment fund. As the name implies, MMFs invest in a range of money market instruments, including those discussed in this book.

To invest in an MMF, an investor has to buy shares in the fund company. By doing so, the investor has access to the returns offered by the full range of instruments that the fund buys.

Most MMFs are domiciled in offshore locations for tax purposes.

Availability

MMFs are widely available in most local markets and are also provided out of a variety of tax-efficient locations.

In the USA, MMFs, as defined by the 2a-7 rules, are a popular location for short-term surplus cash. MMFs following similar rules are also available in Europe. International MMFs typically have an AAA rating from one or more rating agencies. This rating imposes a slightly stricter requirement on the manager than the US 2a-7 rules.

Nature of the return

When making an investment in a mutual fund, an investor technically buys a share in the fund company. Investors earn a return, a dividend, on an MMF in one of two ways:

- ▶ **Constant net asset value (CNAV).** In these funds, the value of the investment unit has a fixed face value. The fund's income is accrued daily. The investor receives cash or can purchase new units with the income. For administrative convenience, the daily accrual is normally allowed to build up and be paid monthly.
- ▶ **Variable net asset value (VNAV).** In these funds, income is again accrued daily. The investor benefits as the value of each investment unit increases to reflect that increase.

As part of its MMF reforms, the EU is legislating to introduce a third method of earning a return, the low volatility net asset value (LVNAV). This is viewed by legislators as an alternative to CNAV funds and is expected to apply to non-government funds.

Accessibility

Investors can usually access the funds directly. This investment process can be in the form of an automated sweep, or via either proprietary or fund-independent web portals. In some cases, investors access funds through money brokers.

Main variants

The use of the term 'money market fund' varies significantly, especially between different markets, and has been used to describe funds with significantly different characteristics such as liquidity funds, which invest very short term (with a weighted average maturity (WAM) less than about 90 days), and funds with extended terms, referred to as MMFplus or enhanced MMFs.

To clarify the terminology used when describing MMFs, the European Securities and Markets Authority (ESMA) has designated two categories of money market fund: a short-term money market fund (STMMF) and a money market fund (MMF). The main differences between the two designations are listed below:

| | STMMF | MMF |
|---|--|--|
| Credit quality of portfolio instruments | Limited to top two categories of credit rating | May invest in sovereign issuance of at least investment grade |
| Maximum redemption period | 397 days | Two years; the maximum time until the next interest fixing is 397 days |
| Weighted average maturity (WAM) | Up to 60 days | Up to six months |
| Weighted average life (WAL) | Up to 120 days | Up to 12 months |
| Net asset value (NAV) | Constant and fluctuating both permitted | Must have fluctuating NAV |

Since the release of these designations, the ESMA has released guidance that states that any downgrade of a portfolio instrument, should not require a mechanistic sale of that instrument. Instead, the asset manager should “undertake a new assessment of the credit quality of the money market instrument to ensure it continues to be of high quality.” In the USA, the SEC has similarly removed the use of credit ratings as a mark of the credit quality of instruments held by 2a-7 funds. Instead, “a money market fund is limited to investing in a security only if the fund determines that the security presents minimal credit risks after analyzing certain prescribed factors.”

Enhanced MMFs are outside these guidelines so should not be referred to as MMFs in markets regulated by ESMA.

Mutual funds are common in many local markets. For example, a société d'investissement à capital variable is a popular open-ended mutual investment fund used in France. Fonds commun de placement are unit trust-style funds also used in France. Similar short-term funds are available in local markets. Investors will need to understand how fund managers purchase assets, what restrictions apply when determining the portfolio and what safeguards, if any, exist for investors. Some funds are rated, although the ratings cannot usually be compared to those issued to MMFs, as different criteria are used.

Bond funds are also available in a number of locations. As their name implies, these tend to invest in longer-dated instruments. This offers a higher potential return, although at a greater risk to the security of the principal than money market funds.

Benefits

Diversified risk

Any investment in an MMF represents a diversified risk, as the fund itself invests in a wide range of alternative instruments.

There are two key advantages for most investors:

- ▶ **Diversification at minimal operational cost.** First, this diversification of risk comes at minimal operational cost to the investor. In order to invest in a portfolio of assets similar to those selected by the fund's manager, an investor would have to assess a large number of alternative assets to select the appropriate asset mix. Once selected, there would be custody arrangements to deal with, and the value and credit standing of these assets would need to be tracked on a regular basis.

These activities would impose a significant back office cost on any group treasury. Smaller treasury departments would be unable to justify these costs.

Instead, MMFs allow smaller treasury departments to invest in the range of assets they would choose, if they had the expertise available. The fees charged by the funds are much lower than any back office costs might be. In addition, the investors benefit from access to professional fund managers' expertise.

- ▶ **Minimal investment amounts.** Second, by aggregating investments, MMFs allow investors to diversify risk even if they have only relatively small amounts to invest. In order to replicate the diversity offered by MMFs, investors would also need to have a large pool of cash to invest. Although MMFs have a minimum investment amount, this is comparable to the minimum investment in an individual instrument.

Safety

MMFs have proved to be secure short-term investment instruments. Two factors help investors when making their decisions, although, as with any other investment, the investor in an MMF assumes the risk of the investment:

Regulation

In some locations, MMFs are subject to regulation aimed at protecting investors. For example, the 2a-7 rules in the USA place restrictions on the type and maturity of instruments in which an MMF can invest. In the EU, any collective undertaking which wants to call itself a money market fund must comply with guidelines established by the ESMA.

In other locations, the regulation of MMFs is less formalised and they may be subject to similar rules as apply to other fund managers. In these cases, investors should take care to understand the level of regulation and supervision to which a chosen fund is subject.

There is also some self-regulation available to members of the International Money Market Association (IMMFA). IMMFA membership requires adherence to its Code of Practice. This incorporates a number of requirements similar to those under US 2a-7 rules, summarised below:

| | IMMFA | 2a-7 |
|--|----------|----------|
| Maximum weighted average life (WAL) | 120 days | 120 days |
| Maximum weighted average maturity (WAM) | 60 days | 60 days |
| Minimum proportion of assets convertible into cash within one day | 10% | 10% |
| Minimum proportion of assets convertible into cash within one week | 20% | 30% |

Ratings

Some funds are also rated by one or more of the credit rating agencies. The three largest agencies have each developed their own special rating scale and criteria for MMFs. If a fund is rated, the rating will usually appear with a suffix to indicate it is a fund rating; this varies according to the rating agency.

Investors should take care to understand each agency's approach to MMF rating. The agencies publish their rating criteria; in order to attract a particular rating, funds are restricted to investing in specific instruments and for maximum defined durations.

In addition, the rating agency will examine the fund manager's operational effectiveness and receive statements of assets as frequently as weekly, in order to check that the investment

policy is being complied with. Although MMFs allow investors to diversify risk, this does assume the fund manager is able to invest funds effectively and to manage those funds once invested. An operational failure by the fund manager could also affect the security of the invested principal.

Accessibility

In most cases, MMFs allow same-day deposits and withdrawals, so for the investor they are highly liquid.

It is possible for investors to automate a daily balance sweep to some MMFs.

Potential problems

Knowing the rate of interest

There is no published expected return, as the fund managers will be unable to calculate this figure until after the funds have been reinvested. This contrasts with competing investments, such as bank deposits and money market instruments. Returns can be estimated relatively accurately, though, because the volatility of return, especially over the short term, is low. Funds will often benchmark their yield against seven-day LIBOR and will be able to exceed this through holding slightly longer-term investments.

In some circumstances, especially when market rates are increasing, the duration of the fund's portfolio may mean the fund will under-perform when compared to the overnight market. When market rates are falling, the reverse is generally the case.

Nature of counterparty risk

One reason for investing in an MMF is to manage counterparty risk at a relatively low cost. However, because of the nature of the funds, it can be difficult for a treasury to manage its own counterparty risk completely.

Investing in more than one fund may not solve the problem, as these funds are often forced to purchase the same instruments (especially government paper and some paper issued by financial institutions) in certain market conditions. By investing in more than one fund, a company may paradoxically be more exposed to some counterparty risks than if it had only invested in one. However, the company would be less exposed to operational risk within the fund.

Where a company maintains a portfolio of short-term investments, in addition to the money fund, it may be over-exposed to a particular counterparty if the fund also invests in instruments issued by it. A number of fund managers have responded to this concern by providing more information about their funds' portfolios.

Finally, a company should try to understand the nature of other investors with the fund. No company would want its investment to represent a significant proportion of the total assets under management with the fund, since this could make a rapid redemption of funds difficult. Equally, if other investors hold particularly large holdings, any large withdrawals by them could destabilise the fund.

Restrictions on investment

One of the problems with MMFs is that not all funds are available to all investors. Local rules may prohibit offshore funds being marketed to local investors. Undertakings for the Collective Investment in Transferable Securities (UCITS) legislation has been used by European MMFs to market to investors within the EU. In some cases, regulations that prohibit entities investing in shares can prevent investment in MMFs.

Early cut-off

Because fund managers need knowledge of the available investments, most funds apply an early cut-off time with respect to their local market (USD-denominated funds have a later cut-off time than EUR funds). There is some difference in the times applied by different fund managers.

Tax and accounting

MMFs technically require investors to buy shares in the fund company. This can have complex tax and accounting implications, which need to be understood by investors, but for the most part they are treated as cash deposits earning interest. Specialist advice should be sought to confirm this treatment, especially in circumstances where liquidity fees or redemption gates are applied.

Liquidity fees and redemption gates

A series of reforms to US MMF regulations could result in a fund applying liquidity fees (a charge on a redemption from a fund) or a redemption gate (a restriction on redemptions) to prevent a run on that fund during periods of market stress. A fund's management board always has the discretion not to apply fees or gates and they only apply if the proportion of a fund's holdings of assets that can be converted into cash within a week falls below 30%. If the weekly liquidity falls below 10%, the fund is required to impose liquidity fees, unless the board decides not to.

Proposed EU reforms include similar rules for CNAV funds and the newly designated LVNAV funds.

Assessment

As with all instruments, this assessment of investment suitability is intended as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

MMFs are relatively secure investments. The level of security will vary, depending on the nature of the fund, especially its investment rules. Many funds are run so as to ensure an AAA rating. When available, published credit ratings provide a good indication of the relative counterparty risk. The level of fund supervision is also an important determinant of counterparty risk. Treasurers should be aware that where a fund is VNAV or where redemption fees could be applied, there is an implied risk to principal, which needs to be understood prior to investment.

Liquidity

MMFs are highly liquid. In most cases, investors can choose to redeem their investment without giving notice (although, in practice, investors will want to give as much prior notice of a redemption decision as possible). MMFs can be used as a location for overnight funds. To meet redemption requests, a proportion of an MMF's assets are invested on an overnight basis. Funds will require a minimum amount to be invested. During periods of market illiquidity, funds may impose redemption gates, restricting investors' immediate access to principal.

Yield

MMFs offer returns based on the performance of the assets they buy. Because funds can purchase some longer-dated instruments, the overnight return is often better than an overnight return on an individual instrument. This is more likely when market rates are falling. The fund manager will charge a fee of around 10 to 15 basis points per annum; this varies between funds and depends on the size of the investment. Large users of a fund can often negotiate a rebate of fees.

Suitability

MMFs are most useful in the following circumstances:

- ▶ if a group concentrates cash using a liquidity management structure and there is a need to invest short-term surpluses overnight;
- ▶ to invest surplus balances, especially when current accounts are not interest bearing;
- ▶ when exchange controls require local subsidiaries to invest locally, and alternative short-term instruments expose the entities to unacceptable levels of risk;
- ▶ as a destination for overnight investment when higher-yielding instruments cannot be accessed;
- ▶ as a tool to maintain short-term liquidity, especially where the cash flow forecast can be inaccurate;
- ▶ as part of the pattern of managing the duration of the group's investment portfolio within acceptable limits;
- ▶ as a counterparty risk management tool that delivers diversification.

Money market funds: the next chapter – enter Asia and China

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US and European MMFs: a brief history

The institutional MMF industry in the USA began primarily due to post-Depression laws (specifically Regulation Q), which prohibited the payment of interest on corporate demand deposits. These laws were introduced to prevent large corporations leveraging their bank relationships to get above-market interest pay-outs on deposits, which otherwise would have put pressure on the banks' profitability capital position. These laws, however, did not in any way change corporate treasurers' desire to earn yield on their cash, and other products were introduced to fill the void.

One of these products was the MMF. The primary function of a MMF was to maintain a constant NAV of USD 1 thus providing stability for a corporate treasurer while still paying dividends. The Investment Company Act of 1940 section 2a-7 sought to limit the risks associated with MMFs. Primarily this is done by: limiting the percentage a portfolio manager can invest in any one security; limiting the average maturity dates both of the individual securities purchased by the fund and of the portfolio as a whole; and, determining how investments should be accounted for. The US MMF industry became the largest in the world, with approximately USD 2.7 trillion in assets, due to client demand and the transparency of the governing law. While the US market has been materially transformed due to the recent money market reform rules, causing a significant shift in assets from Prime funds to government funds, overall assets have remained fairly stable.

Established in the 1980s, the European MMF industry was generally shaped by very different fundamentals from the US MMF industry, although the French market grew, as in the USA, in response to rules preventing paying interest on deposits. In the rest of Western Europe, the initial driver of the industry was to service offshore subsidiaries of US corporations. Today, the AAA-rated constant net asset value industry is primarily centred on UCITS funds domiciled in Luxembourg and Ireland with, historically, very similar regulations to the US 2a-7 rules, as well as a large domestic market still operating in France. These funds are generally managed in a conservative manner and attempt to achieve a constant NAV. Total European money fund assets totalled around USD 1.2 trillion at the end of 2016, of which USD 627 billion were AAA-rated CNAV funds that are members of the industry body, the IMMFA. The EU is due to implement new MMFA regulations in 2018-19. Just as in the USA, these new EU regulations have been designed to provide greater consistency and security for investors. It should be noted, however, that there are some key differences between the US and the EU approaches, which are covered elsewhere in this guide.

There are similarities between the US and EU MMF markets. Both have retail and institutional participants, are governed by a clear set of rules and have grown considerably

in size. Furthermore, they focus on the same goals of capital preservation, daily liquidity, diversification and yield.

A shift east – Asia

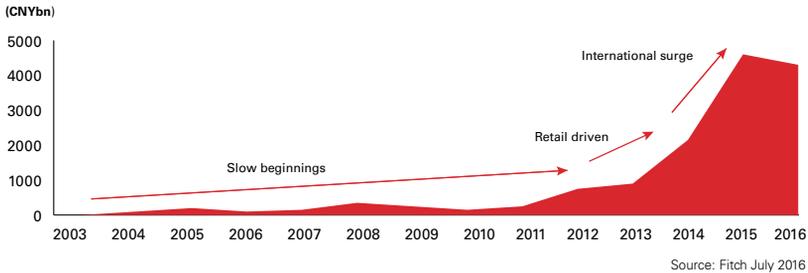
The Asian MMF industry is still in its infancy, having only begun in the early years of the new millennium, but it has already grown significantly. As in Europe, the Asian market initially developed to support the expansion of US and EMEA subsidiaries operating in Asia. Singapore and, to a lesser extent, Hong Kong have emerged as regional and international treasury centres for US and EMEA multinational corporations (MNCs), as well as becoming large financial centres in their own right. This has led to significant demand for USD money market instruments, in addition to the larger developed Asian-based currencies such as AUD, SGD and HKD. The Asian MMF industry has met the needs of MNCs primarily by distributing European-based UCITS products in the region. However, while these funds may be based in Europe, increasingly the fund managers, credit teams and the back offices are located in-country. This means decision-makers are increasingly present in Asia, reducing the need to revert to head office for every investment decision.

Another component of the Asian market is the emergence of local or in-country funds. One of the primary reasons for this is that regulatory requirements dictate that funds be domiciled in-country in order to be marketed to retail clients or certain regulated industries such as insurance companies. As MMFs become increasingly accepted at the retail level, the expectation is that there will be growth in the local funds and, in some markets, UCITS funds will be registered locally. This will be especially true in India in order to reach the growing retail and in-country corporate markets, and in Hong Kong both to penetrate the large insurance segment and to service China's offshore state-owned enterprises. As other Asian economies grow and cash surpluses become larger, the expectation is that more local funds will emerge in countries including Malaysia and Indonesia.

A shift east – China

The largest and most important money market in Asia is China. The first MMFs were launched as recently as 2004, but it is already home to the largest MMF in the world (Yu'e Bao at USD 166 billion) and, after the USA, is the second largest MMF country of domicile at USD 657 billion. Assets have more than doubled in the last few years and are ten times larger than three years ago. This has been driven primarily by four factors: the unofficial limiting of the rates Chinese banks can pay on deposits; the increased trapped cash due to official and unofficial capital controls; institutional demand increasing materially following the recent volatility in the stock market and treasurers looking for a safer haven for cash; and, The growth of Yu'e Bao and other funds using technology to tap both viral growth rates and new sources of cash previously out of reach of the MMF market. Overall the Chinese market is split about 60% institutional and 40% retail.

Development of Chinese MMFs



Key Features of the MMF Industry in China

There are many differences between the Chinese MMF industry and its broadly consistent US and European peers. The first is its focus on yield as being paramount in the choice of fund, which is especially true in the retail and Chinese corporate/institutional space. In comparison, MNC subsidiaries tend to have a more traditional weighted approach across all factors of capital preservation, daily liquidity, diversification and yield.

It is important to note that only Chinese investors are allowed to buy Chinese MMFs and all MMFs are currently offered by Chinese fund houses only. While several of the largest fund houses are joint ventures (JVs) between the large US and European fund companies and a local institution, the local company must have the majority/controlling stake. It is should also be noted that, in general, Chinese MMFs are not rated. The rating agencies have limited footprint in China and are sometimes subject to JV status as well. Moreover, ratings are not considered as relevant by the retail and local corporate/intuitional market, whose focus is on yield. However, MNC investors, consistent with the approach of their offshore head offices, still require ratings. There are just four rated MMFs in China noted below with their JV partners.

- ▶ HSBC Jintrust Money Market Fund (HSBC)
- ▶ CIFM Money Market Fund (JP Morgan)
- ▶ Harvest Prime Liquidity Money Market Fund (Deutsche Bank)
- ▶ CIFM Cash Liquidity Fund (JP Morgan)

MMFs in China typically have a T+1 settlement date and all dividends/distributions are exempt from withholding taxes (currently 25% on bank interest). In general, management fees tend to run higher than their US/European counterparts, in the 30–40 basis points range. The majority of the distribution is done via banks or the asset managers' own sales efforts. There are no offshore portals currently offering China funds. Interestingly, despite the significant size of the market in China, adoption rates of the product are low when

compared to the USA or EU. For example, in the USA and Europe, about 10–20% of corporate cash is held with MMFs compared with 80–90% in bank deposits. In China, the amount placed with MMFs comprises less than 5% of the amounts held in bank deposits. Another interesting fact is historically there were no investor concentration rules governing the industry so many funds had only one or two investors who could make up considerably more than half the fund. This would not be allowed under 2a-7 or UCITS rules due to liquidity concerns.

New rules and other trends to watch

Due to the rapid growth in the money market space and concerns about the safety of some of the funds, China issued new draft guidelines to govern the industry in March 2017. The rules primarily focus on limiting investor concentration, reducing the WAM/WAL, providing concentration limits on riskier investments, improving disclosure requirements and outlining when amortised cost or mark-to-market accounting should be used. These restrictions are considered as a good first step, but fall far short of the 2a-7 and European MMF regulations. More work will need to be done to ensure investor protection from sudden liquidity issues with funds due to losses or large withdrawals by significant investors. However, the rules will have a material impact on some funds that have only a few large shareholders with tailored investment policies. In April 2017, the China Securities Regulatory Commission stopped the approval of any new MMFs. It wants to ensure the new guidelines are fully issued and adopted by the 229 funds already live, prior to approving any new funds.

As the MMF industry matures in China, the expectation is that the market will converge with international conventions. Funds are advocating a move to T+0, for example, and the expectation is that more funds will be rated in the future. Due to the new rules, there is also the potential for industry consolidation and some fund closures. Third-party portals could become a factor, as could the disruption to the traditional bank distribution model by Fintech. Many fund houses are also hoping in the future to be allowed to launch MMFs out of their wholly foreign-owned enterprise entities.

However, the biggest change could come from higher adoption rates within both the retail and institutional segments that could materially increase the size of the market. China has over USD 13 trillion in deposits held by the listed banks. If the split between bank deposits and MMFs moved closer to the 10–20% levels seen in the developed markets, China could soon see itself as the largest player globally in this space.

Derivatives

Core characteristics

Key features

A derivative is an instrument whose value is determined by another financial instrument. Fund managers and other traders often write derivatives to speculate in the market.

When investing working capital, companies are more likely to hold a derivative to hedge a particular position, rather than as an investment in its own right. From an investment perspective, a derivative is most likely to be used to provide a guaranteed minimum value for the investment. Derivatives can be used to lock into a set interest rate or exchange rate, or to guarantee a minimum interest rate or a minimum exchange rate.

Availability

Most derivatives transactions are arranged on an over-the-counter-basis between an investor and a counterparty bank. The price will be determined at the time of negotiation. An investor can arrange a derivative transaction with any counterparty and is not tied to the issuer of the underlying instrument.

A small number of instruments, primarily futures and options, are traded on exchanges. These are available for standard terms. The price will be publicly quoted.

Nature of the return

Unlike other short-term investment instruments, derivatives will be used by the investor to protect either the value of the principal or the value of any interest payments. Interest rate derivatives can be used to provide a guaranteed minimum investment return. Currency derivatives can be used to manage any foreign exchange transaction risk.

Accessibility

Over-the-counter transactions are arranged on a bilateral basis between the investor and the arranging bank. In most cases, the investor will have negotiated an International Swaps and Derivatives Association (ISDA) agreement with the counterparty bank. This will set out the main terms and conditions covering all derivatives trades, leaving only the detail (term, amount and

currency) on each trade to be finalised each time.

Exchange-traded derivatives are accessed through brokers, typically banks.

Main variants

There are four main types of derivative transactions – swap, forward, option and future – often referred to as plain vanilla. In all cases, the principal amounts are not exchanged. Any payments between the investor and the counterparty bank will be calculated on a pre-agreed notional principal amount.

Swap

Swaps are available to hedge both currency and interest rate risk:

- ▶ **Interest rate swap.** An interest rate swap allows an investor to exchange two sets of cash flows associated with two investment instruments. Typically, the investor will swap a set of floating rate cash flows for fixed payments, or vice-versa. In some cases, the investor will swap one set of floating rate cash flows for a set calculated on a different basis.
- ▶ **Currency swap.** A currency swap is similar to an interest rate swap, except that the two parties will exchange cash flows denominated in different currencies. The currency cash flows may be any combination of fixed and floating rate payments.

Forward

Forward agreements are available to hedge both currency and interest rate risk:

- ▶ **Interest rate forward or forward rate agreement.** A forward rate agreement allows an investor in effect to pre-agree the rate applicable to a future contract period. To compensate for the difference between the pre-agreed rate and the actual market rate at the start of the contract period, a settlement payment is made from one party to the other at the beginning of the contract period. This will equal the difference between the present values of the two sets of interest payments at the beginning of the contract period.
- ▶ **Foreign exchange forward.** A foreign exchange forward allows the investor to fix the exchange rate at a specific point in the future. It is calculated by taking the current exchange rate and extrapolating interest rates in both currencies to find the future value of the exchange rate. The forward rate is a simple calculation and does not incorporate any speculation or taking a view on foreign exchange movements.

These are useful instruments, as they allow investors to translate an asset from one currency to another to access higher-yielding investments or more liquid markets. See page 62 for an illustration of how a UK company could use an FX forward to access the USCP market.

Option

An option gives the holder the right, but not the obligation, to buy or sell a set quantity of a particular asset at a predetermined price on, or sometimes before, a particular date in the future

(the expiration date). A European option can only be exercised on the expiration date. A US option can be exercised on any date up to and including the expiration date.

Options are written by counterparties, usually banks. The investor will hold the option on payment of a premium, which is usually a lump sum at inception. The amount of the premium paid will depend on the likelihood of the holder exercising the option.

- ▶ **Interest rate option.** An investor will use an interest rate option to ensure that a minimum interest payment will be earned. Typically, the investor will purchase an option giving the right to exchange floating rate interest payments for fixed rate payments if the market rate falls below a certain level.
- ▶ **Currency option.** An investor could use a currency option to ensure that a minimum quantity of foreign currency is received in the future. For example, in order to ensure security and liquidity when investing, the investor may select an instrument denominated in an international currency. When this instrument matures, the funds will be exchanged into a local currency to meet a payment obligation. The option ensures the investor will have sufficient local currency funds when the investment matures.

It would be very unusual for a company to write an option (as opposed to buying an option), since this exposes the writer to an unlimited downside risk.

Future

Futures contracts are exchange-traded and are the least common form of derivative used by companies investing working capital. This is because they cannot be tailored to the user's exact requirements, and because investors will be required to make margin payments on a daily basis, in the event of a serious adverse market movement.

Benefits

Flexibility

Because most derivatives transactions used by company treasuries are arranged over-the-counter, the terms and conditions can be set to suit each individual circumstance. In particular, the investor can determine the level of protection needed from the derivative.

Ease of access

It is relatively easy for a company to enter into a derivative agreement. Although there are a number of terms and conditions associated with any transaction, many of these can be standardised through the negotiation of an ISDA agreement. For a company intending to arrange a number of derivative transactions, it is often prudent to negotiate ISDA agreements with a group of counterparty banks. This allows the company to seek competitive quotes and to manage counterparty risk more effectively.

Relatively low cost

Once the ISDA agreements have been negotiated, derivative agreements are quick to negotiate.

Options do require the payment of an initial premium, although its size will depend on the likelihood of the option being exercised. Other transactions are relatively inexpensive to arrange, although some settlement payment may need to be made.

However, if a derivative transaction does not meet the exemption qualifications for EMIR (in the EU) or Dodd-Frank (in the USA), treasurers may be required to comply with the relevant regulations, which will add complexity and cost to the transaction. For more information see page 59.

Potential problems

Counterparty risk

Derivative transactions are distinct financial agreements. Although no exchange of principal normally takes place, the investor is still faced with a counterparty risk. This is because, should the derivative counterparty fail, the investor will no longer be protected against the risk for which the derivative was purchased. If exchange rates or interest rates move significantly, the amounts potentially owing from one party to another can become material. If this is the case, the beneficiary party may want to impose some form of credit support agreement on the other party, such as margin calls or collateral.

Investment policy

Because of highly publicised reports of companies failing due to derivatives transactions, company boards are often nervous of their use. In some cases, this may be reflected in a restrictive investment policy, which does not make agreeing a derivative transaction easy. As a result, a treasurer may need to ask the board to amend the investment policy to allow the use of derivatives.

Valuation

In some cases, especially with more complex options, it can be difficult to value derivatives. This can be a problem if the company wants to apply hedge accounting rules.

Accounting

International Accounting Standard (IAS) 39 (being replaced by IFRS 9 for reporting periods beginning on or after 1 January 2018) and its equivalent in the US, FAS 133, require all derivatives to be marked to market. The precise accounting rules, including the occasions on which hedge accounting can be used, are complicated. They can also require significant record-keeping and additional administration.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

Because no principal is usually exchanged, derivatives transactions should pose limited risk to

their holders. Even so, usage should be recorded against the credit limits marked for the counterparties involved. This assumes care has been taken to ensure the terms and conditions of the derivative will not leave the investor exposed to adverse movements in market prices. For this reason, investors of working capital should not write options.

Liquidity

Options require the payment of an initial premium. Other derivatives transactions may give rise to a cash outflow. Since derivatives are normally tailored over-the-counter transactions, their liquidity is determined by the counterparty bank's willingness to unwind or buy back the deal. Although this is normally possible, a derivative can always be effectively closed out by transacting an equal and opposite transaction with another bank.

Exchange-traded derivatives are highly liquid instruments, but are rarely used by companies investing working capital.

Yield

Derivatives are rarely purchased by investors of working capital to generate a return. Instead they are used to protect the value of another investment.

Suitability

Derivatives are most useful in the following circumstances:

- ▶ to protect the value of a short-term investment instrument;
- ▶ to protect against fluctuating short-term interest rates;
- ▶ to protect against fluctuating exchange rates;
- ▶ to match predicted future cash flows;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments.

Structured deposits

Core characteristics

Key features

As their name suggests, structured deposits are arranged with additional terms and conditions to meet the objectives of both the investor and the counterparty bank. The structured deposit itself will usually incorporate a derivative transaction, which will allow the investor to hedge against movements in interest rates or foreign exchange rates.

Availability

Structured deposits are increasingly available, as banks seek to develop products to attract investors. Initially, structured deposits were created as specific solutions to particular problems. Once developed, they became more commonly available, sometimes as standardised products.

Nature of the return

The nature of the return from a structured deposit will vary and will depend on the terms and conditions. One of the attractions of structured deposits is that they allow the investor to achieve a range of alternative returns. This might include an enhanced return compared to alternative investments or a guaranteed minimum return over a period of time.

For example, consider an agreement that states that if a specified interest rate remains within 3% and 4%, then a deposit's return would be enhanced by 50 basis points over the life of the instrument. If the specified rate moves below 3% or above 4% at any point, then the investor would lose interest income for the remaining life of the deposit. This shows that an investor must have a high degree of conviction before agreeing the parameters.

Accessibility

Structured deposits are available as over-the-counter products from banks. Terms and conditions will vary according to the nature of the funds being invested and the investor's requirements.

Main variants

Structured deposits allow the investor to select an instrument created to meet a particular need.

In most cases, this will reflect a desire to manage interest rate risk. Foreign exchange risk can also be managed using a structured deposit.

Interest rate based

In most cases, structured deposits enable the investor to achieve a guaranteed minimum return over a predetermined period of time. The investor may also benefit from an enhanced rate, which will usually be capped by the counterparty bank at a maximum rate, and will reflect different views of the future direction of market interest rates.

The precise terms and conditions, including the level of any capped rate, will be set at the time of arranging the deposit. Where a capped rate is set, the investor benefits from the opportunity to earn an enhanced return, in the belief that a higher variable rate will not be forgone.

For example, a range-based deposit allows a company to earn a guaranteed rate of interest for a fixed period. The company benefits from any increase in market rates, up to a maximum ceiling rate, over the same period.

Foreign exchange rate based

Dual currency deposits allow an investor to make a deposit in one currency, with repayment in either the same or another currency. They allow the investor to hedge foreign exchange risk without having to arrange a separate currency option.

For example, an Italian company decides to deposit some EUR in a dual currency deposit for one month. A conversion rate of EUR/USD of 1.212 is agreed. Over the life of the deposit, the USD appreciates against the EUR. At maturity the spot rate is EUR/USD 1.175. On maturity the treasurer elects to have the principal plus interest (EUR 1 million) repaid in USD. At the pre-agreed conversion rate, the Italian company will receive USD 1,212,000. This is a better return than the EUR 1,175,000 available in the spot market.

Benefits

Flexibility

The chief advantage of structured deposits is that they are flexible investment instruments. An investor will arrange the terms and conditions of the deposit with the counterparty bank, allowing them to be set to match the investor's specific requirements.

Enhanced return

One reason why investors are attracted to structured deposits is that they offer an enhanced return, when compared to alternative instruments available in the market.

Banks offer an enhanced return because the investor usually has to commit to invest for a predetermined period of time. This enhanced return is generated by giving up a return in certain

circumstances, or effectively granting the bank some form of option. Structures that appear at first sight to be attractive may include some unwelcome downside risk. Furthermore, the investor must ensure that any loss of liquidity is justified by the promise of an enhanced, or guaranteed, return.

Structures can also be created that are asymmetric. This means the return is enhanced if the market moves in one direction. However, if the markets move the other way, the returns will be low or nil.

Counterparty risk

Structured deposits allow the investor to achieve a particular objective, e.g. a minimum return, without having to arrange contracts with a number of different counterparties. This is because any derivatives transactions will be incorporated in the structured deposit.

Potential problems

Speculation

Because structured deposits incorporate a derivative transaction, investors will need to understand any implied speculation. The attraction of the structured deposit is that it may offer a guaranteed minimum return, or provide a hedge against an adverse movement in the exchange rate. Note that any implied speculation is also likely to result in the transaction not qualifying for hedging exemptions under EMIR or Dodd-Frank.

The difficulty for the investor is to understand the full potential implications of the investment. This may include penalty payments to redeem the investment early, or opportunity costs if markets do not move in the expected direction.

High minimum investment

Where structured deposits are created to meet an individual investor's specific requirements, the counterparty bank will insist on a relatively high minimum investment. The investor will need to take care to maintain investments within counterparty limits.

In addition, the bank may also require the investor to commit to a minimum investment term. Before committing to a structured deposit, the investor should understand the implications for group liquidity.

Complex valuation

Because the structured deposit incorporates derivatives transactions, it can be difficult to value any investments accurately. Although treasury management systems are increasingly able to mark derivatives transactions to market, the very nature of the structured deposit makes automated valuation difficult. As a result, structured deposits may have to be valued independently. This will be time-consuming and will make managing the portfolio difficult.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

The security of a structured deposit is determined by the creditworthiness of the counterparty bank. The use of credit ratings will help to assess the relative creditworthiness. It is crucial to ensure the correct entity's rating is assessed.

However, investors should also analyse the terms and conditions of the deposit to identify whether the value of the initial investment is at risk.

Liquidity

Because structured deposits are arranged between the investor and the counterparty bank, they are relatively illiquid instruments. They cannot usually be redeemed before maturity, without payment of a penalty.

Yield

The return available from structured deposits may be higher than more liquid instruments. This reflects the loss of liquidity faced by the investor and the optionality built in to the transaction.

Interest will be paid according to the terms and conditions of the deposit, typically on maturity.

Suitability

Structured deposits are most useful in the following circumstances:

- ▶ when funds are available to invest for longer than the immediate short term;
- ▶ when funds are available for a known period;
- ▶ when treasury is unlikely to need to redeem the funds at short notice;
- ▶ to protect against fluctuating short-term interest rates;
- ▶ when treasury is seeking to earn an additional return on non-core cash;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments;
- ▶ to create a tailored form of return that can be used as a hedge against other exposures in the business.

However, before using any such instrument, the treasurer should take extra care to understand the nature of the risks the company would be exposed to. The complex nature of these transactions means they are unlikely to be suitable for the investment of working capital.

Separately managed accounts

Core characteristics

Key features

A separately managed account (sometimes called a segregated account) is a method of outsourcing investment management decisions. An investor appoints an investment manager to manage funds according to a detailed mandate set by the investor. Unlike other fund management options, each investor's funds are maintained separately by the investment manager.

Availability

Separately managed accounts are available from some banks and investment managers. They are primarily used for longer-term investments, although they are increasingly available for short-term investment of cash and working capital.

Nature of the return

The nature of the return from a separately managed account will vary and will depend on the mandate given to the investment manager. One of the attractions of separately managed accounts is that they allow the investor to set its own investment guidelines to reflect the organisation's risk appetite and investment objectives.

Accessibility

Separately managed accounts are available from some banks and investment managers. Although the investor will set the investment guidelines within the mandate, the investment manager will also set specific terms and conditions for the wider use of the service.

Benefits

Controlled outsourcing

Separately managed accounts allow the investor to outsource much of the administration of investing whilst retaining the ability to set detailed investment policy.

Counterparty risk

As part of the agreement, any credit risk analysis will be performed by the specialists within the investment manager's team. As a separately managed account, the investor will have access to information about the portfolio of assets held on its behalf.

Potential problems

Counterparty risk

Although the investor will set the investment parameters, there will be no day-to-day control over individual investment decisions. The investor will also be exposed to operational risks within the investment manager.

Cost

Because of the bespoke nature of the service, it can be a relatively expensive solution.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

The security of a separately managed account is determined by the investment parameters set by the investor. In a separately managed account, the investor holds the securities directly, rather than as a share in a traditional managed fund.

Liquidity

The liquidity of a separately managed account is largely determined by the investment parameters set by the investor. However, a separately managed account is unlikely to be suitable for investors who require instant access to their cash.

Yield

The return from a separately managed account is determined by the investor's risk appetite and investment policies.

Suitability

Separately managed accounts are most useful in the following circumstances:

- ▶ when funds are available to invest for longer than the immediate short term;
- ▶ when funds are available for a known period;
- ▶ when treasury is unlikely to need to redeem the funds at short notice;
- ▶ to implement an investment policy without needing to develop an in-house investment management team;
- ▶ when a company becomes cash rich over a relatively short period of time;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments.

Longer-term instruments – bonds

Core characteristics

Key features

Bonds are issued by companies, governments and other entities, for terms ranging from under a year to over 20 years. Some bonds, known as perpetuals, are issued without a maturity date. In effect, a bond is a form of term loan that can be transferred between investors.

Bonds are issued in registered or bearer form. Registered bonds are issued in the name of the holder and are becoming less common, whereas bearer bonds are freely negotiable.

Although they are usually medium to long-term securities, as they near maturity bonds begin to exhibit the characteristics of shorter-term investment instruments.

Availability

The availability of bonds varies between local markets and according to prevailing market conditions. Bonds available in the international capital markets are known as Eurobonds. Despite their name, Eurobonds may be denominated in any currency.

Nature of the return

Bonds usually generate a return for an investor in one of three ways:

- ▶ **Coupon-bearing.** Most bonds make some form of interest payment, or coupon. Coupon payments will be made on a regular basis, typically at least annually. These may be structured in a number of different ways. Some bonds pay a fixed coupon throughout their life. Others pay a variable coupon, which is refixed after every coupon and is set with reference to a particular market rate. Stepped coupons increase in size over the life of a bond.

Other coupon payment types are available. For example, some bonds are dual currency, meaning the principal is denominated in one currency and coupon payments are made in another.

The price of coupon-bearing bonds will vary according to the market interest rate. A bond price is calculated as the net present value (NPV) of the scheduled interest and capital payments discounted back at the current interest rates. This means that as the market interest rate falls, the price of the bond increases, and vice-versa.

- ▶ **Zero coupon bond.** As the name implies, zero coupon bonds do not pay interim interest payments. Instead, they are issued at a discount, with the investor being paid the face value at maturity. When sold in the secondary market, the price of these bonds will always be the net present value of the face value of the bond.
- ▶ **Index-linked.** Index-linked bonds deliver a return that is linked to some other reference rate or market. Inflation linkage is widely available. An inflation-linked bond is normally structured to pay a low cash coupon (or real rate of interest) annually, but calculated on an amount of principal that is itself uplifted each year by the reference inflation index. Assuming inflation is positive, this means that the interest amount each year will grow. At maturity, the principal repaid will also be uplifted by the lifetime move in the inflation index.

Accessibility

Bonds are initially sold to investors by a dealer group of banks, appointed by the issuer. Some bond issues are standalone, whereas others are issued off a EUR medium-term note programme.

Some bonds are listed securities, meaning they are listed on a securities exchange and can be traded in that market. In other cases, bonds are issued as private placements, direct to investors. These are not usually traded in the secondary market.

Main variants

There are several types of bond issuer, including governments, both local and national, multinational agencies and companies.

- ▶ **Government bonds.** In most cases, governments elect to issue their bonds into their own local markets. The level of issuance is determined primarily by the level of the government's public borrowing requirement.
- ▶ **Corporate bonds.** Companies also issue bonds to finance their operations. The level of issuance by an individual company will depend on its borrowing requirement, its access to other forms of finance (shareholder funds, bank lending and other forms of debt issuance, such as commercial paper) and its preferred debt-to-equity ratio. Companies issue bonds into their own local markets. They may also issue Eurobonds, which are issued into the international capital markets and may be denominated in a number of international currencies.
- ▶ **Bond funds.** Investors can also decide to use bond funds, which have the benefit of diversifying counterparty risk. When investing in a bond fund, the investor should take care to understand the investment policy followed by the fund. Funds will often restrict themselves to investing in particular types of bond (in terms of credit rating or type of issuer) or in particular geographic areas. Investors should understand the nature of a fund's investment policy and ensure that it fits into the counterparty risk policy the investor is following.

Benefits

Liquidity

Bond investors can sell their bonds in the secondary market to realise their investment. The investor's ability to do so depends on the size of the deal and the state of the market.

Variety of bond issues

No single bond issue has the same characteristics. For example, bonds may be interest-bearing, and they are issued with a range of maturities. This variety of bond issues available, allows investors to purchase instruments with the characteristics to suit their portfolio requirements.

Because of these differences, when assessing different investment alternatives investors should always take care to ensure that they are comparing like with like. In particular, investors should establish which day-count convention applies, when calculating the yield from the bond.

Riding the yield curve

Because bonds are issued with longer maturities, there may be the opportunity for investors to ride the yield curve. If the yield on a longer-term bond exceeds that of a shorter-term instrument, the investor can purchase the bond in order to benefit from the better return. The investor can hold the bond until such time that the two yields are equal, and then sell it. As a result, the investor will have generated a higher return on the bond.

Potential problems

Counterparty risk

When purchasing a bond, the investor will be exposed to the credit risk of the issuer. Most public bond issues will carry a long-term credit rating from an international credit rating agency. The investor will need to take care to keep within agreed counterparty limits.

The investor is also at risk from a change in credit rating. A rating upgrade will reduce the yield and increase the market value; if an agency downgrades a bond, its yield will increase and the price will fall. This reflects changes in relative creditworthiness.

This risk can be mitigated by investing in bond funds. However, as with any alternative investment, this will expose the investor to different risks.

Liquidity risk

Because bonds are longer-term instruments, the investor will usually need to sell the bond in the secondary market to redeem the principal. The investor's ability to do so will depend on the liquidity in the market. For example, in an economic downturn, there may be little appetite from investors to buy corporate bonds, especially the lesser-rated instruments.

Operational costs

There are some administrative costs associated with investing in bonds. The investor will need to appoint a custodian bank, because the bonds are held with securities depositories, such as Euroclear. For more information, see page 112.

Assessment

As with all instruments, this assessment of investment suitability is designed as a comparative indication. It assumes similarly rated counterparties in the same jurisdiction.

Security

A bond's security is determined by the creditworthiness of the issuer. The use of credit ratings will help to assess the relative creditworthiness. It is crucial to ensure the correct entity's rating is assessed. However, because bonds are usually longer-term instruments, investors should not rely on credit ratings alone when assessing counterparty risk.

Liquidity

Bonds are relatively liquid instruments. They can usually be redeemed before maturity via a sale in the secondary market. Their liquidity is therefore dependent on the size of the secondary market, which is determined partly by the activities of local dealer banks. The liquidity of government bonds will also be partially determined by government activity in the markets.

Yield

The return available from a bond will reflect its underlying creditworthiness. In each local market, bonds with the same credit rating will usually offer a similar return. The difference between the return available on differently rated bonds with the same maturity will vary over time.

There may also be a difference in the return offered on bonds with the same credit rating, but with different maturities. This is known as the yield curve effect.

Interest on all bonds is paid regularly. This varies according to the issuer, but will usually be quarterly, every six months or annually.

Like any fixed interest instrument the price of a bond will vary during its life as market interest rates move, or if the creditworthiness of the bond issuer changes. During a period of rising interest rates, any investment in a longer-term bond is only attractive on a hold to maturity basis.

Suitability

Bonds are most useful in the following circumstances:

- ▶ when funds are available to invest for longer than the immediate short term;
- ▶ to take advantage of differences in the yield curve;
- ▶ when treasury is unlikely to need to redeem the funds at short notice;

- ▶ to protect against fluctuating short-term interest rates;
- ▶ when treasury is seeking to earn an additional return on non-core cash;
- ▶ as part of a strategy of diversifying risk across a portfolio of investments.

Alternative investments

In addition to the short-term and longer-term instruments described above, there are many other alternative investment instruments available to companies. Although companies, especially their pension funds, may use the following instruments, for a variety of reasons they are not likely to be suitable for the treasurer seeking to invest working capital.

Equities

Core characteristics

Key features

Equities are shares issued by local and foreign companies. They are usually listed and traded on the local stock exchange. Unlike debt instruments, when an investor purchases a share, this represents a proportional ownership in the issuing company.

Availability

Equities are widely available in almost all local markets. Most shares listed on a local stock exchange are issued by domestic companies. Some larger stock exchanges, notably the New York and London Stock Exchanges, list shares issued by foreign companies.

Nature of the return

Investors receive a return in two ways:

- ▶ **Capital growth.** Capital growth is usually the main reward for the investor.
- ▶ **Dividend payment.** Investors may also receive an annual dividend payment. Whether a dividend is paid, and the amount, if it is, will depend on the policy of the management of the company. Rapidly growing companies may choose to reinvest profits rather than pay a dividend.

Accessibility

Investors access shares through trading members of a stock exchange.

Assessment

Security

The value of the invested principal will fluctuate according to the price of the underlying share. In the event that that company falls into liquidation, the equity investors bear the first losses.

Liquidity

In any local market, equities are among the most liquid investments available. Liquidity does vary between markets, depending on the volume of activity on the exchange. There is a difference in liquidity: e.g. between the New York and Namibian Stock Exchanges.

Yield

The yield will be determined by a range of factors, some within the company's control, some external, including the state of the economy and the impact of natural events.

Suitability

Because of the uncertain nature of the return and the risk to principal, treasurers would have limited use for equities when making a working capital investment. Almost all company pension funds have assets invested in equities.

Equity funds

Core characteristics

Key features

Equity funds are the most common form of mutual fund. As the name implies, the funds invest in a range of quoted stocks. The nature of the stocks selected by a fund depends on the expressed aims of the fund manager and will affect the security and the yield of the fund. They are known as unit trusts or open-ended investment companies in the UK, mutual funds in the USA and organismes de placement collectif en valeurs mobilières in France.

Availability

Equity funds are widely available in most local markets.

Nature of the return

In most cases, equity funds are designed to provide long-term capital growth for the investor. When making an investment in an equity fund, an investor technically buys a share or unit in the fund company and the return is in the form of a dividend. Funds may be closed, with a fixed number of units/shares in issue, or open-ended, with the ability to create or cancel units to meet demand.

Accessibility

Investors can access funds directly or through brokers.

Main variants

There is a wide range of equity funds available.

- ▶ **Geographic funds.** Some funds only invest in equities from particular countries or regions. Investors will need to consider country risk.
- ▶ **Industry funds.** Some funds only invest in companies operating in a particular sector of the economy. Investors will need to consider the level of exposure to that industry.
- ▶ **Growth or value funds.** Some funds concentrate on a particular size of company. Growth funds tend to invest in smaller companies that are expected to grow, including start-ups. Value funds tend to invest in larger, established companies that may be undervalued by the market as a whole.
- ▶ **Ethical funds.** Some funds only invest in companies that meet certain socially responsible criteria.
- ▶ **Balanced funds.** Some fund managers seek to create a fund with a diversified spread of risk. These include index funds that match the return offered by the market as a whole by following a particular market index (such as the FTSE, the Nikkei or the Dow Jones).

Assessment

Security

Because the funds invest in equities, the value of the invested principal is determined by the performance of those equities. Investors can manage this risk by selecting particular equity funds, but the underlying risk will always remain.

Liquidity

Equity funds are liquid. Most funds allow investors to withdraw their investment with little or no notice, and with a minimal difference between bid and offer rates. However, during times of unusual market strain the manager may impose a restriction on withdrawals. Terms and conditions vary from fund to fund.

Yield

The yield will be determined by a range of factors. The most important will be the investment choices made by the investment managers. The general performance of equities will also be crucial, especially for any index funds.

Suitability

Because of the uncertain nature of the return and the risk to principal, treasurers would have limited use for equity funds when making a working capital investment.

Any company pension fund would consider investing in equity funds.

Hedge funds

Core characteristic

Key features

Their name implies that hedge funds use trading strategies to protect their investment from, and to take advantage of, market movements. In practice, the term hedge fund applies to a range of funds, investing in a variety of instruments. Critically, hedge funds are not constrained by regulatory requirements or the oversight of credit rating agencies.

Most hedge funds are domiciled in offshore locations for tax reasons.

Availability

Hedge funds are increasingly available in a number of markets. They are mainly used by high net worth private investors and institutional investors.

Nature of the return

The nature of the return from an individual fund depends on the investment strategy it adopts. There are significant differences between the investment strategies adopted by individual hedge funds. Some funds target capital growth, whilst others seek to generate short-term income. Hedge funds differ from standard equity funds, because they are permitted to take short positions to benefit from falling markets.

Accessibility

Investors access hedge funds directly.

Main variants

Individual hedge funds vary significantly in terms of their investment strategy. Some funds are highly leveraged, and invest heavily in derivatives. Other funds are much more conservative, and simply seek to use the flexibility offered by the lack of regulation to create a hedged portfolio.

Assessment

Security

There are significant differences of investment approach from one hedge fund to another. Some hedge funds take a more conservative approach to risk and, as a result, the associated counterparty risk will be lower.

Two factors are important for investors of working capital cash:

- ▶ **Lack of regulation.** Because hedge funds are subject to limited regulation, investors do not benefit from the same level of protection that applies with other instruments. This is despite the fact that the UCITS III directive is much more open-ended in regulatory terms compared with its predecessors, such that it will allow hedge fund-like activity.

- ▶ **Lack of transparency.** Linked to this, it is difficult for investors to have a firm knowledge of the risks being taken by the hedge fund managers. Unlike other funds, hedge funds are not subject to the scrutiny of the credit rating agencies. As a result, investors cannot fully evaluate the counterparty risk they assume when investing in a hedge fund.

Liquidity

Hedge funds are relatively liquid investment instruments.

Yield

The potential yield varies according to the approach of the hedge fund manager. Different funds have different investment objectives, which must be understood by investors.

Suitability

Because of the lack of transparency and, sometimes, high-risk strategies, it is unlikely that treasurers would seek, or receive, board-level approval to invest working capital in hedge funds.

Currency as an asset class

Core characteristics

Key features

Although major currencies markets are highly liquid and transparent, minor inefficiencies may be created in the foreign exchange market by a number of participants, including, for example, treasurers hedging a financial exposure. As a result, active currency managers aim to generate a return from these inefficiencies.

Availability

Active currency management is growing as an activity in the major financial centres.

Nature of the return

In theory, the greater returns should be available from currency pairs, whose value is more volatile. In most cases, active currency management is designed to provide long-term capital growth for the investor.

Accessibility

Most investors will use the services of a specialist active currency manager.

Assessment

Security

Security is dependent on the risk-management policies adopted by the asset manager. It is possible that a manager could experience a loss of principal.

Liquidity

Active currency management is a long-term activity. However, investors should be able to redeem any principal at short notice.

Yield

Yield will be determined by the volatility in the foreign exchange markets.

Suitability

In most cases, companies would not choose currency as an asset when investing working capital. In the short term, treasurers use the foreign exchange market to hedge currency exposures, rather than as a location to deposit cash.

Company pension funds are increasingly turning to currency as an asset, in addition to more traditional instruments such as equities and bonds.

Bank loans as an asset class

Bank loans are emerging as an asset class, notably in the USA. These allow investors to purchase an interest in syndicated loans made to corporate borrowers. These are marketed as a better credit risk than a bond or other debt instrument issued by a similarly rated borrower, essentially because of the loan's seniority in the borrower's capital structure and the tighter covenants typically included.

However, these instruments are not suitable for corporate treasurers seeking to maintain the security and liquidity of their short-term cash. Set against any yield pick-up, there are potential disadvantages from the lack of a rating, the lack of liquidity, the inclusion of non-standardised, and possibly, complex terms and conditions and the risk of withholding tax on interest.

Financial calculations

Financial calculations

Interest rate calculations

Note: the rate of interest or yield in these calculations is represented by the % rate/100. For example, for a 5% rate, calculate using the number 0.05.

For investments held for periods other than whole years, the day-count convention (see below) is important, especially when comparing investments that use different day-counts.

Simple interest

The simplest investment instruments pay simple interest. This means the investor will invest a principal sum and then receive an interest payment calculated from that principal sum from the time of investment until either the instrument matures or the investor redeems the principal. The investor will receive the interest payment, but will be responsible for reinvesting it.

Bonds are perhaps the most common instrument paying a simple interest return. At every interest period, the investor will receive a coupon calculated on the basis of the original principal sum invested. The investor may have used previous interest receipts to purchase additional bonds, but they will generate their own return.

The annual proceeds can be calculated using the following formula:

$$\text{Proceeds} = [(\text{principal} \times (1 + r)) - \text{principal}]$$

where r is the rate of interest.

So, for example, if an investor holds a five-year bond (face value 100) paying a fixed annual coupon of 8%, the investor will receive coupon payments at the end of the first four years of 8. At the end of the fifth year, the investor will receive the coupon of 8 plus the maturing principal 100.

Using the formula:

$$\text{Proceeds} = [(100 \times (1 + 0.08)) - 100] = 8$$

If the investor receives semi-annual (six-monthly) coupon payments, this will be in form of two payments per year of four each time. Again, the investor is responsible for reinvesting the received coupons.

Compound interest

In other cases, the investment instrument pays compound interest. This means the investor will invest a principal sum. Any interest earned will be reinvested in the same instrument and added to the invested principal. Subsequent interest payments will be calculated using the enhanced principal.

This is known as compound interest, because interest is earned not only on the principal, but also on the earned interest. For example, if an investor has deposited funds in a savings account, the bank will usually pay interest proceeds into the savings account. Once the interest has been added to the balance in the savings account, the investor will earn interest on the new, higher balance.

As a result, the annual proceeds from an instrument paying compound interest will be higher than from an instrument paying simple interest.

The annual interest proceeds can be calculated using the following formula:

$$\text{Proceeds} = \text{principal} \times \left(1 + \frac{r}{n}\right)^n - \text{principal}$$

where n is the number of interest payments a year and r is the nominal annual rate of interest.

Assuming quarterly interest payments on an invested sum of 100 and a nominal rate of interest of 8% p.a., the annual proceeds will be:

$$100 \times \left(1 + \frac{0.08}{4}\right)^4 - 100 = 8.24$$

The more frequently interest is applied (assuming the proceeds are reinvested at the same rate), the higher the annual return will be.

Long-term investment proceeds

Compound interest also has an effect on instruments held for more than a year, even if interest is only paid annually. This is because the receipts are reinvested at the same rate and interest is then earned on the new principal.

The long-term proceeds can be calculated using the following formula:

$$\text{Long-term proceeds} = [\text{principal} \times (1 + r)^y - \text{principal}]$$

where y is the number of years.

If we assume the same original principal of 100, the same rate of interest of 8% p.a. and the same investment period of five years, we can calculate the long-term proceeds:

$$[[100 \times (1 + 0.08)^5 - 100] = 46.93$$

This return compares well to the total proceeds of the bond paying a simple interest return illustrated above. This paid a total return of 40 (five different coupon payments of 8), compared to the compounded return of 46.93.

The investor may well have decided to reinvest the coupons earned under simple interest, but will only have been able to earn a total return of 46.93 if each coupon payment was reinvested at 8%, which may not have been possible. This is reinvestment risk. On the other hand, the investor may have been able to reinvest at a better rate than 8%, and then would have earned in excess of 46.93.

Nominal versus effective rates of interest

When an investor is earning compound interest, it is useful to be able to calculate the effective rate of interest, especially if the instrument is paying interest more than once a year. It is essential to do this calculation when comparing the returns generated from investments with different interest payment frequencies. This enables the investor to compare like with like.

$$\text{The effective rate of interest} = \left[\left(1 + \frac{r}{n} \right)^n - 1 \right]$$

where n is the number of interest payments a year and r is the nominal annual rate of interest.

For example, if an instrument pays interest twice a year ($n = 2$) and the rate of interest is 3.5% p.a., then the effective rate of interest is:

$$\left[\left(1 + \frac{0.035}{2} \right)^2 - 1 \right] = 3.53\%$$

The effective rate is higher because it assumes the interest earned after six months is reinvested at the same rate for the next six months.

Continuously compounding interest

At the extreme, interest is continuously compounding. This is rare and assumes interest is earned continuously and immediately reinvested.

The annual proceeds can be calculated using the following formula:

$$\text{Annual proceeds} = [(\text{principal} \times e^r) - \text{principal}]$$

where $e = 2.71828$, the base of natural logarithms.

Using the example of 100 invested at 8%, the annual proceeds as a result of continuously compounding interest will be:

$$[(100 \times e^{0.08}) - 100] = 8.33$$

This is significantly higher than the proceeds when interest is paid quarterly (8.24).

Total proceeds of a short-term investment

When making an investment for period under a year, the investor will also need to compare the respective potential returns from prospective instruments.

In this case, the interest proceeds from an investment made for under a year, and assuming interest at maturity only, can be calculated using the following formula:

$$\text{Proceeds} = \left[\left\{ \text{principal} \times \left[1 + \left(r \times \frac{d}{y} \right) \right] \right\} - \text{principal} \right]$$

where r is the rate of interest, d the number of days in the interest period and y the number of days in the year.

In this case, the number of days in the year becomes important. This will depend on which particular day-count convention applies in the relevant market, either 360 or 365 days (see below).

This formula calculates the proportion of the full-term interest payment that should be earned.

For example, consider an investment of 100 held at a rate of 8% p.a. for 57 days, in a market in which the convention is 360 days. The proceeds would be as follows:

$$\left[\left\{ 100 \times \left[1 + \left(0.08 \times \frac{57}{360} \right) \right] \right\} - 100 \right] = 1.27$$

Bond pricing

The following techniques are useful for pricing bonds and other investment instruments. The principle underpinning all investment instrument valuation is the idea that the investor will pay the net present value of all future cash flows. The net present value represents the capital sum that, when invested at the discount rate, would be able to generate all the stated flows of that investment.

For a zero coupon bond (or a bond nearing maturity after the final coupon has been paid), an investor will pay:

$$\text{Price of zero coupon bond} = \frac{\text{maturity proceeds}}{\left[1 + \left(\text{yield} \times \frac{\text{number of days to maturity}}{\text{number of days in the year}} \right) \right]}$$

For a zero coupon bond with more than a year to run, the compounding effect means that with an annualised yield and n years to run, an investor will pay:

$$\text{Price of zero coupon bond} = \frac{\text{maturity proceeds}}{[1 + \text{yield}]^n}$$

If a bond has interim coupon payments, the purchaser will have to compensate the seller for the time that they have held the bond since the last coupon payment. This can be calculated using the following formula:

$$\text{Value of an accrued coupon} = \frac{(\text{face value} \times \text{coupon rate} \times \text{number of days since last coupon})}{\text{number of days in the year}}$$

In some cases, the seller will have to compensate the purchaser of the bond. This occurs when a coupon payment is made after the bond is sold, but the administration process is delayed such that the coupon payment is made to the previous holder. This is known as an ex-dividend payment and the seller will have to pay the value of the accrued coupon, calculated using the following formula:

$$\text{Ex-dividend} = - \frac{(\text{face value} \times \text{coupon rate} \times \text{number of days until next coupon})}{\text{number of days in the year}}$$

Discount to yield

Some short-term instruments, such as commercial paper, are issued at a discount and so they are non-interest bearing. This means the investor will invest a discounted amount and receive back face value on maturity. By convention, these instruments are nonetheless quoted as a yield.

$$\text{Discounted proceeds} = \frac{\text{face value of principal}}{\left[1 + \left(\frac{\text{quoted yield} \times \text{days to run}}{\text{number of days in the year}} \right) \right]}$$

Bond yields

The yield on a corporate bond can be expressed either as an absolute rate or as a spread over a reference market rate. The spread is usually given as the number of basis points over the relevant government security, or over the swap rate for the same maturity and currency. In most cases, corporate bonds pay interest annually, whereas government bonds and swap rates pay interest semi-annually.

When comparing yields, it is essential to ensure that any comparisons are done on a like-for-like basis.

Repos – implied rate of interest

These techniques can also be used to imply the rate of interest on a repo transaction. This is calculated using the following formula:

$$\text{Interest rate} = \left[\left(\frac{\text{future value}}{\text{present value of purchased security}} \right) - 1 \right] \times \frac{\text{number of days in year}}{\text{number of days between sale and repurchase}}$$

In effect, this extrapolates the difference between the two transaction prices into an annual interest rate and can be useful when comparing alternative investment returns.

Net present value

One way of comparing alternative investment instruments is to translate all future cash flows into a present value.

The following formula translates a future cash flow into a present value:

$$PV = \frac{FV}{\left(1 + \frac{r}{n}\right)^{\frac{d}{y}}}$$

where r is the rate of interest, n is the number of interest payments every year, d is the number of days until the cash flow and y is the number of days in the year (as determined by the day-count convention).

For example, the present value of 100 and a cash flow expected in 27 days in a 365-environment with the current interest rate of 4.75%, can be calculated as follows:

$$PV = \frac{100}{\left(1 + \frac{0.0475}{1}\right)^{\frac{27}{365}}} = 99.66$$

The net present value of a series of cash flows (perhaps those associated with a bond) is simply calculated by summing the present value of each individual future cash flow.

For example, consider a five-year bond with a face value of 100 paying annual coupons of 6% with a current yield of 4.5%. The price of the bond would be calculated by discounting each future cash flow (the five annual coupon payments and the repayment of principal at the end of the fifth year) to a present value.

Using the formula above, the calculation would be:

$$\text{Price} = \frac{6}{1.045} + \frac{6}{1.045^2} + \frac{6}{1.045^3} + \frac{6}{1.045^4} + \frac{106}{1.045^5} = 106.58$$

The bond price is above 100 (above par) because the current yield is below the coupon rate.

Calculating duration

Duration uses the concepts of net present value to help investors manage their exposure to interest rate risk. An investment is sensitive to changes in the interest rate. In general terms and especially for instruments paying a fixed rate of interest, the price of an instrument falls as the interest rate rises, and vice versa.

The duration (sometimes called the Macaulay duration) of an investment is a measurement of

how long it takes on average for the bondholder to receive the associated cash flows under the bond, including coupon payments. In its simplest form, duration is a measure of the weighted average of the timing of all the payment flows associated with that investment.

It can be calculated using the following formula:

$$\text{Duration} = \frac{\text{sum of (present values of each cash flow} \times \text{time to that cash flow)}}{\text{sum of (present values of each cash flow)}}$$

Modified duration

This concept can also be extended to measure an investment's sensitivity to a change in the interest rate. Modified duration is calculated using the following formula:

$$\text{Modified duration} = \frac{\text{Macaulay duration}}{\left(1 + \frac{\text{YTM}}{n}\right)}$$

where YTM is the yield to maturity and n is the number of interest periods per year.

Modified duration of x means that for every 1% fall in the interest rate, the price of the investment will increase by approximately $x\%$. The price of an investment with a 15-year duration will move more as interest rates change than an investment with a ten-year duration.

Constructing a yield curve

As part of their investment strategy, investors often want to construct a yield curve. Knowing the shape of the yield curve allows investors to adopt different strategies. In most cases, the yield curve suggests that longer-dated instruments offer a higher return than shorter-dated instruments. Investors are rewarded for giving up some liquidity by a higher return.

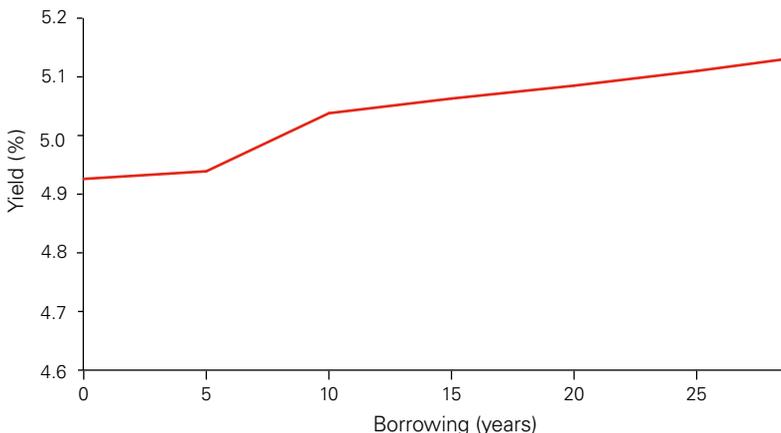


Diagram of normal-shaped yield curve

In some cases, the yield curve is unusual. For example, sometimes short-term instruments offer a better return than longer-dated instruments. This is seen in an inverted yield curve.

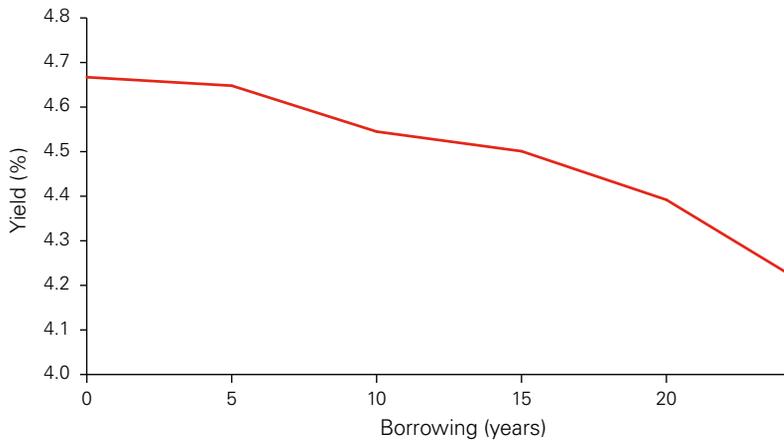


Diagram of inverted yield curve

This can arise for a number of reasons. The market may expect interest rates to fall, as a result of central bank activity, or due to general economic conditions. Alternatively, a government may have issued a large number of long-dated bonds and the market may simply be reflecting the short-term excess of supply over demand for that particular date.

It is possible to ride the yield curve if there is an upward sloping yield curve. In these circumstances, an investor may invest in an instrument with a longer maturity before selling out when the maturity has shortened, at which point the price will have risen because the yield has reduced. This assumes the yield curve is static with time. There can be other opportunities to gain better returns than expected, especially if the curve is not a normal shape. However, to be successful, investors will need to understand why the yield curve's shape is unusual and how it might change with time.

Plotting a yield curve

In order to plot a yield curve, investors can use market rates for instruments of different maturities. By using government paper (Treasury bills and notes), the investors can minimise the effect of risk on the shape of the curve.

In some countries, governments only issue paper for a small number of maturities. In this case, investors may need to extrapolate and interpolate yields for different maturities to complete the curve.

This formula can be used to interpolating an interest rate, although it is based on a linear equation:

$$\text{Interest rate } r_d = r_x + (r_y - r_x) \times \frac{(d-x)}{(y-x)}$$

where r_d is the interest rate for d days, r_x is the interest rate for x days and r_y is the interest rate for y days.

It is also possible to plot a forward yield curve using current spot rates. For example, knowing the current three-month and six-month LIBOR rates, we can calculate the forward rate for an investment placed in three months and redeemed in six months' time (this rate is known as the 3 x 6 forward rate, as it starts in three months and matures in six months). This is because the return on an investment made at the three-month LIBOR rate that is reinvested for a further three months at the forward rate must equal the return on a six-month LIBOR investment. If not, arbitrage opportunities will be exploited until it does so.

The equation is as follows:

$$\left(1 + 3\text{-month LIBOR} \times \left(\frac{92}{365}\right)\right) \times \left(1 + 3 \times 6 \text{ forward rate} \times \left(\frac{91}{365}\right)\right) = \left(1 + 6\text{-month LIBOR} \times \left(\frac{183}{365}\right)\right)$$

So, if three-month LIBOR = 2.86% and six-month LIBOR = 3.03%, we can solve for the 3x6 forward rate (r):

$$\left(1 + 0.0286 \times \left(\frac{92}{365}\right)\right) \times \left(1 + r \times \left(\frac{91}{365}\right)\right) = \left(1 + 0.0303 \times \left(\frac{183}{365}\right)\right)$$

$$1.0072 \times \left(1 + r \left(\frac{91}{365}\right)\right) = 1.0152$$

Solving for r , we get 0.0318, or 3.18%. This is intuitively correct, as the investor would expect to earn a higher return from the second three months to obtain the same return, had the funds been invested for the full six months.

A full forward curve can be calculated using existing spot rates to create 1 x 4, 2 x 5, 4 x 7 rates, and so on.

Zero coupon yield curve

As zero coupon bonds pay no interim interest payments, they are issued at a discount and the face value of the bond is paid at maturity. It is therefore possible to calculate an implied interest rate from a single government instrument and also plot a zero coupon yield curve using a series of similar instruments with different maturity dates. Other values for interim maturities (for which no zero coupon bond exists) can be calculated using extrapolation and interpolation techniques, allowing the treasurer to build a continuous zero coupon yield curve. This can then be used to help value other instruments with different risk and maturity profiles.

Zero coupon yield curves can also be sourced from central banks (for example, both the Bank of England and the European Central Bank publish zero coupon yield curves) or from market information systems (such as Bloomberg or Reuters) if the treasury department has a subscription.

Summary of day-count conventions

Interest is calculated in different ways, depending on the market in which an investment is made.

For a short-term investment, interest is accrued according to the formula:

$$\text{Interest accrued} = \text{principal} \times \left[1 + \left(r \times \frac{d}{y} \right) \right]$$

where r is the rate of interest, d the number of days in the interest period and y the number of days in the year.

Most markets base interest calculations on a 360-day year, although some calculate on the basis of a 365-day year (sometimes referred to as an actual basis).

There can also be variances in the calculation of the number of days in an interest period. In the money market, most calculations are done on an actual basis. Sometimes bond basis, where all months are assumed to have 30 days (and years to have 360 days), is applied in the money market (although this is more common in the bond markets).

Day-count conventions are determined by a combination of the currency of the issued security and the market (whether domestic or international) into which it is issued. A summary of the conventions is given below. However, as with any convention, it is important to establish exactly how interest is applied before making an investment.

| Convention | Domestic money market | International money market |
|--|--|------------------------------------|
| Actual/360 (ACT/360) | EUR | EUR |
| Number of days as is, 360 days in year | DKK SEK, NOK (except Treasury bills) CHF USD | DKK, SEK, NOK CHF JPY USD |
| Actual/365 fixed | AUD, CAD, NZD | AUD, CAD, NZD |
| Number of days as is, 365 days in year (even leap years) | JPY HKD, SGD, TWD, ZAR GBP NOK Treasury | HKD, SGD, TWD, ZAR GBP |
| 30/360 30 days in month, 360 days in year | SEK Treasury bills | |

Most US corporate and federal agency bonds are issued on bond basis. Some Eurobonds (those issued into the international market) and Swiss bonds are issued on a modified Eurobond basis (if the last date of the interest period is 28 February, then the month will not be extended to 30 days).

Other bonds, including EUR-denominated bonds, GBP-denominated bonds, and US treasury notes, are usually issued on an Actual/365 (or actual/actual) basis. This is different from Actual/365 fixed, as actual/actual computes on 366 days in a leap year.

Interest basis – converting 360-day to 365-day basis

In order to compare proceeds from investments calculated on a different basis, treasury will need to convert all rates to a common basis. This can be done using the following formula:

$$\text{Interest rate on comparison basis} = \frac{\text{interest rate on quoted basis} \times \text{number of days in comparison}}{\text{number of days in quoted year}}$$

So, if a treasurer wanted to compare a 4.5% interest rate calculated on a 365-day year with instruments calculating interest on a 360-day basis, the calculation would be:

$$\text{Comparison interest rate} = 4.5 \times \frac{360}{365} = 4.44\%$$

This formula can also be used to translate a 360-day interest rate into an equivalent 365-day rate. Note that rates prepared on a 360-day basis will always be slightly lower than those on a 365-day basis.

How LIBOR and Euribor rates are calculated

When appraising investments, it is important to understand any benchmark interest rates. One of the most commonly used benchmark rates is LIBOR.

The LIBOR rates used to be calculated daily for ten major currencies (AUD, CAD, CHF, DKK, EUR, GBP, JPY, NZD, SEK and USD) and for 15 maturities ranging from overnight (or spot/next) to the maximum 12 months.

Since the emergence of allegations of LIBOR manipulation, LIBOR has been calculated by ICE Benchmark Administration (IBA). IBA now calculates LIBOR daily for five major currencies (CHF, EUR, GBP, JPY and USD) and only for seven maturities (overnight/spot/next, one week, one month, two months, three months, six months, and 12 months).

Each LIBOR rate is developed from a panel of contributor banks (ranging from 11 to 17 banks per currency), each of which is asked to respond to this question on a daily basis: 'At what rate could you borrow funds, were you to do so by asking for and then accepting interbank offers in a reasonable market size just prior to 11 am London time?' Personnel at each of the contributor banks file their bank's rates to the IBA. The top and bottom quartile submissions are deleted (to avoid outliers distorting the result) and each daily LIBOR rate is calculated as the mean of the remaining five to nine submitted rates and is presented as an annualised rate. The daily rates are then published electronically by nine data vendors.

The IBA is regulated by the Financial Conduct Authority and requires bank submissions to be supported by transactional evidence, while still requiring contributors to use professional judgement where transactional data is insufficient or unrepresentative. This change, plus certain governance reforms, should reduce the risk of banks being able to manipulate the rates.

The European Money Markets Institute (EMMI) (formerly Euribor-EBF) produces the Euribor benchmark on a daily basis. It uses a similar calculation method to LIBOR, with rates provided by a large panel of contributor banks, with the top and bottom 15% of submissions deleted before each rate is calculated. It is currently the rate at which contributors believe euro interbank term deposits would be offered by one prime bank to another prime bank within the EMU zone, although transaction data will be used to calculate Euribor from mid-2017. Rates are published for eight maturities (one week, two weeks, one month, two months, three months, six months, nine months and 12 months). The EMMI also produces an overnight reference rate for the EUR, the Euro OverNight Index Average (EONIA), which is calculated via the European Central Bank, and is a weighted average of overnight interbank lending transactions in the euro area by the same panel banks which help to calculate Euribor.

Understanding the rate-setting process is essential. It is important to recognise that the contributor panel for Euribor and EONIA is larger than the LIBOR panels, which might

increase the potential impact from involving banks with a lower credit standing in the EMMI rates, according to their interpretation of 'prime bank'. Generally speaking, the Euribor rate tends to come in at levels that are slightly higher than the LIBOR rate for EUR, probably for liquidity reasons.

The Sterling Overnight Index Average (SONIA) was initially calculated by the Wholesale Market Brokers' Association, as the average of all unsecured overnight cash transactions brokered in London by its member firms. The Bank of England became SONIA administrator in April 2016 and it plans to introduce reforms to the SONIA benchmark by April 2018. These change the method of calculating SONIA, which will also be extended to provide cover of unsecured sterling overnight transactions negotiated bilaterally, as well as through brokers.

Finally, because LIBOR started as an offered rate, it was seen as better suited to benchmark borrowing rates. To benchmark investing rates, a bid rate may be considered as more appropriate. Traditionally, the London Interbank Bid Rate (LIBID), taken as LIBOR less a margin of 0.125%, was used. Today, the use of LIBID is no longer widely used, given the somewhat arbitrary nature of this margin. Instead, a treasurer may be better served by benchmarking against LIBOR itself and determining an appropriate margin if necessary.

Foreign exchange calculations

Forward exchange rates

When managing investments, treasury may want to fix a future exchange rate to ensure access to the required foreign currency on the date of maturity. This is possible through the use of a forward foreign exchange rate. Forward foreign exchange rates are calculated from the spot rate between the two currencies and the respective currency interest rates.

To calculate a forward exchange rate between the EUR and the USD for 60 days' time, we would use the following equation:

$$\text{Forward rate} = \text{spot rate} \times \frac{\left[1 + \left(r_v \times \frac{d}{y}\right)\right]}{\left[1 + \left(r_b \times \frac{d}{y}\right)\right]}$$

where r_v is the variable currency interest rate, r_b is the base currency interest rate, d is the number of days until settlement and y is the number of days in the year. By convention, all currency pairs are quoted in the same way. The first named currency is the base currency and the second is the variable currency. In most cases, the USD is quoted first (the exceptions against the USD are GBP, EUR, AUD and NZD, which are quoted first).

For example, to calculate the EUR/USD exchange rate 40 days forward when the spot rate is 1.20, with the EUR interest rate 2.5% and the USD interest rate 4.0%, we use the formula:

$$\text{Forward rate} = 1.2 \times \frac{\left[1 + \left(0.04 \times \frac{40}{360}\right)\right]}{\left[1 + \left(0.025 \times \frac{40}{360}\right)\right]} = 1.202$$

This can also be calculated using a points adjustment. In this case, the formula is:

$$\text{Forward rate} = \text{spot rate} + \left[\text{spot rate} \times (r_v - r_b) \times \frac{d}{Y}\right]$$

Using the example above:

$$\text{Forward rate} = 1.2 + \left[1.2 \times (0.04 - 0.025) \times \frac{40}{360}\right] = 1.202$$

As an illustration, consider a European company that has EUR 500,000 to invest for 40 days. The company could invest in a EUR-denominated asset and earn 2.35% or swap into USD and earn 3.8%. The spot rate is 1.20 and the 40-day forward rate is 1.202. Which is the more profitable solution?

The total return on the EUR-denominated instrument will be:

$$500,000 \times \left(1 + \left(0.0235 \times \frac{40}{360}\right)\right) = \text{EUR } 501,305.56$$

To invest in the USD-denominated instrument, the company would first swap the EUR into USD using the spot rate of 1.2 = USD 600,000.

This would then be invested in the USD-denominated instrument, giving a return of:

$$600,000 \times \left(1 + \left(0.038 \times \frac{40}{360}\right)\right) = \text{USD } 602,533.33$$

Because the company would know this return in advance, it could enter into a forward exchange rate contract to exchange the total return back into EUR at the rate of EUR/USD = 1.202.

This would give a return of EUR 501,275.65. Therefore the company would choose to invest the funds in the EUR-denominated instrument.

(In reality, there is unlikely to be an arbitrage opportunity between EUR and USD, although there may be between two cross-currencies that are less commonly traded.)

By convention, exchange rates are quoted with a bid/offer rate. The bid rate is the rate at which the counterparty bank will buy the currency from the company and the offer rate is the rate at which the counterparty bank will sell the currency to the company. For example, the spot EUR/USD exchange rate may be quoted as 1.2020/1.2023. This shows a bank will sell USD 1.2020 for EUR 1. A company would need to sell USD 1.2023 to receive EUR 1.

Forward rates are usually quoted in terms of the differential between the spot and the forward rate. For example, the spot GBP/USD rate could be 1.7625/1.7629, with forward points at 50/48. Because the larger number comes first, this means the points should be subtracted from the spot rate (indicating that US interest rates are higher than UK rates at the time of the quote). If the rate was quoted as 1.7625/1.7629, with forward points at 48/50, the points should be added to the spot rate, implying UK rates are higher than US rates. Finally, it is important to remember that spreads for forward rates are always greater than those for spot rates: a useful check that you have the convention the right way round.

Derivatives transactions

Swaps

When entering into an interest rate swap agreement, it may be possible to calculate the net present values of the two different sets of cash flows associated with the swap. The calculation of the net present value uses the formula explained earlier.

Calculating the net present value of the fixed-rate leg of an interest rate swap is relatively straightforward. Calculating the net present value of any floating rate leg is more complex. Investors can infer the likely future cash flows by using the forward interest rates implied by the current zero coupon yield curve. These can then be discounted to a present value using the same formula.

Finally, the net present value of the swap is represented by the difference between the two calculations.

FRAs

A forward rate agreement (FRA) allows one party to fix a rate of interest (the contract rate) from one point in the future to another (the contract period) and make payments on the basis of a set principal amount. The FRA effectively locks in either a payable or receivable rate for the future period. The settlement rate is determined with reference to an appropriate money market rate (e.g. LIBOR or Euribor) ruling on the start of the contract period.

The two parties will exchange a settlement amount at the beginning of the contract period. The settlement amount represents the difference between the settlement rate and the contracted rate discounted back from the end date. It is calculated using the following formula:

$$\text{Settlement} = \frac{\left[(s-c) \times \text{principal} \times \frac{n}{y} \right]}{\left[1 + \left(s \times \frac{n}{y} \right) \right]}$$

where s is the settlement rate, c is the contract rate, n is the number of days in the contract period and y is the number of days in the year.

For example, an investor may decide to enter into an FRA with a bank to fix the interest rate at 3% for three months in three months' time. If the nominal principal amount is EUR 450,000 and the rate at the beginning of the contract period is 3.15%, then the settlement payment will be:

$$\frac{\left[(0.0315 - 0.03) \times 450,000 \times \frac{92}{360} \right]}{\left[1 + \left(0.0315 \times \frac{92}{360} \right) \right]} = \text{EUR } 171.12$$

Because the settlement rate is above the contract rate, this is paid by the party wanting to fix the rate to the counterparty bank.

Options

Options are complex to value. The Black-Scholes model is one method of valuing an option. The original equation calculated the value of a call option on a stock. This gave the holder the right to buy the stock on a particular date in the future.

The value of the Black-Scholes call option is:

$$[P \times N(d_1)] - [K \times e^{-rT} \times N(d_2)]$$

where P is the current stock price, K is the exercise price, and e^{-rT} is the factor that discounts K to a present value; $N(d_1)$ is an assessment of the likelihood of the option being exercised; and

$N(d_2)$ is an assessment of the likelihood of the option being 'in the money' on exercise day (in other words, of $K < P$ on exercise day).

This basic model has been adapted to value all types of option, including currency options.

Country profiles

ARGENTINA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | <p>Although no restrictions exist, interest is not typically earned on resident and non-resident accounts. Companies are not permitted to open savings accounts.</p> <p>Accounts are available in domestic (ARS) and foreign currency.</p> <p>The common corporate current account can accept ARS deposits only. So called 'special current accounts' can accept deposits in ARS, USD and other foreign currencies, subject to central bank approval.</p> |
| Demand deposits | ✓ | <p>Interest-bearing USD and EUR-denominated savings accounts are available to individuals only. Companies are not permitted to open savings accounts.</p> <p>Authorisation from the Central Bank of Argentina (BCRA) is required for interest-bearing savings accounts denominated in other foreign currencies.</p> |
| Time deposits | ✓ | <p>Time deposits can be held in ARS (at fixed and variable rates for ARS and also UVA rates, which in turn are linked to the CER rate), USD and EUR.</p> <p>ARS fixed rate deposits are subject to a 30-day minimum term.</p> <p>ARS variable rate deposits are subject to a 120-day minimum term.</p> <p>UVA-linked time deposits are only available for maturities of 180 days or longer.</p> <p>USD and EUR fixed rate deposits are subject to a 30-day minimum term.</p> |
| Certificates of deposit | ✓ | <p>Certificates of deposit are available in nominal and inflation-adjusted instruments with a range of maturities. The most popular maturities are under two months.</p> <p>Certificates of deposit are not widely used as short-term investment instruments, due to relatively low interest rates.</p> |
| Treasury (government) bills | ✓ | <p>The Argentine Treasury issues Treasury bills (known as LETES) denominated in ARS and USD. Subscription of USD-denominated LETES can be made either in ARS or USD.</p> <p>LETES are issued with maturities ranging from 90 to 365 days.</p> <p>The BCRA issues bills denominated in ARS. Fixed and floating-rate bills are both available.</p> <p>ARS-denominated BCRA bills are issued with maturities ranging from one month to three years.</p> <p>The minimum investment amount is ARS 1,000 and USD 1,000.</p> |
| Commercial paper | ✓ | <p>Domestic commercial paper issuance is possible in Argentina, but is not widely used by companies.</p> <p>Maturities range from 90 days to two years.</p> |
| Money market funds | ✓ | <p>Some banks offer access to money market funds as part of their suite of short-term investment products.</p> |

ARGENTINA - continued

| Instruments | ✓ or x | Comments |
|-----------------------|--------|---|
| Repurchase agreements | ✓ | Repurchase agreements are available with maturities ranging from overnight to 30 days (terms up to seven days are the most traded). Repurchase agreements are used by financial institutions. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are not used by companies as short-term investment instruments in Argentina. |

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: 3%/6%. To non-resident companies (subject to tax treaties): 35%/15.05%. |
|---|---|

Custody and settlement arrangements

| | |
|----------------------|--|
| Depository | Caja de Valores SA. |
| Central counterparty | Mercado de Valores de Buenos Aires (Merval). |
| Settlement | T+3. |

Data as at January 2017.

AUSTRALIA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (AUD) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Term deposits can be held in AUD and foreign currency. Maturities range from seven days to over a year. Interest rates range from 2% to 3%. |
| Certificates of deposit | ✓ | Certificates of deposit are available with maturities ranging from one to six months. There is an active secondary market. |
| Treasury (government) bills | ✓ | The Reserve Bank of Australia (RBA) issues Treasury notes on behalf of the Australian government (Australian Office of Financial Management). Treasury notes are issued on an 'as required' basis with terms generally less than six months. Treasury notes are exempt from non-resident interest withholding tax (IWT). Overnight indexed swap rates are also issued by the RBA. |
| Commercial paper | ✓ | Offered by Australian companies, discounted promissory notes are popular with institutional investors. Maturities range from seven days to six months. The minimum investment amount is typically AUD 1 million. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are available in Australia, but are more commonly used by financial institutions than by companies. Repurchase agreements have an average maturity of 30 days. |
| Banker's acceptances | ✓ | Known as bank bills in Australia, these are issued with maturities of one, three and six months. Maturities of one month are most common. |

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): 10%. |
|---|---|

Custody and settlement arrangements

| | |
|--------------|-------------------------------------|
| Depositories | ASX Settlement. ASX Austraclear. |
|--------------|-------------------------------------|

Australia - continued

Central counterparty

ASX Clear.
ASX Clear operates the Derivatives Clearing System (DCS) to clear and settle equity-related derivative products.

Settlement

T+3 for equities.
T+3 for debt instruments.

Data as at January 2017.

AUSTRIA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (EUR) and foreign currency. Interest rates range from 0.02% to 1%. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are the most popular method of short-term investment among companies in Austria. Time deposits can be held in EUR and foreign currency. Maturities range from seven days to over a year. The minimum investment amount depends on the currency and maturity of the deposit. Interest rates range from 0.2% to 1.7%. |
| Certificates of deposit | ✓ | Certificates of deposit are available with maturities ranging from overnight to one year. Maturities of three months and six months are most common. The minimum investment amount is EUR 5,000. |
| Treasury (government) bills | ✓ | Treasury bills are issued by the Austrian Treasury on behalf of the Austrian government. Bills are issued, usually at a discount, with maturities ranging from seven days to one year. The minimum investment amount is EUR 100,000. Treasury certificates and government bonds are also available. |
| Commercial paper | ✓ | Offered by large companies and public authorities, domestic commercial paper is issued at a discount with maturities of three, six, nine and 12 months. Euro commercial paper can be issued in a range of currencies, typically USD, by larger companies with a published credit rating. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements (repos) are popular short-term investment instruments for companies and financial institutions in Austria. Maturities range from overnight to one week. Open repos are also available. There is an active repo market. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used by companies as short-term investment instruments in Austria. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: 0%/25%. To non-resident companies (subject to tax treaties): 0%/27.5%. |
|---|--|

AUSTRIA - continued

Custody and settlement arrangements

| | |
|---|---|
| Depository | Oesterreichische Kontrollbank AG (OeKB). The OeKB acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, commercial paper, investment funds, rights and warrants. |
| Central counterparty | Central Counterparty Austria. |
| Austria's securities settlement and custody includes: | T+2. The OeKB migrated to TARGET2-Securities on 6 February 2017. |

Data as at January 2017.

BELGIUM

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident current accounts. Accounts are available in domestic (EUR) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among companies in Belgium. Time deposits can be held in EUR or foreign currency. Maturities range from one week up to 12 months. Interest rates vary in accordance with the maturity and value of the time deposit. |
| Certificates of deposit | ✓ | Certificates of deposit are available with a maximum maturity of one year. The minimum investment amount is EUR 250,000. Most certificates of deposit have a fixed rate of interest. |
| Treasury (government) bills | ✓ | Two types of securities are regularly issued by the Belgian Debt Office: Treasury bills (issued in any OECD currency with maturities of up to three months); and Treasury certificates (issued in EUR at a discount with maturities of three, six or 12 months). Accrued interest is not subject to withholding tax. |
| Commercial paper | ✓ | Offered by companies and public authorities, commercial paper is available with a minimum maturity of seven days and a maximum maturity of one year. The minimum investment amount is EUR 250,000. It is common for amounts to exceed EUR 5 million. Belgian investors accept unrated EUR-denominated commercial paper from domestic issuers. Euro commercial paper can be issued in a range of currencies, typically USD, by larger companies with a published credit rating. |
| Money market funds | ✓ | Companies can invest in SICAVs, which are open-ended investment companies. Local funds are based in Belgium and Luxembourg. |
| Repurchase agreements | ✓ | Repurchase agreements are a popular short-term investment instrument among companies in Belgium. Maturities range from one day to one week. Repurchase agreements are actively traded between banks. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used by companies as short-term investment instruments in Belgium. |

BELGIUM - continued

Withholding tax on interest payments to companies

| | |
|---|--|
| | To resident companies: 0%/15%/25%. |
| Source: Deloitte Touche Tohmatsu, 2017. | To non-resident companies (subject to tax treaties): 0%/15%/30%. |

Custody and settlement arrangements

| | |
|-----------------------------|--|
| Depositories | <p>Euroclear Belgium.</p> <p>Banque Nationale de Belgique/Nationale Bank van België (BNB/NBB).</p> <p>Euroclear Belgium acts as central securities depository for equities, ETFs, government bonds, corporate bonds, investment funds, rights and warrants.</p> <p>The BNB/NBB acts as CSD for government bonds.</p> |
| Central counterparty | LCH.Clearnet SA. |
| Settlement | <p>T+2.</p> <p>The BNB/NBB Securities Settlement Systems migrated to TARGET2-Securities on 29 March 2016.</p> <p>Euroclear Belgium migrated to TARGET2-Securities on 12 September 2016.</p> |

Data as at January 2017.

BERMUDA

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts although interest-bearing current accounts are not widely used. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available from the leading banks in domestic (BMD) and major foreign currency. |
| Time deposits | ✓ | Fixed term deposit accounts can be held in BMD and all major foreign currencies. Maturities range from one week to one year. |
| Certificates of deposit | ✓ | Certificates of deposit are available in BMD and all major foreign currencies. Maturities range from one month to five years. |
| Treasury (government) bills | x | Treasury bills are not issued in Bermuda. |
| Commercial paper | ✓ | Commercial paper is available. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are available. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used by companies as short-term investment instruments. companies in Bermuda. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): None. |
|---|--|

Custody and settlement arrangements

| | |
|--------------------------|-------------------------------|
| Depository | Bermuda Securities Depository |
| Settlement | T+3. |
| Data as at January 2017. | |

BRAZIL

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | x | This is not formally available in Brazil. However, some banks use automatic investment of surplus balances on mutual funds to generate very similar results. |
| Demand deposits | ✓ | Interest-bearing BRL-denominated savings accounts are available to residents and non-residents. However, not all banks offer this product to non-residents. |
| Time deposits | ✓ | Time deposits can be held in BRL, with maturities between 30 and 120 days. |
| Certificates of deposit | ✓ | <p>Certificates of deposit (known as CDB) are widely used by companies in Brazil as a method of short-term investment. Maturities typically range from one month to one year (although there is no maximum maturity).</p> <p>Both fixed and floating-rate CDBs are issued and widely available. Financial institutions determine their own minimum investment amounts.</p> |
| Treasury (government) bills | ✓ | <p>Two types of Treasury bills are issued in Brazil: National Treasury Bills (known as LTNs) and Treasury Financial Bills (known as LFTs). Treasury bills are available online via the Tesouro Direto; only resident individuals are permitted to invest online via the Tesouro Direto.</p> <p>A portfolio of National Treasury Notes are also issued, denominated in both BRL and USD.</p> <p>Both bills and notes are issued for a wide range of maturities. Bills (LTNs and LFTs) are issued and traded at a discount over par value.</p> <p>Notes pay a coupon over face value, which is usually index linked.</p> <p>The Central Bank of Brazil issues its own bills (LBCs) and sells them in the market through daily auctions.</p> |
| Commercial paper | ✓ | Domestic commercial paper is a popular type of investment in Brazil. |
| Money market funds | ✓ | <p>Money market funds are an extremely popular type of short-term investment in Brazil. The majority of the total assets under management are invested in mutual funds of this category.</p> <p>Money market mutual funds may be incorporated as short-term or long-term funds (lower tax rates for long-term funds).</p> |
| Repurchase agreements | x | Repurchase agreements are not widely used by companies in Brazil. |
| Banker's acceptances | x | Banker's acceptances are prohibited in Brazil. |

BRAZIL - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2017.

To resident companies: 0–22.5%.
To non-resident companies: 0–15–25%.

Custody and settlement arrangements

Depositories

BM&FBOVESPA Central Securities Depository (CSD).
Central de Custódia e de Liquidação Financeira de Títulos (CETIP).
Sistema Especial de Liquidação e Custodia (SELIC).

Central counterparty

BM&FBOVESPA.

Settlement

T+3 for equities.
T+0 or T+1 for debt.

Data as at January 2017.

BRUNEI

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Interest is paid on the surplus balances of domestic currency (BND) current accounts and BND saving accounts. Interest is less commonly available on foreign currency current accounts. Interest is typically calculated on deposits of BND 1,000 or more. |
| Demand deposits | ✓ | Interest-bearing demand deposit savings accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among companies in Brunei. Time deposits can be held in BND and foreign currency. Maturities range from one month to one year. |
| Certificates of deposit | ✓ | Sharia-compatible certificates of deposit are available in Brunei for terms of up to one year. The minimum investment amount is BND 1,000. |
| Treasury (government) bills | ✓ | The Autoriti Monetari Brunei Darussalam sells and discounts BND-denominated sukuk bills on behalf of the government. Maturities of 91 and 364 days are most common. |
| Commercial paper | ✓ | Sharia-compatible commercial paper is issued by companies in Brunei, priced at a comparable rate to government sukuk bills. Maturities of up to 12 months are available. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | | Repurchase agreements are available in Brunei. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Brunei, but they are not widely used by companies as short-term investment instruments. |

Withholding tax on interest payments to companies

To resident companies: None.
 To non-resident companies (subject to tax treaties): 15%.*

Source: Deloitte Touche Tohmatsu, 2017.

Custody and settlement arrangements

Depository
 None
 Brunei is yet to establish a stock exchange.

* Interest on approved foreign loans from non-resident sources is exempt from tax.

CANADA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | <p>Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (CAD) currency and USD.</p> <p>Cash management/current accounts with interest generally pay a prime discounted interest rate on daily deposits. This is paid monthly. Interest earned on US deposits is based on the US Base Rate on a discounted basis. These accounts are the most liquid.</p> |
| Demand deposits | ✓ | <p>Interest-bearing demand deposit accounts are available to residents and non-residents.</p> <p>Cash management/current accounts with interest generally pay a prime discounted interest rate on daily deposits. This is paid monthly. Interest earned on US deposits is based on the US Base Rate on a discounted basis. These accounts are the most liquid.</p> |
| Time deposits | ✓ | <p>Term deposits can be held in both CAD and foreign currency. CAD-denominated term deposits up to CAD 100,000 with terms up to five years are guaranteed by the Canada Deposit Insurance Corporation (CDIC), if the deposit-holder is a member of the CDIC.</p> |
| Certificates of deposit | ✓ | <p>Canadian banks issue Guaranteed Investment Certificates (GICs). Short-term GICs are issued with maturities ranging from one month to five years. Some have the option of early redemption.</p> <p>The minimum investment amount is CAD 1,000 or, more commonly, CAD 5,000, depending on the term length.</p> |
| Treasury (government) bills | ✓ | <p>Treasury bills (T-bills) are issued by both the federal and the provincial governments and their agencies.</p> <p>Federal government three, six and 12-month T-bills are auctioned off bi-weekly.</p> <p>Federal government cash management bills are issued with maturities ranging from overnight to three months. Auctions are held when necessary.</p> <p>T-bills under six months can be found in the secondary market with maturities placed every two weeks. T-bills with maturities of six months to one year are available with maturities placed every month.</p> <p>The minimum investment is CAD 5,000 for T-bills with maturities of three months to one year, and CAD 25,000 for T-bills with maturities of one or two months.</p> <p>There is an active secondary market.</p> |
| Commercial paper | ✓ | <p>Commercial paper is commonly issued by companies with maturities of one, two and three months. Maturities ranging from overnight to one year are possible.</p> <p>US and international companies frequently access the Canadian market with USD and CAD commercial paper programmes.</p> <p>The minimum investment amount is CAD 100,000 or USD 100,000. There is an active secondary market for both domestic and foreign issuers.</p> |

CANADA - continued

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Money market funds | ✓ | Money market funds are widely available. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for companies in Canada. Maturities range from overnight to one year. Overnight paper can be continuously rolled over. |
| Banker's acceptances and banker deposit notes | ✓ | Banker's acceptances (BAs) and bearer deposit notes (BDNs) are popular short-term investment instruments in Canada. Maturities of one, two, three, six and 12 months are most common, although maturities ranging from overnight to one year are available in the secondary market. The minimum investment amount is CAD 25,000 for retail investors and CAD 100,000 for institutional investors. BDNs require a minimum investment of CAD 1 million; however, small lots are found in the secondary market. BAs and BDNs, which are issued by Canada's largest financial institutions, have minimal credit risk and provide a benchmark for other short-term credits. There is an active secondary market. |

Withholding tax on interest payments to companies

| | |
|--|--|
| | To resident companies: None. |
| | To arm's length non-resident companies (subject to tax treaties): None. |
| | To non-arm's length non-resident companies (subject to tax treaties): 25%. |

Source: Deloitte Touche Tohmatsu, 2017.

Custody and settlement arrangements

| | |
|------------------------|---|
| Depository | CDS Clearing and Depository Services Inc. |
| Central counterparties | The Canadian Derivatives Clearing Corporation. CDS Clearing and Depository Services Inc. ICE Clear Canada Inc. Natural Gas Exchange Inc. The Canadian Derivatives Clearing Corporation acts as central counterparty for equity derivatives, index derivatives and interest rate derivatives. CDS Clearing and Depository Services acts as the central counterparty for Government of Canada bonds, Treasury bills, Government of Canada-guaranteed corporate bonds, Provincial government bonds, notes and Treasury bills. |
| Settlement | T+3 for equities and debt securities. T+0 for money market instruments and short-term federal bonds. |

Data as at January 2017.

CHILE

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts, but the practice is not widespread. Accounts are available in domestic (CLP) and foreign currency (USD and EUR). |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among companies in Chile. Time deposits can be held in in CLP, UF (unidades de fomento), EUR and USD. Maturities range from one week to one year. The most popular maturity is one month. UF-denominated deposits are inflation-indexed and available for periods over three months. |
| Certificates of deposit | ✓ | Certificates of deposit are available with maturities ranging from one month to one year. Certificates of deposit with maturities of less than 89 days are denominated in CLP. Those with maturities of three months and above are inflation-indexed and denominated in UF. Financial institutions determine their own minimum investment amounts. |
| Treasury (government) bills | ✓ | Treasury bills (T-bills) in the form of discountable promissory notes are issued by the Chilean government via auction with maturities ranging from one month to one year. T-bills are issued via an auction. The Chilean Central Bank issues its own discountable promissory notes (PDBC) with maturities ranging from one month to one year on a regular basis. The most common maturities are one and three months. There is an active secondary market. |
| Commercial paper | ✓ | Commercial paper can be issued with maturities of up to 36 months. The minimum denomination is UF 250. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for companies in Chile. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Chile, but there is no evidence that they are used by companies as short-term investment instruments. |

CHILE - continued

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): 4%/35%.* |
|---|---|

* 4% withholding rate applies to interest payments made to foreign banks, financial institutions and by insurance companies or pension funds that comply with certain registration requirements, provided the lender and borrower are unrelated.

Custody and settlement arrangements

| | |
|----------------------|---|
| Depository | Deposito Central de Valores (DCV). |
| Central counterparty | Contraparte Central de Liquidacion de Valores (CCLV). |
| Settlement | T+2 for equities; T+0 or T+1 for bonds. |

Data as at January 2017.

CHINA

| Instruments | ✓ or X | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. The interest rate is subject to a ceiling published by the People's Bank of China (PBoC). |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. Domestic (RMB) and foreign currency demand deposit accounts are available. The interest rate on RMB deposits is subject to a ceiling published by the PBoC. Banks are free to set rates on EUR, HKD, JPY and USD deposits if amounts are equal to or higher than USD 3 million or its foreign currency equivalent. The interest rate on low-value deposits (amounts less than USD 3 million or its foreign currency equivalent) denominated in EUR, HKD, JPY and USD is subject to a ceiling published by the PBoC. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among companies in China. Term deposit accounts can be held in RMB and foreign currency. RMB deposit accounts are available with maturities of three and six months and one, two, three and five years. Foreign currency accounts have terms of one and two weeks, one, two, three and six months and one and two years. The interest rate on RMB deposits is subject to a ceiling published by the PBoC. Banks are free to set rates on large fixed deposits (amounts equal to or higher than USD 3 million or its foreign currency equivalent) denominated in EUR, HKD, JPY and USD. The interest rate on low-value fixed deposits (amounts less than USD 3 million or its foreign currency equivalent) denominated in EUR, HKD, JPY and USD is subject to a ceiling published by the PBoC. |
| Certificates of deposit | ✓ | Although certificates of deposit are available, the market is ill-developed and illiquid. Negotiable Certificates of Deposit (NCDs) are issued by financial institutions, with trading on the interbank market. The Shanghai Interbank Offered Rate is used as a reference rate. NCDs must be issued at over RMB 50 million. Fixed rate certificates of deposit must have a maximum maturity of one year. Floating-rate certificates of deposit must have maturities of more than one year. |
| Treasury (government) bills | X | Only Qualified Foreign Institutional Investors are permitted to invest in Chinese government securities. |

CHINA - continued

| Instruments | ✓ or x | Comments |
|-----------------------|--------|--|
| Commercial paper | ✓ | Offered by companies and financial institutions, commercial paper is issued with maturities of up to six months. Foreign-invested enterprises are permitted to invest in commercial paper. As of 2017, all commercial paper issued with a face value of more than RMB 3 million must be executed electronically. |
| Money market funds | ✓ | Money market funds are available, and increasingly popular, in China. |
| Repurchase agreements | ✓ | Repurchase agreements can be arranged on both government and corporate bonds. Foreign-invested enterprises must sign a master agreement before entering into a repurchase agreement with a counterparty. |
| Banker's acceptances | ✓ | Banker's acceptances are available in China and widely used by companies as short-term investment instruments. |

Withholding tax on interest payments to companies

To resident companies: None.

Source: Deloitte Touche Tohmatsu, 2017.

To non-resident companies (subject to tax treaties): 10%/20%.*

* A 6% VAT also is imposed.

Custody and settlement arrangements

| | |
|------------------------|---|
| Depositories | China Securities Depository and Clearing Corporation (CSDCC). China Government Securities Depository Trust & Clearing Corporation (CDC). |
| Central Counterparties | CSDCC. CDC. |
| Settlement | T for 'A' shares and bonds. Net cash settles on T+1. T+3 for 'B' shares, held by foreign investors. |

Data as at January 2017.

COLOMBIA

| Instruments | ✓ or X | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest is not offered on resident COP-denominated standard current accounts. It is offered on remunerated current accounts. |
| Demand deposits | ✓ | Interest-bearing savings accounts are available to residents. |
| Time deposits | ✓ | Term deposits are available in the form of certificados de ahorro a termino (CDATs). These are savings certificates issued by banks with maturities ranging from one day to 30 days. |
| Certificates of deposit | ✓ | <p>Certificates of deposit are issued by banks with maturities ranging from one month to over a year. Maturities of less than three months are the most common.</p> <p>The minimum investment amount is COP 1 million.</p> <p>There is a secondary market via the Colombian Securities Exchange.</p> |
| Treasury (government) bills | ✓ | <p>The Colombian government issues Treasury bills (T-bills) weekly through registered dealers.</p> <p>The minimum investment amount is COP 500,000.</p> <p>Maturities for short-term bills (TES B-Class bills) range from 30 days to one year.</p> <p>Long-term TES bills can be denominated in COP, UVR (an inflation-indexed unit) and TRM (a reference foreign exchange rate (USD/COP)).</p> <p>There is an active secondary market.</p> |
| Commercial paper | ✓ | <p>Commercial paper is not commonly used by companies as a short-term investment instrument.</p> <p>Maturities range from 45 days to one year.</p> |
| Money market funds | ✓ | Short-term mutual investment funds are available in Colombia. |
| Repurchase agreements | ✓ | Repurchase agreements are available in Colombia. The market is dominated by financial institutions, although some companies do use them as short-term investment instruments. |
| Banker's acceptances | ✓ | <p>Banker's acceptances are available in Colombia and used by companies as short-term investment instruments.</p> <p>Issued with maturities up to one year, banker's acceptances are traded on the Colombian Electronic Market.</p> |

COLOMBIA - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2017.

To resident companies: 7%.
To non-resident companies (subject to tax treaties):
5%/14%/33%.*

*Interest paid to a non-resident is subject to a final withholding tax of 33%, if the loan term does not exceed 12 months. Otherwise the rate is typically 14%. Payments to a foreign entity on loans granted for development of infrastructure programmes are subject to a reduced rate of 5%.

Custody and settlement arrangements

Depositories Deposito Centralizado de Valores de Colombia SA for the country's stock exchange (Bolsa de Valores de Colombia).
Deposito Central del Valores for government bonds.

Central counterparty Bolsa de Valores de Colombia.

Settlement T+3 for equities.
T+0 to T+3 for bonds.

Data as January 2017.

COSTA RICA

| Instruments | ✓ or X | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (CRC) and major foreign currencies, including EUR and USD. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Term deposits are available in maturities ranging from one month to one year, with three, six and 12-month terms most common. Term deposits can be held in CRC and foreign currency. Interest rates vary according to the amount invested. Minimum investment amounts are determined by individual banks. |
| Certificates of deposit | ✓ | Offered by commercial banks, certificates of deposit are available in CRC, EUR and USD, with maturities ranging from one month to five years. Minimum investment amounts are determined by individual banks. |
| Treasury (government) bills | ✓ | Several types of Treasury bills are issued by different government entities. Monetary-stabilisation bonds (BEMs) are central bank bills issued via auction, with maturities ranging from one to 12 months. They are used widely as short-term investment instruments. |
| Commercial paper | ✓ | Commercial paper is commonly issued by local companies and can be purchased through the stock market or directly from the issuing firm. Maturities are less than 360 days. |
| Money market funds | ✓ | A number of banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for companies in Costa Rica. |
| Banker's acceptances | ✓ | Banker's acceptances are used by companies as short-term investment instruments and are widely available from commercial banks. Banker's acceptances are traded on the stock exchange. |

Withholding tax on interest payments to companies

| | |
|---|---|
| | To resident companies: 5.5%.* To non-resident companies (subject to tax treaties): 0%–15%.** |
| | * Only paid by financial intermediaries or entities registered on a stock exchange. |
| | ** There is no withholding tax on interest payments to bilateral or multilateral organisations |
| Source: Deloitte Touche Tohmatsu, 2017. | |

COSTA RICA - continued

Custody and settlement arrangements

| | |
|----------------------|-------------------------------------|
| Depository | InterClear Central de Valores SA. |
| Central counterparty | There is no central counterparty. |
| Settlement | T+3 for equities. T+1 for bonds. |

Data as January 2017.

DENMARK

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | x | Interest can be earned on resident and non-resident accounts. However, due to Denmark's current negative interest rate policy, banks no longer pay interest on current accounts or on most savings accounts. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are the most popular method of short-term investment among companies in Denmark. |
| Certificates of deposit | ✓ | Certificates of deposit are offered by banks. |
| Treasury (government) bills | ✓ | Government securities are popular with both companies and financial institutions in Denmark. Maturities of six or nine months are most common, although Treasury bills (T-bills) can be issued with maturities of up to 12 months. Auctions are held at the end of each month. A new six-month T-bill is opened every three months. T-bills are issued in multiples of DKK 20 million. |
| Commercial paper | ✓ | Commercial paper is issued by both companies and financial institutions. The minimum investment amount is typically DKK 1 million. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are available with maturities ranging from one day to one year. The minimum investment amount is DKK 1 million. The minimum investment amount for a reverse repo is DKK 500,000. |
| Banker's acceptances | x | There is no evidence of banker's acceptances being used by companies as short-term investment instruments in Denmark. |

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-residents companies (subject to tax treaties): 0%/22%. |
|---|---|

DENMARK - continued

Custody and settlement arrangements

| | |
|------------|--|
| Depository | VP Securities. VP Securities acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, commercial paper, investment funds, rights and warrants. |
|------------|--|

| | |
|------------|---|
| Settlement | T+2. VP Securities joined TARGET2-Securities on 12 September 2016. |
|------------|---|

Data as at January 2017.

EGYPT

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | x | Interest can be earned on resident and non-resident accounts, but there is no evidence that banks are offering it. Accounts are available in domestic (EGP) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing savings accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among large companies in Egypt. Time deposits are offered by the majority of commercial banks in Egypt. Maturities of one, three, six and 12 months are most common, but can range from one week to five years. Time deposits with maturities exceeding one year are uncommon. Deposits in EUR and USD are offered with three-month maturities, but their rates of interest are significantly lower than those denominated in EGP. |
| Certificates of deposit | ✓ | Certificates of deposit (CDs) are issued in EGP, USD, EUR and GBP by public sector banks. CDs issued by private sector banks represent only a small proportion of the total. CDs in EGP are available with maturities of three and five years. Foreign currency CDs are available with maturities of three, five and seven years. Returns are exempt from tax. |
| Treasury (government) bills | ✓ | Treasury bills (T-bills) are the most popular method of short-term investment in Egypt. T-bills are issued by the Central Bank of Egypt via weekly auctions and are available via the secondary market. Bids for T-bills are required to be placed via financial institutions licensed by the Central Bank. Foreign institutions are exempt from restrictions on such investments. Maturities of 91, 182, 273 or 364 days are most common. Returns from T-bills are tax-free. |
| Commercial paper | ✓ | Discounted commercial paper is available in Egypt, but the market for such paper is underdeveloped. |
| Money market funds | x | Money market funds are not available. |
| Repurchase agreements | ✓ | Repurchase agreements on T-bills are available. The minimum investment amount is EGP 1 million. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Egypt, but are seldom used by companies as short-term investment instruments. |

EGYPT - continued

Withholding tax on interest payments to companies

| | |
|--|---|
| <p>Source: Deloitte Touche Tohmatsu, 2017.</p> | <p>To resident companies: None/20%/32%. *</p> <p>To non-resident companies (subject to tax treaties): None/20%. **</p> <p><small>*Government bonds issued by the Ministry of Finance suffer 32% withholding tax on their interest. Treasury notes and bonds are subject to withholding tax of 20%. **Interest paid under a long-term loan (i.e. exceeding three years) is subject to withholding tax.</small></p> |
|--|---|

Custody and settlement arrangements

| | |
|--------------------------|--|
| <p>Depository</p> | <p>Misr Company for Central Clearing, Depository & Registry (MCDR). MCDR is the sole central securities depository in Egypt.</p> |
| <p>Settlement</p> | <p>T for eligible securities traded on the Intra-day Trading System. T+1 for Treasury bonds. T+2 for other securities.</p> |

Data as January 2017.

FINLAND

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | x | Interest can be earned on resident and non-resident accounts, However, due to Finland's exceptionally low interest rates, banks no longer pay interest on current accounts or most savings accounts. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among smaller companies in Finland. Time deposits can be held in domestic (EUR) and foreign currency. Maturities are typically for less than one month. |
| Certificates of deposit | ✓ | Offered by commercial banks, certificates of deposit (CDs) have traditionally been the most popular method of short-term investment among companies in Finland. CDs can be traded prior to their maturity date. CDs traded on the interbank market are typically valued at EUR 5 million to EUR 10 million. The minimum investment amount is EUR 100,000. |
| Treasury (government) bills | ✓ | Issued by the State Treasury, Treasury bills are available in EUR and USD, with maturities ranging from one day to one year. The minimum par value of Treasury bills is EUR 1 million. |
| Commercial paper | ✓ | Commercial paper is a popular short-term investment instrument among companies in Finland. Finnish companies may also invest in Euro commercial paper, typically in USD. |
| Money market funds | ✓ | Banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | There is an active interbank repurchase agreement market in Finland. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used by companies as short-term investment instruments in Finland. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): None. |
|---|--|

Custody and settlement arrangements

| | |
|------------|--|
| Depository | Euroclear Finland. Euroclear Finland acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, commercial paper, investment funds, rights and warrants. |
|------------|--|

FINLAND - continued

Settlement

T+2.

Euroclear Finland is scheduled to migrate to TARGET2–Securities in the fifth wave, scheduled for 18 September 2017.

Data as at January 2017.

FRANCE

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident current accounts. Accounts are available in domestic (EUR) and foreign currency. Interest rates range up to 1% on most accounts. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits can be held in EUR and foreign currency. Maturities range from one week to one year. Interest rates range from 0.7% to 1.5%. |
| Certificates of deposit | ✓ | Certificates of deposit are available with a minimum maturity of one day and a maximum maturity of one year. Maturities of three to six months are most common. Certificates of deposit can be denominated in EUR or foreign currency. The minimum investment amount is EUR 150,000. Interest rates can be fixed or variable. |
| Treasury (government) bills | ✓ | Treasury bills are regularly issued to commercial banks and funds by the Agency France Trésor. Discounted Treasury bills (BTFs) have maturities ranging from two weeks to one year. The minimum investment amount is EUR 1 million. |
| Commercial paper | ✓ | France has the busiest commercial paper (CP) market in Europe. Offered by companies and public authorities, domestic CP is popular among commercial banks. Most outstanding CP is held in OPCVMs (see below). CP has a minimum maturity of one day and a maximum maturity of one year. Maturities of between one month and three months are the most common. The country's leading banks act as dealers in CP programmes. Issuers rarely distribute CP directly. The minimum investment amount is EUR 150,000. Euro commercial paper can be issued in a range of currencies, typically USD, by larger companies with a published credit rating. |
| Mutual investment funds | ✓ | OPCVMs, a popular and flexible method of short-term investment, are mutual investment funds into which residents can transfer excess funds. An OPCVM can take the form of an open-ended investment company (SICAV) or a unit trust based on the contractual co-ownership of transferable securities (FCP) that, unlike a SICAV, does not have to publish its net asset value on a daily basis. OPCVMs are used to invest in money, bonds or equities. |

FRANCE - continued

| Instruments | ✓ or x | Comments |
|-----------------------|--------|---|
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for companies in France. Maturities range from one day to one week. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used by companies as short-term investment instruments in France. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies: None. |
|---|--|

Custody and settlement arrangements

| | |
|----------------------|---|
| Depository | Euroclear France. |
| Central counterparty | LCH.Clearnet SA. |
| Settlement | T+2. Euroclear France migrated to TARGET2-Securities on 12 September 2016. |

Data as at January 2017

GERMANY

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (EUR) and foreign currency. |
| Demand deposits | ✓ | Demand deposit accounts (known as Day Money/Day Money Account) are available to residents and non-residents. Most domestic companies place their cash surplus with commercial banks for short maturities. |
| Time deposits | ✓ | Time deposits can be held in EUR or foreign currency. The amounts deposited range from EUR 100,000 to EUR 10 million. Maturities range from overnight to 12 months. Interest rates are negotiable, depending on maturity, but typically range from 0.08% to 0.38%. |
| Certificates of deposit | ✓ | Certificates of deposit (CDs) are issued by companies and banks, mainly into the primary market, but are not widely used. Maturities range between 30 days and 180 days. Maturities in excess of six months are possible for CDs with a value above EUR 1 million. The minimum investment amount is EUR 5,000. CDs are generally issued as fixed rate instruments, but flexible rates are sometimes available. |
| Treasury (government) bills | ✓ | Treasury bills (T-bills) are regularly issued by the federal government. Fixed rate T-bills have maturities ranging from three months to several years. Zero-coupon T-bills have maturities ranging from six months to two years. Bubills are zero coupon T-bills with maturities of six months. Bubills are issued on a monthly basis by the German Finance Agency to refund the federal debt on a short-term basis. Bundesschatzanweisungen are T-bills issued by the Bundesbank with maturities of two years. |
| Commercial paper | ✓ | Offered by companies and the country's larger banks, commercial paper is typically issued with maturities ranging from one week to two years. Maturities of three months is most common. Commercial paper is principally sold in the primary market. Euro commercial paper can be issued in a range of currencies, typically USD, by larger companies with a published credit rating. |
| Promissory notes | ✓ | Companies in Germany have traditionally used the private placement of promissory notes (Schuldscheindarlehen). Maturities range from two years to ten years. |

GERMANY - continued

| Instruments | ✓ or x | Comments |
|-----------------------|--------|--|
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments among companies in Germany. They can be used as a money market substitute. Maturities range from one day to one week. |
| Banker's acceptances | ✓ | Banker's acceptances are available with maturities of 30 days to 90 days. |

Withholding tax on interest payments to companies

To resident companies: 0%/15.825%/26.375% (including solidarity surcharge).

To non-resident companies: 0%/15.825%/26.375% (including solidarity surcharge).

Source: Deloitte Touche Tohmatsu, 2017.

Custody and settlement arrangements

| | |
|----------------------|--|
| Depository | Clearstream Banking Frankfurt. Clearstream Banking acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, commercial paper, investment funds, rights and warrants. |
| Central counterparty | Eurex Clearing AG. |
| Settlement | T+2. Clearstream Banking migrated to TARGET2-Securities on 6 February 2017. |

Data as at January 2017.

GREECE

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (EUR) and foreign currency. Interest rates are competitive and open to negotiation. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents in EUR and foreign currency. |
| Time deposits | ✓ | Time deposits can be held in EUR or foreign currency, with maturities ranging from one week to one year. Interest is typically paid on the maturity date, although monthly interest payments are possible for 12-month deposits. |
| Certificates of deposit | ✓ | Certificates of deposit are available and widely used by companies. Maturities range up to one year. The minimum investment amount is EUR 5,000. |
| Treasury bills | ✓ | Greek Treasury bills (T-bills) are auctioned by the Ministry of Finance with maturities of three, six or 12 months. T-bills are auctioned in denominations of EUR 5 million. |
| Commercial paper | ✓ | Offered by companies, commercial paper is available with maturities ranging up to one year. Euro commercial paper can be issued in a range of currencies, typically USD, by larger companies with a published credit rating. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Most repurchase agreements are made on T-bills and government bonds. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used by companies as short-term investment instruments in Greece. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: 0%/15%. To non-resident companies (subject to tax treaties): 0%/15%. |
|---|--|

Custody and settlement arrangements

| | |
|----------------------|--|
| Depositories | Bank of Greece (BOG). Hellenic Exchanges SA (HELEX). |
| Central counterparty | HELEX. |
| Settlement | T+2. Bank of Greece Securities Settlement System migrated to TARGET2-Securities in June 2015. |

Data as at January 2017.

HONG KONG

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (HKD) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposits are available to residents and non-residents. Accounts are available in HKD and foreign currency. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among companies in Hong Kong. Time deposits can be held in HKD and foreign currency. Licensed banks are permitted to issue deposits of any size or maturity. Restricted licence banks are limited to offering time deposits of HKD 500,000 or more, while deposit-taking companies are confined to offering deposits of HKD 100,000 or more, with a maturity of at least three months. Maturities range from overnight to a year. |
| Certificates of deposit | ✓ | Certificates of deposit are issued by financial institutions in a number of currencies for a range of maturities. The minimum investment amount depends on the issue. Interest is paid periodically, depending on the issue. |
| Treasury (government) bills | ✓ | The Hong Kong Monetary Authority issues Exchange Fund Bills with maturities ranging from one week to 12 months. Exchange fund bills are issued at a discount, with a minimum denomination of HKD 500,000. Exchange fund bills are exempt from profits tax and stamp duty. |
| Commercial paper | ✓ | Commercial paper is available, but not widely used by companies as a method of short-term investment. |
| Money market funds | ✓ | Commercial banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are available in Hong Kong and used by some large companies. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Hong Kong, but not widely used by companies as short-term investment instruments. Banker's acceptances are typically only available in USD. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): None. |
|---|--|

HONG KONG - continued

Custody and settlement arrangements

| | |
|----------------------|---|
| Depositories | Hong Kong Securities Clearing Company Limited (HKSCC). Central Clearing And Settlement System (CCASS). Central Monetary Unit (CMU). |
| Central counterparty | HKSCC. For isolated trades, the HKSCC facilitates the settlement between buyer and seller only, with each bearing counterparty risk. |
| Settlement | T+2 for equities (requires prepayment for cash to achieve T+2, otherwise the cash element occurs one day later). |

Data as at 2017.

HUNGARY

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident current accounts. Accounts are available in domestic (HUF) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are the most popular method of short-term investment among companies in Hungary. Time deposits can be held in HUF and foreign currency. Maturities range from one week to one year. |
| Certificates of deposit | ✓ | Certificates of deposit are available with maturities ranging from one month to three years. The minimum investment amount is HUF 5,000. Yields are higher than for time deposits. |
| Treasury (government) bills | ✓ | Treasury bills (T-bills) are widely used by companies, financial institutions and domestic mutual funds. They are regularly issued via auction by the Government Debt Management Agency with maturities of three, six or 12 months. T-bills are auctioned in denominations of HUF 10,000. Government bonds are also issued with maturities of over one year, two, three, five, ten and 15 years. These are used by both domestic and international investors. The National Bank of Hungary auctions central bank deposits on a weekly basis with maturities of three months. |
| Commercial paper | ✓ | Offered by companies and local authorities, commercial paper can be issued via auction by dealers or by direct private placement. Maturities range up to 12 months. Domestic commercial paper is issued in denominations of HUF 500,000. Euro commercial paper can be issued in a range of currencies, typically USD, by larger companies with a published credit rating. Euro commercial paper is issued in denominations of EUR 500,000. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements on T-bills are used for short-term investment purposes by all banks and brokerage companies. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Hungary, but they are seldom used by companies as short-term investment instruments. |

HUNGARY - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2017.

To resident companies: None.
To non-resident companies (subject to reduction or exemption under tax treaties): None.

Custody and settlement arrangements

Depository

Központi Elszámolóház és Értéktár (Budapest) Zrt (KELER).
KELER acts as central securities depository for equities, ETFs, Government bonds, corporate bonds, T-bills, commercial paper and investment funds.

Central counterparties

KELER CCP Ltd.
Central Clearing House and Depository Budapest.

Settlement

T+2.
KELER migrated to TARGET2-Securities on 6 February 2017.

Data as at January 2017

INDIA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | x | Interest cannot be earned on current accounts. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. Accounts are available in domestic currency (INR) and foreign currency. |
| Time deposits | ✓ | Time deposits are available to residents and non-residents. Term deposits can be held in INR and foreign currency. There is no minimum investment term for residents. Non-residents may be required to invest for a minimum of one year. Companies can invest in other companies for short periods (typically for no longer than six months) through inter-corporate deposits. |
| Certificates of deposit | ✓ | Certificates of deposit (CDs) are available to residents and non-residents. CDs can only be issued to non-residents on a non-repatriable basis. CDs issued by banks have maturities ranging from seven days to a one year. Other financial institutions issue CDs with maturities of one year to three years. CDs are issued in multiples of Rs1 lakh (INR 100,000). The minimum investment amount is Rs1 lakh. CDs can be interest bearing or issued at a discount. |
| Treasury (government) bills | ✓ | The Reserve Bank of India (RBI) issues Treasury bills (T-bills) at weekly auctions. The 91-day T-bill is auctioned every Wednesday and the 182-day and 364-day T-bills are issued on alternate Wednesdays. T-bills are available to residents and non-residents. The minimum investment amount is INR 10,000. There is an active secondary market, especially for the longer-dated bills. |
| Commercial paper | ✓ | Commercial paper (CP) is offered by companies, primary dealers and All-India Financial Institutions. CP is available to both residents and non-residents. Maturities range from seven days to one year. The most common maturity is three months. The minimum investment is Rs5 lakh (INR 500,000). CP must be rated by an RBI-specified Indian rating agency. |
| Money market funds | ✓ | Money market funds are available in India. |

INDIA - continued

| Instruments | ✓ or x | Comments |
|-----------------------|--------|--|
| Repurchase agreements | ✓ | Repurchase agreements can be arranged against certain instruments without a limit on maturity. Only RBI-authorised financial institutions can participate in the repurchase agreement market. |
| Banker's acceptances | x | Banker's acceptances are not permitted in India. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: 10%. To non-resident companies (subject to tax treaties): 5%/20% plus applicable surcharge and cess. |
|---|--|

Custody and settlement arrangements

| | |
|--------------|---|
| Depositories | Central Depository Services (India) Limited (CDSL). National Security Depository Limited (NSDL). Reserve Bank of India. |
| Settlement | T+2 for equities. T+N for bonds. |

Data as at January 2017.

INDONESIA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident current accounts. Accounts are available in domestic (IDR) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits can be held in IDR and foreign currency. Maturities range from one month to two years. |
| Certificates of deposit | ✓ | Certificates of deposit are offered by some domestic and international banks. Certificates of deposit are predominantly issued in IDR. Maturities range from one week to one year. |
| Treasury (government) bills | ✓ | Sertifikat Bank Indonesia (SBI) are issued weekly via auction by Bank Indonesia with maturities of one, three, six, nine and 12 months. SBIs are available in denominations of IDR 1 million. The minimum investment amount is IDR 1 billion for banks that purchase SBIs directly from Bank Indonesia. |
| Commercial paper | ✓ | Commercial paper is not widely used by companies as a method of short-term investment. Maturities range from one week to nine months. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are available in IDR and foreign currency. Repurchase agreements most commonly have overnight maturities. The benchmark interest rate is 3%. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Indonesia, but they are not widely used by companies as short-term investment instruments. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: Exempt (banks) or 15% (non-banks). To non-resident companies (subject to tax treaties): 20%. |
|---|--|

INDONESIA - continued

Custody and settlement arrangements

| | |
|----------------------|---|
| Depositories | Bank Indonesia. Indonesian Central Securities Depository (KSEI). |
| Central counterparty | Bank Indonesia. |
| Settlement | T+3 for equities. T+2 for income securities. |

Data as at January 2017.

ITALY

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | <p>Interest can be earned on resident and non-resident current accounts.</p> <p>Accounts are available in domestic (EUR) and foreign currency.</p> <p>Interest rates are negotiable, but typically average 0.1%.</p> |
| Demand deposits | ✓ | <p>Interest-bearing demand deposit accounts are available to resident and non-residents.</p> |
| Time deposits | ✓ | <p>Time deposits are a popular method of short-term investment among companies in Italy.</p> <p>Time deposits can be held in EUR and foreign currency.</p> <p>Maturities range from overnight to one year.</p> <p>Terms are negotiable.</p> |
| Certificates of deposit | ✓ | <p>Certificates of deposit are available, with maturities ranging from three months to five years. Maturities exceeding 18 months are not permitted to be cashed until after the first 18 months.</p> <p>Certificates of deposit are available in USD, GBP and CHF, in addition to other major foreign currencies.</p> <p>The minimum investment amount is EUR 5,000.</p> <p>Certificates of deposit can have fixed or floating rates of interest.</p> <p>There is no secondary market.</p> |
| Treasury (government) bills | ✓ | <p>Treasury bills (T-bills) are the most popular short-term investment in Italy.</p> <p>Maturities of three, six and 12 months are most common, although the Ministry of Economy and Finance's Department of Treasury can issue T-bills for any period.</p> <p>T-bills can be purchased via financial intermediaries and online.</p> <p>There is an active secondary market.</p> <p>Bonds are also issued by regional, provincial and municipal authorities (buoni obbligazionari comunali).</p> |
| Commercial paper | ✓ | <p>Commercial paper is seldom used in Italy.</p> <p>Maturities range from three to 12 months.</p> <p>The minimum investment amount is EUR 50,000.</p> <p>Italian companies may invest in Euro commercial paper, typically in USD.</p> |
| Money market funds | ✓ | <p>A number of banks offer access to money market funds as part of their suite of short-term investment products.</p> <p>The minimum investment amount is EUR 25,000.</p> |

ITALY - continued

| Instruments | ✓ or x | Comments |
|-----------------------|--------|--|
| Repurchase agreements | ✓ | Repurchase agreements are increasingly popular short-term investment instruments among companies and institutional investors in Italy. Most repurchase agreements have a spot value date, although maturities of one week, one month or three months are available. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Italy, but they are seldom used by companies as short-term investment instruments. Maturities range from three to 12 months. |

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: 0%/26%. To non-resident companies (subject to tax treaties): 12.5%/26%. |
|---|---|

Custody and settlement arrangements

| | |
|----------------------|--|
| Depository | Monte Titoli SpA. Monte Titoli acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, investment funds, rights and warrants. |
| Central counterparty | Cassa di Compensazione e Garanzia. |
| Settlement | T+2. Monte Titoli migrated to TARGET2-Securities on 31 August 2015. |

Data as at January 2017.

JAPAN

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (JPY) and foreign currency. It is possible for companies to sweep surplus balances into an interest-bearing overnight account. |
| Demand deposits | ✓ | Interest-bearing savings accounts are available to residents and non-residents. Accounts are available in JPY and foreign currency. |
| Time deposits | ✓ | Time deposits can be held in JPY or foreign currency. Foreign currency deposits have become popular, given low domestic interest rates. Maturities range from one month to ten years. |
| Certificates of deposit | ✓ | Banks issue fixed interest rate certificates of deposit for maturities ranging from overnight to five years. Three-month maturities are the most common. There is an active secondary market. |
| Treasury (government) bills | ✓ | The Japanese government issues short-term Treasury bills (T-bills) via bi-monthly auctions. Maturities of three or six months and one year are most common. T-bills of JPY 10,000 are issued to retail investors with a three-year fixed rate, five-year fixed rate and ten-year floating rate. T-bills of JPY 50,000 are issued with maturities of two, five, ten, 20, 30 and 40 years. |
| Commercial paper | ✓ | Commercial paper is issued by companies at a discount with maturities of up to one year. Three-month maturities are the most common. The minimum investment amount is JPY 100 million. |
| Money market funds | ✓ | Money market funds are a popular method of short-term investment among companies in Japan. |
| Repurchase agreements | ✓ | Repurchase agreements are used by companies as short-term investment instruments. |
| Banker's acceptances | x | Banker's acceptances are not available in Japan. |

JAPAN - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2017.

To resident companies: 0% /20%.

To non-resident companies: 15.315%/20.42%.

Custody and settlement arrangements

Depositories

Bank of Japan.

Japan Securities Depository Centre (JASDEC).

The Bank of Japan is the central depository for Japanese Government Bonds.

JASDEC is the central securities depository for equities and corporate bonds.

Central counterparty

Japan Securities Clearing Corporation.

Settlement

T+3.

Data as at January 2017.

LUXEMBOURG

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (EUR) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to resident and non-residents. |
| Time deposits | ✓ | Time deposits can be held in EUR or foreign currency. Maturities range from one week to 12 months. Interest rates vary in accordance with maturity and amount. Market rates determine the rate of interest. |
| Certificates of deposit | ✓ | Certificates of deposit are available with a minimum maturity of one day and a maximum maturity of one year. The minimum investment amount is EUR 5,000. |
| Treasury (government) bills | x | Treasury bills are not issued by the government. |
| Commercial paper | ✓ | Offered by companies and public authorities, commercial paper has a minimum maturity of one day and a maximum maturity of one year. Euro commercial paper can be issued in a range of currencies by larger companies with a published credit rating. |
| Money market funds | ✓ | Companies can invest in SICAVs, which are open-ended investment companies. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for companies in Luxembourg. There is no minimum investment amount. Repurchase agreements are actively traded in the interbank market. |
| Banker's acceptances | x | Banker's acceptances are available in Luxembourg, but there is no evidence that they are used by companies as a short-term investment instrument. |

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: 0%*/15%. To non-resident companies (subject to tax treaties): 0%*/15%. * So long as the rate and conditions are at arm's length. |
|---|---|

LUXEMBOURG - continued

Custody and settlement arrangements

Depositories

Clearstream, Luxembourg.
VP LUX.
LuxCSD SA.
globeSettle SA.

Settlement

T+2.
VP Lux migrated to TARGET2-Securities on 12 September 2016.
LuxCSD migrated to TARGET2-Securities on 6 February 2017.

Data as at January 2017.

MALAYSIA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | x | Financial institutions are not permitted to offer interest-bearing current accounts to their corporate customers. |
| Demand deposits | ✓ | <p>Interest-bearing demand deposit accounts are available to residents and non-residents.</p> <p>Accounts are available in both domestic (MYR) and foreign currency.</p> <p>A deposit must have a tenor of 30 days before interest is payable.</p> <p>Companies can earn overnight interest by depositing funds with a bank with principal dealer status.</p> |
| Time deposits | ✓ | <p>Time deposits are a popular short-term investment instrument among companies in Malaysia.</p> <p>Time deposits can be held in MYR and foreign currency.</p> <p>Maturities range from one month to five years.</p> |
| Certificates of deposit | ✓ | <p>Certificates of deposit are a popular short-term investment instrument used by companies.</p> <p>Short-term certificates of deposit are issued with maturities ranging from one month to a year. Longer-term issues have terms of up to ten years.</p> <p>There is an active secondary market.</p> |
| Treasury (government) bills | ✓ | <p>The Malaysian Government issues Treasury bills (T-bills) in both Islamic and conventional form through regular tenders.</p> <p>T-bills have maturities of three (issued weekly), six (issued fortnightly) and 12 (issued monthly) months.</p> <p>The central bank issues Bank Negara Monetary Notes, which have a maximum maturity of one year.</p> <p>Longer-dated bonds are also issued by the government in Islamic and conventional form, with three, five and ten-year maturities.</p> <p>Cagamas notes are short-term bonds issued by Cagamas Berhad (the National Mortgage Corporation) to refinance mortgage loans.</p> <p>Cagamas notes are issued with maturities ranging from one month to ten years.</p> |
| Commercial paper | ✓ | <p>Commercial paper is used as a short-term investment instrument by companies.</p> <p>Maturities range from one month to one year.</p> |
| Money market funds | ✓ | Conventional and sharia-compliant money market funds are widely available in Malaysia. |
| Repurchase agreements | ✓ | Repurchase agreements are available with maturities of up to one year. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Malaysia and used by companies as short-term investment instruments. |

MALAYSIA - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2016.

To resident companies: None.
To non-resident companies (subject to tax treaties): 15%.

Custody and settlement arrangements

Depositories

Bursa Malaysia.
MyClear.
Bursa Malaysia operates a central depository system for securities traded on Bursa Malaysia and cleared through Bursa Malaysia Securities Clearing.

Settlement

T+3 for Bursa Securities-listed.
T+2 for SSTS-eligible.

Data as at January 2017.

MALTA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident current and savings accounts, but is not typically offered on current accounts. Accounts are available in domestic (EUR) and foreign currency, although interest is not usually paid on foreign currency accounts. Interest of 0.2% is typical on EUR-denominated savings accounts with a balance between EUR 5,000 and EUR 50,000. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits can be held in EUR or major foreign currency. Maturities range from one week to over a year. Interest rates vary in accordance with the maturity and amount. |
| Certificates of deposit | ✓ | Certificates of deposit are offered by commercial banks with maturities ranging up to one year. The minimum investment amount is EUR 5,000. |
| Treasury (government) bills | ✓ | Treasury bills are issued by the Treasury Department of the Ministry of Finance with maturities of one, three, six, nine or 12 months. |
| Commercial paper | ✓ | Offered by companies and government bodies, commercial paper is issued with maturities ranging up to one year. The minimum investment amount is EUR 50,000. Euro commercial paper can be issued in a range of currencies, typically USD, by larger companies with a published credit rating. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products, but these cannot accommodate overnight investments. |
| Repurchase agreements | ✓ | Repurchase agreements (repos) are a popular method of short-term investment among companies in Malta. Repos are used in monetary operations and in interbank transactions. Repos on government securities are available from the central bank. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used as short-term investment instruments by companies in Malta. |

MALTA - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2017.

To resident companies: 15%.
To non-resident companies: None.

Custody and settlement arrangements

Depository

The Malta Stock Exchange acts as the central securities depository for equities, government bonds, corporate bonds, T-bills and commercial paper.

Settlement

T+2.
Malta Stock Exchange migrated to TARGET2-Securities on 22 June 2015.

Data as at January 2017.

MEXICO

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts, although interest-bearing current accounts are not commonly used. Companies are able to sweep surplus balances into overnight investment accounts. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents, although a minimum investment may be required. |
| Time deposits | ✓ | Time deposits are not a popular method of short-term investment among companies in Mexico. Time deposits can be held in domestic currency (MXN) and USD. |
| Certificates of deposit | ✓ | Certificates of deposit (CEDES) are available with maturities ranging from two to 12 months. CEDES are issued in MXN and UDIs, which are local investment units. There is a minimum investment amount of MXN 5,000. Companies prefer to invest in pagares, which are short-term promissory notes issued by banks. These are issued at a discount. |
| Treasury (government) bills | ✓ | The Banco de México issues Federal Treasury Certificates (CETEs) at weekly auctions. CETEs are issued at a discount. Maturities of one, three, six and 12 months are available. There is an active secondary market. |
| Commercial paper | x | Although commercial paper is issued, the market is not liquid and therefore companies do not use it as a short-term investment instrument. |
| Money market funds | ✓ | Some mutual funds are available in Mexico. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for companies in Mexico. Maturities typically range from overnight to one month, but can be arranged for terms in excess of one month. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Mexico, but are not widely used by companies as short-term investment instruments. |

MEXICO - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2017.

To resident companies: None.
To non-resident companies (subject to tax treaties): 4.9%–35%/40%.

Custody and settlement arrangements

Depository

Institución para el Depósito de Valores S.A. (INDEVAL).

Central counterparties

Contraparte Central de Valores de México (CCV).
ASIGNA Compensación y Liquidación
Contraparte Central de Valores de México acts as the central counterparty (CCP) for stocks traded on the BMV.
ASIGNA Compensación y Liquidación acts as the CCP for derivatives traded on MEXDER.

Settlement

T+3 for equities.
T+1 – T+2 for Government securities.

Data as at January 2017.

NETHERLANDS

| Instruments | ✓ or x | Comments |
|--|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident current accounts. Accounts are available in domestic (EUR) and foreign currency. Interest on current accounts is paid on a gross basis (typically quarterly) as they are exempt from withholding tax. Interest rates are low. However, it is possible to sweep surplus balances to attain higher yields. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are the most popular method of short-term investment among companies in the Netherlands. Time deposits can be held in domestic currency (EUR) or major foreign currency. Maturities range from one day up to several years. Time deposits can have fixed, floating or annuity interest rates. |
| Certificates of deposit | ✓ | Certificates of deposit are available with maturities ranging up to one year. The minimum investment amount is EUR 5,000. |
| Treasury (government) bills | ✓ | Dutch Treasury Certificates are issued by the Dutch State Treasury Agency with maturities of three, six, nine or 12 months. |
| Commercial paper | ✓ | Offered by companies and public authorities and traded by banks, commercial paper typically has a minimum maturity of one month and a maximum maturity of two years. The minimum investment amount is EUR 500,000. Euro commercial paper can be issued in a range of currencies by larger companies with a published credit rating. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Belening (collateralised loan) is a local form of repurchase agreement. |
| Banker's acceptances | x | Banker's acceptances are not available in the Netherlands. |
| Withholding tax on interest payments to companies | | |
| Source: Deloitte Touche Tohmatsu, 2017. | | To resident companies: None. To non-resident companies (subject to tax treaties): None. |

NETHERLANDS - continued

Custody and settlement arrangements

| | |
|----------------------|---|
| Depositories | Euroclear Nederland. Netherlands Inter-professional Securities Centre. Euroclear Nederland acts as the central securities depository for equities, government bonds, corporate bonds, T-bills, commercial paper, rights and warrants. |
| Central counterparty | LCH.Clearnet SA. |
| Settlement | T+2. Euroclear Nederland migrated to TARGET2-Securities on 12 September 2016. |

Data as at January 2017.

NORWAY

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | x | Although no restrictions exist, interest is not typically earned on resident and non-resident current accounts. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among companies in Norway. Time deposits can be held in domestic (NOK) and foreign currency. Maturities range from one day to two years, although maturities of one week to three months are most common. There are no specific minimum/maximum amount restrictions, but the minimum investment amount is typically NOK 1 million. |
| Certificates of deposit | ✓ | Offered by major commercial banks, certificates of deposit are well established as short-term investment instruments for larger companies in Norway. The minimum investment amount is NOK 1 million. |
| Treasury (government) bills | ✓ | Norwegian Treasury bills (T-bills) are issued by Norges Bank on behalf of the Ministry of Finance. They are listed on the Oslo Stock Exchange. Popular with companies, T-bills are issued with maturities of three, six, nine and 12 months. T-bills are issued in denominations of NOK 1,000. The minimum investment amount is NOK 1 million. |
| Commercial paper | ✓ | Offered by large domestic companies, local authorities and mortgage institutions, commercial paper is purchased by financial institutions, large domestic companies and, more commonly, by medium-sized enterprises. The minimum investment amount is NOK 1 million. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Norway has an active interbank repurchase agreement market. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used by companies as short-term investment instruments in Norway. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): None. |
|---|--|

NORWAY - continued

Custody and settlement arrangements

| | |
|----------------------|--|
| Depository | Verdipapirsentralen ASA (VPS). The VPS acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, commercial paper, investment funds, rights and warrants. |
| Central counterparty | Oslo Clearing. |
| Settlement | T+2. T+1 for Norwegian short-term instruments. |

Data as at January 2017.

PANAMA

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Although no restrictions exist, interest is not typically earned on resident and non-resident current accounts. Accounts are available in domestic (PAB) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents in PAB and USD. |
| Time deposits | ✓ | Term deposits are a popular method of short-term investment among companies in Panama. Term deposits can be held in PAB and foreign currency. Maturities range from overnight to over a year. Term deposits are usually subject to a minimum investment of USD 10,000. |
| Certificates of deposit | ✓ | Certificates of deposit are issued by banks in non-negotiable form. Interest rates are negotiable and may depend on the relationship between client and bank. |
| Treasury (government) bills | ✓ | The Panama government issues USD Treasury bills (T-bills) at monthly auctions. T-bills are issued with maturities of three, six, nine and 12 months. The minimum investment amount is USD 1,000. |
| Commercial paper | ✓ | Some companies issue commercial paper in the form of valores comerciales negociables (VCNs) or pagarés de empresa. Issuance levels vary, although VCNs are traded on the Panama Stock Exchange. The minimum investment amount for VCNs is USD 1,000. |
| Money market funds | ✓ | Banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are available for a range of maturities. The most popular maturities are one, three, six and nine months. Overnight repurchase agreements are also available. Repurchase agreements are traded on the Panama Stock Exchange. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Panama, but there is no evidence that they are used by companies as short-term investment instruments. |

PANAMA - continued

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | <p>To resident companies: 5%.*</p> <p>To non-resident companies (subject to tax treaties): 12.5%.**</p> <p>* If not an authorised financial institution. ** Being 25% corporate tax rate on 50% of the interest remittance.</p> |
|---|---|

Custody and settlement arrangements

| | |
|--------------------------|---|
| Depository | Central Latinoamericana De Valores SA (LATINCLEAR). |
| Settlement | -T+3. |
| Data as at January 2017. | |

PERU

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | x | Although no restrictions exist, interest is not typically earned on resident and non-resident accounts. Accounts are available in domestic currency (PEN), USD and EUR. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. Interest is payable on PEN and USD-denominated savings accounts. |
| Time deposits | ✓ | Term deposits can be held in PEN, USD and EUR. Maturities typically range from 30 days to 360 days. |
| Certificates of deposit | ✓ | The Central Reserve Bank of Peru issues certificates of deposit via regular auctions. Maturities range from overnight to 36 months. |
| Treasury (government) bills | ✓ | T-bills are issued with maturities of three, six, nine and 12 months. The minimum investment amount is PEN 100. |
| Commercial paper | ✓ | Commercial paper is offered by companies in Peru. The maximum maturity is 180 days. |
| Money market funds | ✓ | Some short-term mutual investment funds are available. The minimum investment period is three days. |
| Repurchase agreements | ✓ | Repurchase agreements are available for a range of maturities. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Peru, but there is no evidence that they are used by companies as short-term investment instruments. |

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | <p>To resident companies: None.</p> <p>To non-resident companies (subject to tax treaties): 4.99%/30%.*</p> <p>* The 30% rate is applicable to interest paid abroad to economically related parties or to interest payable to non-related parties exceeding the maximum allowed by law.</p> |
|---|---|

Custody and settlement arrangements

| | |
|------------|--|
| Depository | CAVALI SA. |
| Settlement | T+3 for equities. T+2 for bonds. T+0 for fixed income. T+0 to T+2 for money market. |

Data as at January 2017.

POLAND

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Some banks provide sweep accounts, which offer higher rates of interest on short-term surplus cash than current accounts. Accounts are available in domestic (PLN) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposits accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are the most popular method of short-term investment among companies in Poland. Time deposits can be held in PLN or foreign currency. Maturities of one week, one, three or six months or one, two or three years are available. The most popular deposits have maturities of three or six months. Minimum investment amounts are determined by individual banks. Interest is typically paid at maturity. However, interest can be paid every quarter period for deposits with maturities of two years and above. Deposits with a maturity below six months typically pay a fixed rate of interest. Those with a maturity above six months usually pay a floating rate. |
| Certificates of deposit | ✓ | Certificates of deposit are available with maturities ranging from one month to one year. Certificates of deposit with a maturity below six months typically pay a fixed rate of interest. Those with a maturity above six months usually pay a floating rate. |
| Treasury (government) bills | ✓ | Treasury bills (T-bills) are particularly popular among institutional investors, including those located abroad. T-bills are auctioned regularly by the National Bank of Poland (NBP) on behalf of the Ministry of Finance with maturities ranging from 20 weeks to 52 weeks. T-bills with maturities of one, three, five or six weeks or three months are also occasionally issued. NBP bills with maturities ranging from one day to one week are auctioned on a weekly basis to money market dealers (banks) to control the banking sector's liquidity. There is a minimum investment amount of PLN 100,000. Most investments range between PLN 500 million and PLN 1 billion. |
| Commercial paper | ✓ | Offered by companies, commercial paper is mainly placed with domestic investors. Maturities range from one week to one year. Investments typically range between PLN 100,000 and PLN 500,000. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements on T-bills are available, but seldom used in Poland. |

POLAND - continued

| Instruments | ✓ or x | Comments |
|----------------------|--------|---|
| Banker's acceptances | x | Banker's acceptances are not commonly used by companies as short-term investment instruments. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): 0%/20%. |
|---|--|

Custody and settlement arrangements

| | |
|----------------------|---|
| Depository | National Depository for Securities SA (KDPW). The KDPW acts as central securities depository for equities, ETFs, government bonds, corporate bonds, commercial paper, rights and warrants. |
| Central counterparty | KDPW CCP SA. |
| Settlement | T+2 for equities. T+2 for bonds. |

Data as at January 2017.

PORTUGAL

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-residents accounts, although a low rate of interest is usually applied. Accounts are available in domestic (EUR) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits can be held in EUR or foreign currency. Maturities range up to 367 days. A low rate of interest is applied to time deposits, currently 0.1%, depending on the bank and the term. |
| Certificates of deposit | ✓ | These are offered by commercial banks and Banco de Portugal. The minimum investment amount is EUR 5,000. |
| Treasury (government) bills | ✓ | Treasury bills are issued at a discount by the Portuguese Government Debt Agency with maturities ranging up to 12 months. Treasury bills can be traded on the Special Market for Public Debt (MEDIP) and on other major European trading platforms. |
| Commercial paper | ✓ | Offered by domestic and international companies, commercial paper is usually issued as a tranche of a longer-term programme. |
| Mutual investment funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are available in Portugal. |
| Banker's acceptances | x | There is no evidence that banker's acceptances are used by companies as short-term investment instruments in Portugal. |

Withholding tax on interest payments to companies

| | |
|---|---|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: 25%. To non-resident companies (subject to tax treaties): 0–25% or 35%. |
|---|---|

Custody and settlement arrangements

| | |
|------------------------|--|
| Depository | Interbolsa. Interbolsa acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, commercial paper, investment funds, rights and warrants. |
| Central counterparties | LCH.Clearnet SA. OMIClear. |
| Settlement | T+2. Interbolsa migrated to TARGET2-Securities in March 2016. |

Data as at January 2017.

SAUDI ARABIA

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Prior approval from the Saudi Arabian Monetary Agency (SAMA) is required for the payment of interest on resident and non-resident current accounts. Accounts are available in domestic (SAR) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing savings accounts and deposit accounts are available to residents and non-residents. Demand deposit accounts are offered by commercial banks. |
| Time deposits | ✓ | Time deposit accounts are offered by commercial banks in SAR, with maturities of up to one year. Islamic investment accounts are increasingly popular. These accounts link banks' profits to payments on time deposits, respecting the Islamic prohibition of interest. |
| Certificates of deposit | x | Certificates of deposit are not available in Saudi Arabia. |
| Treasury bills | ✓ | Treasury bills (T-bills) are issued on a weekly basis by the SAMA in denominations of SAR 1 million for banks and other institutions. T-bills are issued with maturities of one week and one, three, six and 12 months. T-bills are exempt from withholding tax. |
| Commercial paper | x | Commercial paper issuance is not prohibited. However, there is no dedicated commercial paper market. |
| Money market funds | ✓ | Money market funds are available in SAR and USD. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for large banks in Saudi Arabia. Maturities range from overnight to one week. Repurchase agreements are exempt from withholding tax. |
| Banker's acceptances | ✓ | Investment instruments similar to banker's acceptances are available from some Islamic financial institutions in Saudi Arabia. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): 5%. |
|---|--|

SAUDI ARABIA - continued

Custody and settlement arrangements

Depositories

Tadawul (Saudi Stock Exchange).

Tadawul currently acts as an Assets Services & Depository executing the transactions of deposit, transfer, settlement, clearing and registering ownership of securities traded on the exchange.

Settlement

T for equities.

T+2 for debt instruments.

Data as at January 2017.

SINGAPORE

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Companies need to maintain a minimum credit balance before interest is earned. Accounts are available in domestic (SGD) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. Accounts are available in SGD and foreign currency. |
| Time deposits | ✓ | Time deposits are a popular method of short-term investment among companies in Singapore. Time deposits can be held in SGD and foreign currency. Maturities range from one week to over a year. Banks often require a minimum deposit of between SGD 5,000 and SGD 10,000 to open an account. |
| Certificates of deposit | ✓ | Banks issue negotiable certificates of deposit (NCDs) in SGD and foreign currency, subject to the rules set by the Monetary Authority of Singapore (MAS). Wholesale and offshore banks are permitted to issue NCDs, but these are subject to MAS restrictions. The minimum investment amount is SGD 100,000 or its foreign currency equivalent. Interest on NCDs with a maturity up to one year is paid at maturity. |
| Treasury (government) bills | ✓ | Treasury bills (T-bills) are issued by MAS on behalf of the Singapore government. Three-month bills are auctioned weekly. One-year bills are auctioned twice yearly. The minimum investment is SGD 1,000. T-bills are sold at a discount. Longer-term government bonds are also issued, with maturities ranging from two years to 20 years. |
| Commercial paper | ✓ | Offered by a small number of companies and banks, commercial paper is not a popular short-term investment instrument. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | There is an established repurchase agreement market in Singapore. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Singapore, but they are not widely used by companies as short-term investment instruments. |

SINGAPORE - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2017.

To resident companies: None.
To non-resident companies (subject to tax treaties): 15%.

Custody and settlement arrangements

Depositories

Central Depository Pte Ltd (CDP).
Monetary Authority of Singapore (MAS).
The CDP provides clearing, settlement and book-entry central registration facilities for equities and fixed income instruments.
MAS is the central depository for government securities.

Settlement

T+3.
T+1 for government securities; cash trades on T.

SPAIN

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (EUR) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | The majority of leading commercial banks and savings banks in Spain offer short-term deposits with maturities of one, three, six and 12 months. Time deposits can be held in EUR or foreign currency. |
| Certificates of deposit | ✓ | Certificates of deposit are rarely used as short-term investment instruments by companies. The depósito financiero (time deposit) is a more popular method of investment. It is a short-term deposit that banks immediately invest on behalf of their customers in Treasury Securities. If the maturity is less than 15 days, the product is called a 'financial account'. If the maturity is above 15 days, it is called a 'financial deposit'. The minimum investment amount is EUR 5,000. Interest rates can be negotiated and tend to vary widely. |
| Treasury (government) bills | ✓ | Treasury bills (T-bills) with maturities of three, six, 12 and 18 months are issued by the Treasury via monthly auctions. T-bills are issued at a discount. The minimum investment amount is EUR 1,000. T-bills are particularly popular among foreign investors. Earnings on government securities are exempt from withholding tax. |
| Commercial paper | ✓ | Commercial paper (CP) is seldom used as a short-term investment instrument by companies. Financial institutions are the main investors in CP issued by companies and public authorities. CP is exempt from withholding tax. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for companies in Spain. The most common maturities are one day and one week, although maturities of one, two and three months are also available. |
| Bankers' acceptances | x | Banker's acceptances are not used by companies as a short-term investment instrument. |

SPAIN - continued

Withholding tax on interest payments to companies

* Source: Garrigues LLP, 2017.

To resident companies: 0%/19%.

To non-resident companies (subject to tax treaties): 0%/19%.

Custody and settlement arrangements

Depository

Iberclear.

Settlement

T+2.

Iberclear is set to migrate to TARGET2-Securities in the final wave, scheduled for 18 September 2017.

Data as at January 2017.

SWEDEN

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | x | Although no restrictions exist, interest is not typically earned on resident and non-resident current accounts. Interest rates are bank-specific, but they are ultimately based on the Stockholm Interbank Offered Rate. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available, but interest rates tend to be very low. |
| Time deposits | ✓ | Time deposits are offered to companies by commercial banks and financing associations. Maturities typically range from three to 12 months. The maximum maturity for a deposit is two years. |
| Certificates of deposit | ✓ | Certificates of deposit are available but rarely issued, due to low yields. Minimum investment amounts are determined by individual banks, but usually range from SEK 1,000 to SEK 50,000. |
| Treasury (government) bills | ✓ | Government securities are a popular method of short-term investment among companies in Sweden, as they are low risk and highly flexible. Treasury bills (T-bills), Treasury bonds and inflation-linked bonds are issued at regular intervals by the National Debt Office (NDO) and sold via banks acting as primary dealers. Maturities range from one month to one year. The minimum investment amount is SEK 5,000. The NDO and, less frequently, mortgage companies also issue fixed or variable-rate premium bonds to domestic and international companies. |
| Commercial paper | ✓ | Offered by companies and public authorities, commercial paper is usually purchased by Sweden's major domestic companies. There is an active secondary market. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are popular short-term investment instruments for companies in Sweden. Rates of interest depend on the demand. |
| Banker's acceptances | x | Banker's acceptances are seldom used by companies as short-term investment instruments. There is no formal market for banker's acceptances in Sweden. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): None. |
|---|--|

SWEDEN - continued

Custody and settlement arrangements

| | |
|----------------------|--|
| Depository | Euroclear Sweden. |
| Central counterparty | European Multilateral Clearing Facility. |
| Settlement | T+2. |

Data as at January 2017.

SWITZERLAND

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Paying interest on current accounts is not common practice in Switzerland, although some banks offer minimal interest on domestic currency (CHF) and EUR-denominated accounts. |
| Demand deposits | ✓ | Interest-bearing call deposit accounts are available to residents and non-residents, although a notice period of up to 48 hours may apply. |
| Time deposits | ✓ | Time deposits can be held in CHF, EUR and other major foreign currencies. Maturities range from overnight to over a year, although maturities of three months or six months are typically used by large domestic companies. A minimum deposit is required in certain cases. |
| Fiduciary deposits | ✓ | Fiduciary deposits are the preferred liquidity instrument among companies in Switzerland, because they provide considerable flexibility. This instrument is offered in any currency and with any maturity up to one year. Interest rates paid are equivalent to the time deposit. |
| Certificates of deposit | ✓ | Certificates of deposit are available. However, domestic banks do not usually issue certificates of deposit for maturities below one year. |
| Treasury (government) bills | ✓ | The Swiss National Bank (SNB) issues money market debt register claims on behalf of the federal government with maturities of three, six and 12 months. These are auctioned on a weekly basis. The minimum denomination, and investment, is CHF 50,000. The SNB also auctions its own SNB bills in CHF and USD. CHF-denominated bills are auctioned on a weekly basis in denominations of CHF 1 million, with maturities ranging from one week and one year. USD-denominated bills are auctioned every fortnight in denominations of USD 500,000 with maturities of one, three and six months. |
| Commercial paper | x | There is no domestic commercial paper market in Switzerland. Some companies issue CHF-denominated commercial paper in the European market, with maturities ranging from one to six months. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. Money market funds are available in major currencies. Money market funds are commonly domiciled in Luxembourg and managed from Switzerland for tax reasons. |
| Repurchase agreements | ✓ | Repurchase agreements are available on the SIX Swiss Exchange. The repurchase agreement market is highly active. |

SWITZERLAND - continued

| Instruments | ✓ or x | Comments |
|--|--------|--|
| Banker's acceptances | x | Banker's acceptances are available in Switzerland, but there is no evidence that they are used by companies as short-term investment instruments. |
| Withholding tax on interest payments to companies | | |
| | | To resident companies: 35%. |
| Source: Deloitte Touche Tohmatsu, 2017. | | To non-resident companies: 0%/35%. |
| Custody and settlement arrangements | | |
| Depository | | SIX SIS. SIX SIS acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, commercial paper, investment funds, rights and warrants. |
| Central counterparty | | SIX x-clear AG. |
| Settlement | | T+2. SIX SIS migrated to TARGET2-Securities on 22 June 2015. |
| Data as at January 2017. | | |

TAIWAN

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | x | Interest cannot be earned on current account surplus balances. Residents only are permitted to open current accounts in Taiwan. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents in domestic (TWD) and foreign currency. Individuals may not withdraw funds in cash from demand deposit accounts opened in an offshore banking unit (OBU); withdrawn funds are allowed to be sent outside Taiwan only. These restrictions do not apply to company accounts held in an OBU. |
| Time deposits | ✓ | Fixed term deposits are available to residents and non-residents in both TWD and foreign currency. Local currency accounts have maturities ranging from one month to two years. Foreign currency accounts have maturities ranging from overnight to one year. Minimum investment amounts are determined by individual banks. |
| Certificates of deposit | ✓ | Certificates of deposit are available with maturities ranging from one month to a year. |
| Treasury (government) bills | ✓ | The Central Bank of China issues Treasury bills (T-bills) via a public auction. Maturities range from 63 to 364 days. Longer-term bonds are available with maturities ranging from two years to 20 years. The minimum denomination for government securities is TWD 100,000. There is a secondary market for T-bills. |
| Commercial paper | ✓ | Commercial paper is the most commonly issued short-term paper in Taiwan. Maturities range from one month to one year. Maturities of less than three months are most common. |
| Repurchase agreements | ✓ | Repurchase agreements are available in Taiwan, although they are more commonly used by financial institutions rather than companies. |
| Banker's acceptances | ✓ | Banker's acceptances are available in Taiwan, but are not widely used by companies as short-term investment instruments. |

TAIWAN - continued

Withholding tax on interest payments to companies

To resident companies: 10%.

To non-residents (subject to tax treaties): 15%/20%.*

* A 15% withholding tax applies to interest paid to a non-resident on short-term bills, interest on securitised certificates, interest on corporate bonds, government bonds or financial debentures, as well as interest derived from repurchase transactions for those bonds or certificates. The rate in all other cases is 20%, unless the rate is reduced under a tax treaty.

Source: Deloitte Touche Tohmatsu, 2017.

Custody and settlement arrangements

Depository

Taiwan Depository and Clearing Corporation (TDCC).

Settlement

T+2.

Data as at January 2017.

TURKEY

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident current accounts. Accounts can be held in domestic (TRY) or foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | Time deposits are one of the most popular methods of short-term investment among companies in Turkey. Time deposits can be held in TRY or foreign currency. Time deposits typically have maturities of one, three, six or 12 months. Interest is paid on the maturity date. Many companies keep funds in repurchase agreements rather than deposit accounts. |
| Certificates of deposit | ✓ | Certificates of deposit are rarely used as short-term investment instruments by companies. Maturities range up to 12 months. Yields can differ substantially. |
| Treasury (government) bills | ✓ | Treasury bills (T-bills) are the most popular method of short-term investment among banks in Turkey. T-bills are fixed-rate investments issued occasionally by the Undersecretariat of the Treasury with maturities of three, six, nine or 12 months. Government bonds have maturities of over one year. The Central Bank issues liquidity bills for terms ranging up to three months. Liquidity bills can be sold and purchased in the secondary market. |
| Commercial paper | ✓ | Larger companies in Turkey issue commercial paper with maturities of several years. A bank bill is a similar investment instrument to commercial paper and is issued by investment banks and development banks. |
| Money market funds | x | Mutual investment funds are available, but not in the form of money market funds. The leading mutual fund managers are affiliated to the country's leading privately owned banks. Yields may differ substantially. |
| Repurchase agreements | ✓ | Repurchase agreements are increasingly popular short-term investment instruments for companies in Turkey. Repurchase agreements on government securities typically have maturities of one, two or four weeks or, on occasion, three months. |

TURKEY - continued

| Instruments | | Comments |
|----------------------|---|---|
| Banker's acceptances | ✓ | Banker's acceptances are available in Turkey, but are not widely used by companies as a short-term investment instrument. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: 0–15%. To non-resident companies (subject to tax treaties): 0–10%. |
|---|--|

Custody and settlement arrangements

| | |
|----------------------|--|
| Depositories | Central Registry Agency (MKK). Takasbank. The MKK acts as the central securities depository for equities, ETFs, government bonds, corporate bonds, T-bills, commercial paper, investment funds, rights and warrants. Takasbank acts as the central securities depository for equities, ETFs, government bonds, corporate bonds and T-bills. |
| Central counterparty | Takasbank. |
| Settlement | T+2 for equities. T+0 for bonds. |

Data as at January 2017.

UNITED ARAB EMIRATES

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | Subject to approval, interest can be earned on resident and non-resident current account surplus balances. Accounts are available in domestic (AED) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. Accounts are available in AED or major foreign currency. |
| Time deposits | ✓ | Time deposits can be held in AED or major foreign currency. Maturities of one, two, three, six, nine or 12 months are most common. Interest is paid on the maturity date. |
| Certificates of deposit | ✓ | The Central Bank auctions certificates of deposit with maturities ranging from one week to five years. Certificates of deposit are offered in USD and EUR, as well as in AED. The minimum investment is USD/EUR or AED 1 million. AED-denominated certificates of deposit with maturities of one week to one year are auctioned daily, with the exception of Fridays, Saturdays and official holidays. USD and EUR-denominated certificates of deposit are auctioned daily, with the exception of Fridays, Saturdays and official holidays. Certificates of deposit with maturities of two to five years are auctioned monthly. |
| Treasury (government) bills | x | The UAE government currently does not issue short-term debt instruments. |
| Commercial paper | ✓ | Commercial paper is typically issued at a discount by financial institutions, with maturities of less than nine months. |
| Money market funds | ✓ | Some banks offer access to money market funds as part of their suite of short-term investment products. |
| Repurchase agreements | ✓ | Repurchase agreements are used by companies in the UAE as a method of short-term investment. Both standard and Sharia-compliant forms of repurchase agreement are available. |
| Banker's acceptances | x | Banker's acceptances are available in the UAE, but there is no evidence that they are used by companies as short-term investment instruments. |

UNITED ARAB EMIRATES - continued

Withholding tax on interest payments to companies

Source: Deloitte Touche Tohmatsu, 2017.

To resident companies: None.

To non-resident companies (subject to tax treaties): None.

Custody and settlement arrangements

Depositories

Abu Dhabi Securities Exchange (ADX).

Dubai Financial Market (DFM).

Nasdaq Dubai.

The three stock exchanges operate their own depository for the settlement and central registration of its respective (equity or corporate debt) instruments.

Settlement

T+2 for securities that have been outsourced to the DFM.

T+3 for securities traded on-exchange.

Data as at January 2017.

UNITED KINGDOM

| Instruments | ✓ or x | Comments |
|---|--------|---|
| Interest payable on bank account surplus balances | ✓ | Interest can be earned on resident and non-resident accounts. Accounts are available in domestic (GBP) and foreign currency. |
| Demand deposits | ✓ | Interest-bearing demand deposit accounts are available to residents and non-residents. |
| Time deposits | ✓ | <p>Time deposits are the most popular method of short-term investment among companies in the UK.</p> <p>Time deposits are offered by commercial banks in several different currencies with a wide range of maturities.</p> <p>The most popular time deposits have a maturity of 30 days, though they can be arranged for terms ranging from overnight up to five years.</p> |
| Certificates of deposit | ✓ | <p>Certificates of deposit (CDs) denominated in GBP are offered by the majority of the UK's leading banks and building societies. Many banks also offer CDs denominated in EUR or USD.</p> <p>GBP-denominated CDs are issued in denominations of GBP 50,000. The minimum investment amount is GBP 50,000.</p> <p>The minimum investment amount for a USD-denominated CD is USD 1 million.</p> <p>Maturities range from one week to five years, although maturities of three or six months are most common.</p> <p>There is an active secondary market.</p> |
| Treasury (government) bills | ✓ | <p>Treasury bills (T-bills), notes and short-term government bonds (gilts) are issued by the UK Government Debt Management Office (DMO) through weekly auctions. They are a popular method of short-term investment among companies.</p> <p>The DMO issues T-bills with maturities of one, three, six and 12 months. The minimum investment amount is GBP 500,000.</p> <p>Short-term gilts typically have maturities below two years, but maturities can range up to five years.</p> <p>There is an active secondary market in UK Treasury securities.</p> <p>Short-term obligations are also issued by local authorities.</p> |
| Commercial paper | ✓ | <p>Offered by companies and public authorities, commercial paper is usually purchased by financial institutions, money market funds, pension funds and insurance companies.</p> <p>Maturities range from one week to one year, although maturities of three to six months are most common.</p> <p>The minimum denomination for commercial paper is GBP 100,000. The minimum investment amount is GBP 500,000.</p> <p>The domestic GBP-denominated commercial paper market is highly liquid.</p> <p>Euro commercial paper can be issued in a range of currencies, typically USD, by larger companies with a published credit rating.</p> |

UNITED KINGDOM - continued

| Instruments | ✓ or x | Comments |
|-----------------------|--------|--|
| Money market funds | ✓ | Money market funds are widely available, with investments offered in GBP, EUR and USD. The ease of sweeping surplus balances enables companies to take advantage of high-yielding money market funds. |
| Repurchase agreements | ✓ | There is an active repurchase agreement market in the UK. However, repurchase agreements are more popular short-term investment instruments for financial institutions than companies. |
| Banker's acceptances | ✓ | Banker's acceptances are available in the UK, but are seldom used by companies as short-term investment instruments as returns are minimal. |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | To resident companies: None. To non-resident companies (subject to tax treaties): 0%/20%. |
|---|--|

Custody and settlement arrangements

| | |
|------------------------|---|
| Depository | Euroclear UK & Ireland. |
| Central counterparties | LCH.Clearnet. SIX x-Clear AG. EuroCCP. |
| Settlement | T+2 for equities. T+1 for government bonds. T+0 for money market instruments. |

Data as at January 2017.

UNITED STATES OF AMERICA

| Instruments | ✓ or x | Comments |
|---|--------|--|
| Interest payable on bank account surplus balances | ✓ | <p>Since the repeal of Regulation Q, banks have been allowed to pay interest on bank account surplus balances.</p> <p>Accounts are available in domestic (USD) and foreign currency.</p> |
| Demand deposits | ✓ | <p>Since the repeal of Regulation Q, banks have been allowed to pay interest on company demand deposits.</p> <p>Accounts are available in USD and foreign currency.</p> |
| Time deposits | ✓ | <p>Time deposits are a popular method of short-term investment in the USA, particularly among smaller companies.</p> <p>Maturities range from seven days to over a year.</p> <p>Companies are subject to a maximum deposit per bank of USD 150,000.</p> |
| Certificates of deposit | ✓ | <p>Certificates of deposit (CDs) are issued by banks with maturities ranging from one week to over a year. The most popular maturities are between three and six months.</p> <p>Interest is paid at maturity for CDs with maturities under a year. The interest rate can be fixed or floating.</p> <p>CDs are issued in denominations of USD 100,000 and above.</p> <p>There is an active secondary market.</p> |
| Treasury (government) bills | ✓ | <p>Treasury bills (T-bills) are issued by the US Treasury Bureau of the Public Debt via auctions held weekly (for maturities of four, 13 and 26 weeks) and monthly (for maturities of one year).</p> <p>T-bills are issued at a discount.</p> <p>The minimum investment amount is USD 100.</p> <p>T-bills are also available to resident companies and individuals through the internet.</p> <p>State governments and local authorities also issue short-term securities.</p> <p>Federal agencies, including Ginnie Mae, Freddie Mac and Fannie Mae, issue mortgage-backed securities.</p> <p>There is a highly liquid market for T-bills.</p> |
| Commercial paper | | <p>Companies issue commercial paper (CP) for maturities ranging from overnight to a maximum 270 days.</p> <p>Most CP is issued at a discount, although some is interest bearing.</p> <p>Each issue usually has a published credit rating.</p> <p>The minimum investment amount is typically USD 100,000.</p> <p>The USCP market is highly liquid.</p> |

UNITED STATES OF AMERICA - continued

| Instruments | ✓ or x | Comments |
|-----------------------|--------|--|
| Money market funds | ✓ | <p>Money market funds are a popular short-term investment instrument in the USA.</p> <p>Money market funds must comply with rule 2a-7 of the 1940 Investment Company Act.</p> <p>The minimum investment is set by each fund, but is typically USD 1,000.</p> |
| Repurchase agreements | ✓ | <p>Repurchase agreements are available for maturities ranging from overnight to three months.</p> <p>Overnight repurchase agreements are popular short-term investment instruments for US companies.</p> |
| Banker's acceptances | ✓ | <p>Banker's acceptances are available in the USA, but are not widely used by companies as short-term investment instruments.</p> |

Withholding tax on interest payments to companies

| | |
|---|--|
| Source: Deloitte Touche Tohmatsu, 2017. | <p>To resident companies: None.</p> <p>To non-resident companies (subject to tax treaties): 0–30%.</p> |
|---|--|

Custody and settlement arrangements

| | |
|------------------------|--|
| Depositories | <p>Depository Trust Company (DTC).</p> <p>Federal Reserve.</p> |
| Central counterparties | <p>National Securities Clearing Corporation (NSCC).</p> <p>Fixed Income Clearing Corporation (FICC).</p> <p>The NSCC acts as central counterparty for equities, corporate and municipal debt, American depository receipts, exchange-traded funds and unit investment trusts.</p> <p>The FICC includes Fixed Income Clearing Corporation Government Securities Division (USTreasury and agency securities) and Fixed Income Clearing Corporation Mortgage-Backed Securities Division (mortgage-backed securities).</p> |
| Settlement | <p>T+3 for equities, corporate bonds and municipals. The DTCC has announced plans to move to a cycle of T+2 for trades in equities, corporate and municipal bonds and unit investment trusts by the end of Q3 2017.</p> <p>T+0 or T+1 for money market instruments and government securities.</p> |

Data as at January 2017.

Glossary

Glossary

Accumulating Net Asset Value (ANAV)

A method of compensating money market fund investors through increasing the net asset value (NAV) of each fund unit, rather than through dividend payout. See Constant Net Asset Value.

Accrued Interest (AI)

The interest accumulated on a debt security since its issue date, but not yet paid out. This is accounted for in the actual gross purchase price of the debt security.

Agent Bank

A custody term designating any bank providing custody services on behalf of a custodian for securities traded in the country where the bank is based.

American Option (American-style Option)

A type of derivative that is widely used in the USA. It gives its holder the right to buy or to sell a certain amount of the underlying financial product at any time, from its purchase to its expiry.

Annual Equivalent Rate (AER)

The notional annual rate of interest applied to current, deposit and savings accounts assuming that all interest is reinvested or compounded.

Arbitrage

The process by which profits are generated from the buying of an asset in one market and the simultaneous sale in another market of the same asset or its economically equivalent derivative. Arbitrage occurs when there is a price differential for the same asset in two different markets.

Arm's-length Principle

A principle that assumes that pricing for transfers between affiliated companies should be identical to that applied to transfers between fully independent companies.

Asian Option

A type of option where the amount that needs to be repaid is determined by the underlying asset's average value over a specific period of time.

Ask Price

The offered (selling) price of traded securities or other instruments, i.e. the price that a buyer would be expected to pay.

At-the-Money (Option)

A situation where the strike price of an option is equivalent to the underlying instrument's current market price.

Authorisation

A key control in treasury. Authorisation needs to be provided for all transactions in treasury and given only by a small number of people with the appropriate (seniority) qualifications. The individuals with power of authorisation should be listed in a document also specifying the various transactions that can be authorised, procedures for controlling authorisation, etc.

Authority Limits

Limits set by treasury on the number of dealers allowed to carry out transactions, the value of the transactions that they can execute and the number of people giving authorisation. More generally, limits can also be applied to the financial risk that a company or organisation is willing to bear. Limits can, for example, be set for the proportion of foreign exchange exposures and the time period within which they should be hedged. The company/organisation may also, for liquidity reasons, limit the types of deals that it wants to have transacted. Another area of authority limit concerns the level of counterparty credit exposures resulting from deals such as those in derivative products. In some exceptional situations, the dealer may have to exceed the risk and authority limits set by the management. In such cases, it is essential for the dealer to have the transaction approved by the relevant responsible manager.

Average Maturity

The amount of time needed for all securities held in a portfolio to reach maturity, weighted by the amount of assets invested in each security.

Average Effective Maturity

1. A calculation of the maturity of a bond taking account of any potential early redemption.
2. A calculation of the weighted average of the maturities of bonds in a portfolio, which includes all adjustable coupons, mortgage prepayments and put options.

Average Nominal Maturity

As opposed to average effective maturity, it does not take account of a potential early call, adjustable coupons, mortgage prepayments and put options.

Average Weighted Maturity

See Weighted Average Maturity.

Back Office

The part of the treasury organisation that administers and supports the trading activities of the treasury front office. The back office's main functions are to process, confirm, verify, settle,

reconcile and record financial market transactions. It is also responsible for ensuring that the organisation's treasury management policy and controls are followed, as well as ensuring general compliance with rules and regulations. In a more general sense, the term refers to all administrative functions that support an organisation and includes areas such as payroll and expenses, accounts payable, accounts receivable and accounting.

Backwardation

The extent to which a spot price of a foreign currency plus carrying costs exceeds the forward price.

Barrier Option

An option that is initiated or terminated, if the underlying asset's value exceeds or goes below a reference price threshold.

Base Currency

Generally, this means the currency to which other currencies are compared. In a multicurrency liquidity arrangement, the base currency refers to the currency in which the master account is denominated and to which all other currencies are converted. The base currency also serves as the basis for all interest rate calculations.

Basis

In futures markets, this is the price differential between the price of the asset underlying the futures contract and the price of the futures contract.

Basis Point (bp)

One-hundredth of 1%, i.e. 1% equals 100 basis points or bps. While bond coupons may be expressed in fractions (i.e. in quarters, eighths or sixteenths), yields and prices of most money market instruments, such as commercial paper or treasury bills, are quoted in bp.

Basis (Rate) Swap

An arrangement where payments based on different floating rates are swapped. The payments can also be denominated in different currencies.

Bearer Bond or Bearer Security

A bond/security that is not registered in the name of a specific owner; the owner of the bond is the person who holds it. Thus, the title to the bearer bond is transferred through delivery. Principal and interest were historically paid to a paying agent, upon presentation of coupons. Nowadays, bearer bonds usually operate by book entry, whereby investors buy and sell their interests in a global note representing the entire issue and held within the clearing system.

Benchmark

A standard set by the market (such as a stock market index) or by an institutional investor (such as an internally developed benchmark) against which the performances of a fund or portfolio can be managed and tracked.

Beneficiary

The party that is named by the grantor, settler or creator of the trust and is entitled, according to the terms in the respective trust deed, to benefit from the revenues of the trust.

Best Ask

A dealer's instruction to sell securities or assets at the highest price possible.

Best Bid

A dealer's instruction to buy securities or assets at the lowest price possible.

Bid and Ask

A quote (quotation) at a given point in time that simultaneously includes the highest bid price (bid) for a security and the lowest offer price (ask). The spread between the highest bid and lowest offer is referred to as the touch.

Bid Price

The market-maker's buying price of securities or assets.

Bid Rate

The price at which banks and other market participants are willing to buy currencies, securities, commodities, instruments and derivatives or to take deposits.

Bid-offer Spreads

The difference between the prices that a holder or trader of assets (generally a financial institution or financial intermediary) is willing to buy and sell those assets. These assets can be currencies, shares, fund units, etc.

Black-Scholes Model

A method of determining the price of an option contract by taking into account the price of the underlying asset, strike price, date of expiry, risk-free interest rate and volatility of the option.

Book Entry

An electronic method of registering ownership of and transferring securities.

Book-entry System

An accounting system that allows the transfer of claims (e.g. securities) without the physical movement of paper documents or certificates.

Broker

An individual or a firm (also called a broking house) that acts as an agent for investors by dealing in securities. Usually, the broker will charge commission (called brokerage) for his advisory and trading services. A broker does not buy or sell on its own account but acts as an agent for clients.

Call

The act of paying/redeeming a security's principal before its actual maturity date in line with the rules laid out in the bond documentation.

Call Option

The option to buy a certain amount of an underlying financial product on (a) specific date(s) at a predetermined price.

Cap

A maximum limit on a price, interest rate or coupon.

Cash Concentration

A cash management technique whereby account balances are physically transferred to/from a single master account for liquidity management purposes.

Cash Flow Forecast

A regular report sent by the company's operations and subsidiaries to the treasury management headquarters informing it about any cash excesses and deficits that they may have in the future.

Cash Flow Management

The monitoring, analysing and adjusting of cash flow to organisation requirements.

Cash Market

See Spot Market.

Cash Pooling

A cash management technique aimed at improving liquidity management by pooling an organisation's account balances either under the form of a cash concentration or a notional pooling arrangement.

Central Account

See Master Account.

Central Counterparty (CCP)

An institution, acting in one or more securities or cash markets, that is interposed between two trading parties. The CCP guarantees the performance of the underlying transaction by acting as a matching seller to the buyer and a matching buyer to the seller.

Certificate of Ownership

A certificate issued to prove ownership of a given security.

Clean Price

The price of a bond excluding any interest accumulated.

Clearance

The process of transmitting, reconciling and, in some cases, confirming payment orders or security transfer instructions prior to settlement, possibly including netting of instructions and calculating final positions for settlement. Sometimes the term is used (imprecisely) to include settlement. Outside the securities market, this process is generally referred to as clearing.

Clearstream

In addition to Euroclear, Clearstream is one of the leading clearing systems and depositories for euromarket securities, as well being a major international central securities depository (ICSD) and the central securities depository for the German and Luxembourg markets. Clearstream is owned by the Deutsche Borse.

Collar

A risk management arrangement where the purchase of an option and sale of another occur contemporaneously for the same underlying financial product. The payment acquired from the sale reduces the cost of the purchase. If both the payment and receipt match exactly, this is known as a zero-cost collar. The collar places a band around the potential outcome for this risk-hedging technique. See Interest Rate.

Compounding

The process of accumulating the time value of money forward in time. When money is invested at compound interest, each interest payment is reinvested to earn additional interest in subsequent periods. See Time Value of Money.

Concentration Account

See Master Account.

Confirmation

A document through which a market participant notifies its counterparties or customers of the details of a trade/transaction and, typically, allows them time to affirm or question the trade/transaction. The issue and matching of confirmations is one of the key controls in treasury dealing activity. Increasingly, confirmations are being transmitted and matched by electronic means, but the same rules, relating to the separation of the dealing function from the confirmation function, still apply.

Constant Net Asset Value (CNAV)

A form of money market fund whose distributing shares maintain a 'constant' price through the application of amortised cost accounting, rather than marking to market the value of the investments held in its portfolio.

Continuous Linked Settlement (CLS)

A global real-time settlement system for foreign exchange transactions that eliminates foreign exchange settlement risk caused by delays arising from time-zone differences; the so-called Herstatt risk.

Counterparty

One of the opposing parties involved in a transaction.

Coupon

The periodic rate of interest paid on bonds and money market securities, stated as a percentage of the principal and usually paid out once or twice a year, depending on issue terms.

Coupon Rate

The rate of interest, expressed as an annual percentage, to be paid on debt securities.

Credit Default Swap (CDS)

A derivative transaction in which the participants exchange the risk of counterparty default associated with two fixed income instruments. The pricing of CDS is used as a market valuation of relative counterparty risk. See Credit Valuation Adjustment.

Credit Derivative

A contract allowing for the transfer of credit risk via a derivative instrument. The party transferring the credit risk is obliged to pay a fee to the transferee.

Credit Enhancement

The increasing of the creditworthiness of securities. There are three main methods of credit enhancement:

1. Junior/senior tranches: the entire debt is divided into so-called junior and senior tranches, with the former bearing all the first losses. Thus, the credit standing of the remaining senior tranches is raised considerably.
2. Insurance: a third party, usually an insurance company, undertakes to insure the credit risk of the respective securities (called wrapping).
3. Collateralisation: securities may be backed by other financial assets, usually equity, of higher values. The difference serves as collateral for the repayment of the debt (over-collateralisation). The issuing company may also put collateral on the differential between the respective security's original and market values (margin).

Credit Rating

A standardised assessment, expressed alphanumerically, of the creditworthiness of an entity raising debt capital – be it a company, an investment vehicle (mutual fund), a country (sovereign) and its affiliated public agencies or regional/local authorities or a supranational institution – provided by credit rating agencies to investors and analysts. Ratings also serve as a measure of the risks related to specific financial investments.

Credit Rating Agencies (CRA)/Rating Agencies

Independent institutions that assess the creditworthiness or the credit risk of issuers and provide credit ratings that are publicly available and used by investors, as well as analysts, as a guide for investment decisions.

Credit Spread

1. The difference in yield between a given security and a comparable benchmark government security. It gives an indication of the issuer's credit quality.
2. The difference in value of two securities with comparable maturity and yield, but different credit qualities.

Credit Valuation Adjustment (CVA)

This values the risk of default by the issuer of a security, so is a market measurement of counterparty risk. See Credit Default Swap.

Cross-border Sweeping

A cash management technique used to concentrate automatically funds derived from different countries into a bank account located in a different jurisdiction.

Currency Forward Contract

An agreement to buy or sell a specified amount of a foreign currency at a future date for a predetermined price.

Currency Futures

Exchange traded, and therefore standardised, contracts to buy or sell a specified amount of foreign currency at a specific price and at a specific date in the future.

Currency Option

A derivative giving its holder the right, but not the obligation, to buy or to sell a certain amount of a foreign currency at a predetermined price on a specified date.

Current Yield (Running Yield)

The annual return in the form of dividend or interest payment on an investment. It is equal to the coupon/ dividend divided by the market price, expressed as a percentage. Also known as flat yield or income yield.

Custodian

A bank, financial institution or other entity responsible for maintaining accurate and up-to-date registration details of the beneficial owners of those securities for which it has custodial responsibility. Custodians are also responsible for the administration of the assets they hold (including trade settlement), the collection of interest or dividends, exercising the voting rights attached to certain types of securities if so required, as well as being able to provide other services, such as the production of portfolio valuations and performance measurement. As a result of dematerialisation, the need to hold and safe keep securities in physical form has been largely removed in many of the world's major securities markets. See Global Custodian and Local Custodian.

Custody

The registration and administration of securities and financial instruments on behalf of investors.

Custody Risk

This is the risk of loss of securities held in custody occasioned by the insolvency, negligence or fraudulent action of the custodian or of a sub-custodian.

Custody Services

These include the processing of securities trades, keeping financial assets safe and servicing the associated portfolios.

Central Securities Depository (CSD)

A facility for holding securities that allows securities transactions to be processed by book entry. Physical securities may be immobilised by the depository or securities may be dematerialised (solely recorded as electronic records). In addition to safekeeping, a central securities depository may provide comparison, clearing and settlement functions.

Day Count

1. The number of days within a specific interest payment period in which interest payments are due.
2. The convention governing the way such interest payments are to be calculated (e.g. 360/365 days).

Debt Book-entry System

A book-entry system for the issue and registration of debt securities.

Delivery

The final settlement of a securities transaction.

Delivery Versus Payment (DVP) System or Delivery Against Payment System

A mechanism in an exchange-for-value settlement system that ensures that the final transfer of one asset occurs only if the final transfer of (an)other asset(s) take(s) place. Assets are, among others, monetary assets (this includes foreign exchange), all types of securities and other financial instruments.

Demand Deposit Account (DDA) A type of non-interest-bearing bank account available in the USA and Canada that allows the account holder to transfer funds to a third party via cheque, wire transfer or an automated clearing house transfer and to withdraw funds on demand.

Dematerialisation

The elimination of physical certificates or documents of title that represent ownership of securities, so that securities exist only as accounting records.

Depository

An agent whose primary function is to record securities either physically or electronically and to keep records of the ownership of these securities.

Depository Trust Company (DTC) (USA)

A subsidiary of the Depository Trust & Clearing Corporation (DTCC), this is an automated central securities depository. It is a member of the US Federal Reserve System, a limited-purpose trust

company under New York State banking law and a registered clearing agency with the Securities and Exchange Commission.

Derivative (Derivative Security)

An instrument, such as an option, future or swap, of which the criteria and value are determined by those of an underlying asset such as a stock, currency or commodity.

Differential Swap

An arrangement involving the exchange of payments denominated in different currencies and with a different floating exchange rate. However, actual payments are always denominated in the same base currency.

Discount

The difference between a financial instrument's market price and its face value or redemption price when its market price is the lower of the two.

Discount Instruments

Securities that are sold at a discount to face value.

Discount Note

A short-term note (with a maximum maturity of 360 days) issued at a discount to its par value. It pays out no interest, but investors receive par value upon maturity.

Discount Rate

1. The generic name for the rate of interest at which the future cash flows of an investment are discounted in order to obtain the net present value of the cash flows. The choice of discount rate should reflect the risks of the investment/project.
2. In the USA, the interest rate that member banks pay the Federal Reserve when the banks use securities as collateral. The discount rate acts as a benchmark for interest rates issued. Other central banks also have similar discount rates.

Discounted Cash Flow (DCF)

A method for the evaluation of investments. This is calculated by discounting the future cash flows at an appropriate discount rate of interest in order to arrive at a single net present value figure, which can be compared with other investments.

Domestic Fund

A mutual fund that only invests in securities originating from a single country, which is more often than not the country in which the fund is domiciled.

Domicile

The country of a fund's creation.

Double Taxation

Instances where the same income or profit is subject to tax twice.

Double Tax Treaties

Agreements between countries to attribute taxing rights and provide relief where double taxation might otherwise apply.

Duration (Macaulay Duration)

The weighted average timing of the cash flows of an instrument, weighted by the present values of the cash flows. Macaulay duration uses the yield to maturity of the instrument to work out the present values to use for weighting in the duration calculation. The longer the duration, the more a security's price is likely to be affected by changes in interest rates. Duration is also used as a measure to compare debt securities that have different maturities and yields.

Embedded Option

1. A provision in a debt security that allows the issuer or the holder to exercise an option; this is generally a call option (issuer) or a put option (holder). The option is generally linked to specific dates and may be subject to other conditions.
2. A provision in a debt security which links payments on the security to pre-specified changes in an underlying security, currency, index or commodity.

EONIA

An effective overnight rate computed as a weighted average of all overnight unsecured lending transactions in the interbank market, initiated within the eurozone by the contributing panel banks. Eonia is widely used as the underlying rate for derivatives transactions within the eurozone. See Financial Calculations Appendix.

Euro Interbank Offered Rate (Euribor)

Sponsored by the European Money Markets Institute (EMMI), Euribor is the benchmark rate at which EUR interbank term deposits within the eurozone are offered by one prime bank to another prime bank at 11:00 CET. Euribor is calculated daily and covers periods ranging from one day to one year. See Financial Calculations Appendix.

Eurobonds

International long-term debt securities with maturities over one year denominated in any Eurocurrency. International distribution is a key feature and they are usually in bearer form, but the bonds can be issued in any currency or any interest basis.

Euroclear

Located in Brussels, Euroclear is the world's largest settlement system for domestic and international securities transactions (covering equities, bonds and funds), providing a comprehensive range of services to major financial institutions located in more than 80 countries worldwide. It also acts as the central securities depository for Belgian, Dutch, French, Irish and UK securities.

Eurocurrency

The generic term for deposits or financial instruments that may be issued and held outside the country/countries in whose currency they are denominated, though this does not usually exclude purchases by domestic investors.

EURONIA

An EUR overnight index average that tracks actual average market EUR overnight funding rates each day for settlement that day and is a EUR equivalent of SONIA.

European Markets and Infrastructure Regulation (EMIR)

EU regulation on over-the-counter derivatives.

European Option (European-style Option)

A derivative that gives its holder the right to buy or to sell a certain amount of the underlying financial product on its date of expiry or for a short specific period (e.g. one day) just beforehand.

Ex-coupon

Debt securities that are sold without the right to receive the next or due coupon.

Exchange-traded Funds

Open-ended funds tracking an index that are priced on a continuous basis and can be bought or sold like shares.

Exchange-traded Option

An option that is traded on an exchange, as opposed to over the counter, i.e. with a bank or other financial institution.

Exercise Price

The predetermined price in a contract at which the option holder can either purchase or sell the underlying security, instrument or commodity.

Exotic Option

A range of options with unconventional payout structures and underlying securities/commodities.

Expiry Date

The final day that an option holder can purchase or sell an underlying security/commodity.

Face Value (Par Value/Principal Value/Nominal Value)

The nominal amount indicated on the security that is the basis for interest or dividend payments.

Fair Value (Fair Market Value)

The price at which an asset can be bought or sold in transparent/perfect markets, i.e. where contracting parties are informed and act in their best interest. It represents the theoretical equilibrium price of securities or derivatives on open markets, i.e. neither buyers nor sellers perceive them as either over priced or under priced.

Federal Funds Rate (USA)

The rate of interest charged on overnight loans from banks' deposit accounts held at the Federal Reserve to other banks.

Firm Bid/Firm Offer

Unconditional order to purchase or sell securities during a specific period at a specified price.

Floor

The minimum interest rate paid on a security or under a derivative agreement.

Fonds Commun de Placement (FCP)

Type of collective investment scheme available in France and Luxembourg, which provides participants with co-ownership of a portfolio of securities managed by an investment management company. Unlike SICAVs, FCPs are not distinct legal entities.

Foreign Currency Option

A contract where the buyer/holder has the right, but not the obligation, to purchase/sell a fixed amount of a foreign currency at a specific price within a specific timeframe.

Foreign Exchange Portal

A browser-based electronic marketplace that regroups several foreign exchange providers who provide online quotes in real time, thereby enabling foreign exchange products to be traded on a fully automated basis. Foreign exchange portals are increasingly being used for smaller foreign exchange trades that do not require human intervention.

Foreign Exchange Rate Collar

See Collar.

Foreign Exchange Swap

A contract where it is agreed that certain amounts of a particular currency are exchanged between two parties on a specific date, combined with a reverse exchange of the same two currencies at a future date and at a rate agreed at the outset, which will normally be different.

Forward Discount

The situation in which the spot price of a currency is greater than the forward price of that currency.

Forward Foreign Exchange Contract

Foreign exchange contracts that are constructed to mature and be settled at a future date. They are priced by adjusting the spot rate to reflect the interest rate differential between the two currencies

involved for the forward period. They are used to hedge against future value fluctuation by locking in future price or rates.

Forward Foreign Exchange Rate

The agreed exchange rate on the day a transaction is entered into for a foreign currency transaction that settles more than two days in the future. The rate is determined by adjusting the spot rate to reflect the interest rate differential between the two currencies involved for the forward period.

Forward Forward

A foreign exchange swap or other swap arrangement where the transaction commences at some date in the future and is in force for a further future period.

Forward Market

A marketplace that allows same-day price fixing of currencies, commodities and securities that will be delivered at a future date.

Forward Premium

The premium that has to be paid when a traded currency's forward price is greater than its spot price.

Forward Price

The price for a transaction that has a start date in the future, or later than the spot date.

Forward Rate

A fixed rate to be applied to a transaction that will come into force at a specific date in the future.

Forward Rate Agreement (FRA)

A bilateral forward contract that fixes the interest rate on the day of the agreement for payment at a future settlement date; this can be up to two years later. FRAs are used to hedge against interest rate exposure, in the sense that one of the parties pays a fixed rate and the other a variable rate. If, at the settlement date, the market rate is lower than the previously agreed rate, the purchaser will indemnify the seller for that difference; conversely, if the market rate has risen, the seller will compensate the purchaser.

Forward Start Swap

Swap arrangement where the commencement of the swap is delayed for a period exceeding the market standard. The pricing and terms of the transaction are agreed at the outset.

Front Office

The part of the treasury function that executes transactions for the cash investment, funding, foreign exchange and risk hedging requirements of the company. The front office is the unit of the treasury that interfaces with the group's entities or subsidiaries, and provides treasury services to them, and which interacts most with the company's lenders and other financial counterparties.

Futures (Futures Contracts)

Contracts stipulating the purchase or sale of commodities, currencies or securities of a specified quantity, at a specific price and on a predetermined date in the future. Futures tend to be standardised in terms of quantity, price and maturity periods.

Global Custodian

An international financial institution that is able to provide custody services to leading international investors in several financial markets. See Custodian.

Global Fund

A mutual or investment fund that has its assets invested in all major financial markets.

Hedge Accounting

Under International Financial Reporting Standard, a hedge, and the underlying transaction being hedged, are accounted for separately. Hedge accounting ensures that both items receive similar accounting treatment, to reflect that the transactions are economically self-cancelling. There are qualifications that must be satisfied in order that hedge accounting may be used: e.g. that the hedge can be shown to be effective.

Hedging

The implementation of a set of strategies and processes used by an organisation with the explicit aim of limiting or eliminating, through the use of hedging instruments, the impact of fluctuations in the price of credit, foreign exchange or commodities on an organisation's profits, corporate value or investments.

High-yield Bond (Junk Bond)

A bond with a sub-investment (speculative) grade credit rating. This type of bond is used particularly to finance leveraged buy-outs and to pay higher yields to investors than bonds with higher ratings do. The term, therefore, increasingly refers to financial instruments with speculative credit ratings.

Implied Volatility

The volatility of the asset, liability, security or commodity underlying a derivative, which is derived from the option pricing formula and the anchor price of the option itself.

Institutional Money Market Funds Association (IMMFA)

The trade association for providers of triple-A rated money market funds within Europe. Its members currently have funds domiciled in Dublin, Luxembourg and the Channel Islands.

Interest

The price paid by the borrower or issuer of debt securities to the lender or investor for providing funds. It is usually expressed as a percentage rate over a period of time (usually one year), and is paid out once or twice a year. See Coupon.

Interest-bearing Instruments

Securities on which a specific rate of interest is required to be paid periodically or at maturity.

Interest Rate Caps

Maximum thresholds applied to the amount of interest that can be charged on debtors' periodic payments.

Interest Rate Collar

A combination of a cap and a floor.

Interest Rate Enhancement (Interest Rate Netting or Interest Rate Optimisation)

A cash management practice that acts as a substitute for notional pooling in several European countries where tax or regulatory constraints limit the potential for cost-effective notional pooling. As is the case for notional pooling, interest rate enhancement aims to view the account balances of a company or its subsidiaries as a whole for the purposes of interest calculation. However, unlike notional pooling, there is no formal scheme set up to allow the systematic offsetting of the various participants' credits and debits.

Internal Rate of Return (IRR)

An accounting method for calculating the return achieved on a (potential) investment by equating the net present value of cash inflow over time to zero.

Interest Rate Swap (IRS)

A swap arrangement where interest payments on a certain amount of principal are exchanged between two parties on a specific date. One of the payment streams involved is usually based on a fixed interest rate, while the other is based on a floating rate.

International Central Securities Depository (ICSD)

A central securities depository that provides clearing and settlement facilities for cross-border transactions in domestic securities and/or international securities transactions.

International Fund

A fund that invests in securities outside the country of the investor.

Inverted/Negative Yield Curve

A situation where securities with short-term maturities attract higher interest rates than those with long-term maturities, so called because the term premium is negative.

Investment Grade

Securities with credit ratings equal to or above investment grade, which is currently BBB or better.

International Swaps and Derivatives Association (ISDA)

An international trade association, composed of over 600 members, for institutions dealing in derivatives, swaps and options.

Issue

The creation of new securities by a private or public entity in exchange for cash or assets. An issue can involve one or more types of debt and/or equity security.

Issuer

A company or other entity that borrows or raises capital via the financial markets through the issuance of securities.

Jumbo Certificate of Deposit (CD) (USA)

A certificate of deposit with a high face value generally purchased by institutional investors looking for low-risk investments.

Junk Bond

See High-yield Bond.

LIBOR (originally the London Interbank Offered Rate)

A daily published rate reflecting the average rate from a panel of contributor banks in the London market. The daily rate is published for seven different maturities for five different currencies. See Financial Calculations Appendix.

Listed Investments

Securities that have been admitted for trading on an official exchange.

Local Custodian

Provides custody services for securities traded and settled in the country in which the custodian is located.

Long-dated Swap

A long-term agreement between two parties to exchange a set of cash flows for a minimum of one year and up to 15 years in the future.

Mandates

Agreements regulating the dealing relationship between the company and its counterparties, authorising people to conduct transactions, possibly applying limits to the size of deals and procedures concerning settlement, and regulating the opening and closing of transactions. Mandates are a key element of treasury control and are an essential mechanism for reducing the company's dealing risk.

Margin

In the context of the securities markets, where securities are bought using credit supplied by the broker, margin is the cash collateral put up by the purchaser. The margin amount is subsequently adjusted to reflect changes in value of the securities broker. In the context of derivatives, margin is cash collateral paid by market participants to protect their counterparties in the market against the risk of a default.

Marking to Market

The practice of revaluing securities and financial instruments using current market prices. In some cases, unsettled contracts to purchase and sell securities are marked to market and the counterparty with an, as yet, unrealised loss on the contract is required to transfer funds or securities equal to the value of the loss to the other counterparty.

Master Account (Central Account or Concentration Account)

Account in a cash pooling structure used to fund zero/target/threshold balance accounts automatically or concentrate funds from participating accounts automatically. The master account may be interest bearing.

Matching

The process used by market participants before settlement of a transaction to ensure that they agree in respect of the terms of the transaction. This is usually done by matching transaction confirmations sent to a counterparty with those received from that counterparty.

Mid-Market Price (Mid Price)

The average value of the bid price and offer price of a security or fund unit.

Middle Office

With the front and back offices, the middle (or mid-) office completes the key best practice division of duties and responsibilities in the treasury operation. Its basic responsibilities include treasury reporting, accounting for treasury and determining and monitoring the internal treasury control framework. Many companies may not have operations that are sizeable enough to require a middle office; in these cases, its role is performed by the back office or the accounting department.

Multicurrency Cross-border Pooling

A cash management technique in which excess funds from companies' accounts in different countries, which are denominated in different currencies, are concentrated and used to offset deficits for the purpose of determining interest earned or owed.

Multicurrency One-country Pooling

A cash management technique in which excess funds from companies' accounts in the same country, which are denominated in different currencies, are concentrated and used to offset deficits for the purpose of determining interest earned or owed.

Mutual Fund

A pool of capital provided by small, as well as institutional investors, and invested in a portfolio of securities. There are two types of mutual fund: while close-ended mutual funds have a predetermined amount of capital to be invested, open-ended mutual funds do not.

Net Asset Value (NAV)

The market price of an investment fund's portfolio of securities (after the deduction of debt to be repaid) calculated by dividing the total value with the total volume of securities.

Net Present Value (NPV)

Refers to the present value of an investment based on the calculation of its future cash flows minus the costs. See Internal Rate of Return (IRR).

Netting

An agreed offsetting of positions or obligations by trading partners or participants. The netting reduces a large number of individual positions or obligations to a smaller number of obligations or positions, thereby reducing the overall credit, liquidity and settlement risk. Netting may take several forms that have varying degrees of legal enforceability in the event of default of one of the parties.

Non-investment

Grade A rating attributed to a security that is deemed speculative, i.e. less certain in respect of the preservation of capital, in the opinion of a credit rating agency such as Fitch Ratings, Moody's or Standard & Poor's.

Notional Pooling

A cash management technique where account balances are offset without physical movement or co-mingling of funds, for the purpose of interest compensation by the bank.

Notional Principal Amount (Notional Principal)

In a derivatives contract, the amount of underlying assets used to calculate the obligations between the different parties.

Offer Rate

The price at which currencies, assets, securities, commodities or instruments are sold, or money/funds are lent by market participants.

Offset

Ability to set assets against liabilities in multiple bank accounts. Also used in netting transactions.

Offshore

A term generally used in the context of transactions with (or) a company resident in a tax haven.

Offshore Fund

Any fund or investment company (in the case of a unit trust or Fonds Commun de Placement) that is legally established outside the country of the investor. Popular offshore fund locations are Bermuda, the Channel Islands, Ireland and Luxembourg.

Open-ended Investment Company (OEIC)

A limited company listed on the stock exchange whose sole aim is to invest in securities issued by other entities. Unlike an investment trust, there is no limitation on the number of shares that can be issued (i.e. it is an open-ended structure). The value of the shares is determined by the OEIC's underlying assets; however, there is no bid-offer spread. OEICs can be the underlying structure for a single fund or the umbrella fund for a family of sub-funds.

Option

A derivative giving its holder the right, but not the obligation, to buy or to sell a certain amount of the underlying financial product, usually a security, on a specific date and at a predetermined price.

Out-of-the-Money (OTM)

A revalued derivative position showing a loss because of market changes.

Outsourcing

The contracting of all or part of the treasury operation to a specialist third-party service provider, rather than it being performed in-house. This is now a commonly used model and has particular application where treasury needs change due to some form of corporate restructuring or change.

Overnight Index Swap (OIS)

A fixed rate interest rate swap against a floating overnight rate index such as SONIA or EONIA or against central bank interest rates

Over-the-Counter (OTC)

A market for the trade of securities that are not listed on the stock exchange consisting of bilateral dealing contracts between brokers. As opposed to an organised stock exchange, prices in the OTC markets are set by direct negotiation between dealers, and not by an auction system. The OTC market is a market for companies that do not fulfil the listing requirements of the official stock exchange markets, or for derivatives or other financial instruments that do not have a liquid market.

Paying Agent

An institution, a company or a bank that, on behalf of the issuing company, makes interest payments and repayment of the principal upon presentation of coupon and/or bond certificates.

Pfandbrief

Mortgage bond issued by German mortgage banks. The strict regulatory regime governing Pfandbrief and their relatively high credit ratings have enabled issuers to sell them widely to international investors.

Plain-vanilla

Instruments that have only the standard features.

Portfolio

A collection of financial assets purchased by private or institutional investors in order to achieve a return on the capital invested.

Positive Yield Curve

Where yields increase as maturities lengthen.

Present Value

The current equivalent value of cash available immediately for a future payment or a stream of payments to be received at various times in the future. The present value will vary with the discount (interest) factor applied to the future payments.

Primary Market

The market for new issues of securities with the aim of raising new capital.

Principal

The face value of a debt instrument. The principal amount of a trade is the face value of the debt instrument involved in the trade.

Private Placement

The sale of securities by a lead manager directly to a limited number of institutional investors, instead of to a wider group of investors as is the case with a public offering. Securities sold via private placement are not listed on the stock exchange.

Put Option

The option to sell a certain amount of an underlying financial product on (a) specific date(s) at a predetermined price.

Quotation/Quote

1. A dealer's bid or offer price for a security.
2. A security's listed market price.

Rate Reset

An amendment, in accordance with a specific formula, in the rate of interest applied to an adjustable rate debt security.

Redemption

The paying off or buying back of a debt security by the issuer on or before its stated maturity date. The redemption can be made at par value or at a premium, as is the custom when exercising a call option.

Rule 2a-7

The section of the US Investment Companies Act of 1940 that specifically defines investment restrictions for money market funds.

Safekeeping

The physical holding and preservation of securities, or the maintenance of up-to-date central securities depository records, for the beneficial owners of securities by an agent bank, custodian or fund administrator. See Custody.

Same-day Funds

Money balances that the recipient has the right to transfer or take out of the account on the

same day as the funds are received. The value date is equal to the date on which the funds transfer is initiated.

Secondary Market

The market for the trading in securities that have previously been bought by investors as new issues in the primary market.

Securities Settlement System (SSS)

A system that permits the transfer of securities either free of payment, i.e. free delivery (for example in the case of pledge) or against payment. Settlement of securities occurs on securities deposit accounts held with a central securities depository (private CSDs or a central bank acting as a CSD) or with a central bank (safe custody operational accounts). In the latter case, the central bank acts as the intermediate custodian of the securities. The final custodian is normally a CSD. Settlement of cash occurs in an interbank funds transfer system, through a settlement agent.

Settlement

The exchange of securities between buyer and seller and the corresponding transfer of money between the two contractual parties. Settlement is usually preceded by confirmations on, among other things, the date and method of exchange and payment.

Settlement Agent

An institution that is responsible for managing all aspects of the settlement process (including the calculation of settlement positions and the monitoring of the exchange of payments) on behalf of transfer systems or other settlement arrangements.

Settlement Date

The date on which a security transaction is settled, i.e. payment is made and securities are physically received and delivered, or beneficial ownership records are changed in central securities depositories. See Trade Date.

Single Legal Account Pooling

A cash management technique based around a single legal master account structure in the name of the parent or group financing company where the other participant accounts act as memo accounts of that legal account. This cash management technique is widely used in Northern Europe (Nordic and Baltic countries).

Société d'Investissement à Capital Variable (SICAV)

Type of collective investment scheme available in France and Luxembourg. Unlike FCPs, SICAVs are distinct legal entities, with each investor being a shareholder of the company. In other words, SICAVs are open-ended investment companies.

Spot Market (Cash Market)

A market in which a currency or commodity is traded for immediate delivery and against cash payment. Settlement usually occurs within two business days.

Spot Price

The rate or price applying to the immediate delivery of a commodity or currency.

Spot Rate

1. The annual rate of return on a zero-coupon instrument.
2. Synonym for spot price, particularly when involving currency transactions.

Spot Transaction

A transaction where both parties agree to pay each other a specific amount in a foreign currency either on the same day or within a maximum two days of each other.

Spread

1. The differential between the yields of two fixed-income securities, mostly expressed in basis points.
2. The difference between the bid and ask prices quoted for a security.

Spread to Treasury/Governments

The spread differential between the yields of a non-government fixed income security and that of a treasury/government security with the same or similar characteristics, whereby the latter acts as a benchmark.

Stable Net Asset Value (SNAV)

See Constant Net Asset Value (CNAV).

SONIA

A sterling overnight index average that tracks actual average market sterling overnight funding rates each day for settlement that day. See Financial Calculations Appendix.

Strike Price

The price in an option contract at which the option can be initiated, i.e. the price at which the option's underlying security/commodity can be bought or sold.

Sub-custodian

Any company/institution providing custody administration services on behalf of other custodians who may not have an operation in the country concerned.

Swap

An agreement between two parties to exchange (or swap), under specified conditions, a set of cash flows at a future point in time.

Swaption

An option on a swap where the buyer of the option has the right, but not the obligation, to enter into a specified swap at a specific future date.

Sweep Account

A bank account that automatically transfers excess balances into an overnight interest-earning investment with the same bank.

Target Balance

The minimum amount that needs to be maintained in each sub-account under a target balancing scheme.

Target Balancing (Target Concentration or Sweeping)

A cash concentration technique whereby all account balances are physically transferred into a nominated account leaving a predetermined amount in the sub-accounts.

Taxable Equivalent Income (Taxable Equivalent Yield)

Adjusting method that allows tax-free income or yield to be compared to gross taxable income before any taxes are deducted in order to determine how much taxable income/yield is required to equal the income or yield generated by a tax-free investment.

T-bill Rate (USA)

The yield derived from the interest rate achieved on the weekly auctions of the three-month treasury bill.

Tenor

1. The term may be used synonymously with maturity.
2. The period between a security issue and its maturity.

Threshold Balancing

A cash concentration technique where the balances of the sub-accounts are physically transferred in their totality into a nominated account each time the sub-accounts' balances reach a predetermined threshold.

Time Value of Money

The concept that the value of money is linked to time because of its capacity to earn interest over time. A given amount of money available today is worth more than a given amount of money to be received tomorrow, because the amount available now can be invested immediately.

Total Return

Return on an investment, taking into account reinvested income as well as capital appreciation.

Trade Date (Transaction Date)

The date on which a transaction is executed following which settlement will occur on the agreed settlement date.

Tranche

One part of a number of different securities that are issued by the same company at the same time. Such securities may differ in terms of risk, yield and/or (most commonly) maturity.

Transfer Agent

An individual or company that records, on behalf of a company, the sale and purchase of a company's securities, as well as maintaining detailed ownership records of the company's shares and other registered securities. Sometimes called a registrar in the USA.

Treasury Inflation-indexed Securities (TIIS)/Treasury Inflation-protected Securities (TIPS) (USA)

Government securities that are inflation-protected in respect of their real value through their linkage to the consumer price index.

Undertaking for Collective Investments in Transferable Securities (UCITS)

Generic term for any open-ended collective investment scheme involving investments in assets available under the form of transferable securities, i.e. FCPs, OEICs, SICAVs and unit trusts.

Variable Net Asset Value (VNAV)

A form of money market fund in which value fluctuates on account of marking to market the value of the investments held in the fund's portfolio.

Volatility

The level of fluctuation in the rate/price of financial instruments and assets.

Weighted Average Final Maturity (WAFM)

This is used to measure credit risk. WAFM is calculated by taking the final maturity of the underlying money market instruments held by the fund, weighted according to the relative holdings per instrument.

Weighted Average Life (WAL)

This is used to measure credit risk. Although the terms WAFM and WAL are currently used interchangeably with respect to money market funds, the WAL is technically the weighted average of the times when principal is repaid. Instruments that repay principal over several years will have a shorter WAL than those that repay all principal at maturity.

Weighted Average Maturity (WAM)

A calculation of the average of the maturities of the fixed rate periods of the underlying instruments held by the fund, weighted according to the relative holdings per instrument. Also known as average weighted maturity.

Withholding Tax

Tax retained at source, generally on dividend and interest income.

Working Capital

The short-term assets a company has at its disposal to produce assets. These include items such as cash, accounts receivable, inventory and marketable securities. The amount by which these exceed the company's short-term liabilities is the net working or net current capital.

Yield

The annual rate of return from income paid out on an investment in securities, expressed as a percentage of the current market price of the relevant securities.

Yield Curve

A graphical representation demonstrating the relationship between yield and maturity on comparable debt securities with different maturities, usually for a single issuer or a very closely related group of issuers.

Yield Spread

The difference in the effective rate of interest offered by two debt securities.

Yield to Maturity (YTM)

The return on a security held to maturity, taking account of the coupon and reinvestment rates and the buying price compared to its face value. YTM assumes that all coupons are fully paid out on their due dates and reinvested at the same yield and that the principal is paid back in full upon maturity. It is an internal rate of return calculation performed on the security's expected cash flows.

Zero Balance Account (ZBA)

A bank account that is automatically brought to a zero balance each day. Debits are covered by a transfer of funds from a master account at the same bank. Credit balances are automatically transferred to the master account.

Zero Balancing

A cash concentration technique where all account balances are physically transferred into a nominated master account.

About HSBC

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HSBC Global Asset Management offers clients a range of investment products including equity, fixed income, liquidity and multi-asset strategies. We believe that HSBC Global Asset Management is well placed to provide a globally-consistent, disciplined, investment process across our capabilities which draws on the local knowledge and expertise of our team around the world.

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Thanks to our global expertise and solutions-driven approach, our clients have entrusted HSBC Global Asset Management with USD446.4 billion in total assets under management, including USD62.7 billion in liquidity and USD187.7 billion in fixed income solutions².

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¹ Source: Euromoney Awards for Excellence 2017

² As at 30 June 2017



About Contributors

Association of Corporate Treasurers (ACT)

The Association of Corporate Treasurers (ACT) is the only professional treasury body with a Royal Charter. We set the global benchmark for treasury excellence and lead the profession through our internationally recognised treasury qualifications, by defining standards and by championing continuing professional development. The ACT is the authentic voice of the treasury profession representing the interests of the real economy and educating, supporting and leading treasurers of today and tomorrow.

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About WWCP

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This is particularly important to clients investing in countries with a less developed money market industry or countries where a client does not have their own local cash management expertise.

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