

Liquidity Management

Thriving in a new world



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I. The paradigm shift

Understanding an inverted world

Today's financial environment is the polar opposite of the pre-crisis landscape, for bankers and treasurers alike. Both may feel that they have entered an inverted world where interest rates are negative and cash deposits can cost money.

There was a time when, for successful corporates, 'liquidity' was neither a buzzword nor much of a concern, when borrowing came easily and depositing excess cash was second nature. Nowadays, managing a company's money may feel more like negotiating a labyrinth where several signposts have been left confusingly pointing in all the wrong directions.

Suppressed lending appetites and low interest rates have characterised 'the new normal' since 2008, and as such, treasurers have had to contend with a host of new environmental and regulatory factors, as well as liquidity shortages and volatility. But more recently, this challenging environment has been exacerbated by ongoing regulatory developments – particularly the implementation of the global bank regulation, Basel III – and compounded by monetary policies in several regions, notably the recent development of negative interest rate regimes in Europe and Japan.

Corporates with a liquidity shortage have felt all too keenly the difficulties of affordable borrowing since the crisis – originally thanks to risk-aversion and lack of bank liquidity, but equally in recent years as banks' lending appetites have been suppressed by legions of post-crisis regulation and capital requirements. While net corporate loan issuance remains low – recovering somewhat, but still below pre-crisis levels – in this new, volatile financial world, those with excess liquidity are finding things equally problematic.

In fact, traditional deposits are no longer immune to scenario loss; they can be

less than welcome to banks and may in fact cost corporates – rather than earning interest – in this new era of negative interest rates. But, alternatively, traditional investment options, such as money market funds and sovereign bonds, can also be subject to negative yield.

In order to adapt to this new world, treasurers must take a new, more highly tactical approach to liquidity management and to their banking relationships. For the first time, treasurers must utilise portfolio management techniques even for their operating cash and current accounts, looking at a range of investment options to meet their requirements for yield, maturity, principal protection and risk diversification. In order to be strategic, treasurers must engage in scenario-building in order to model where and how best to place cash.

Alongside – and complementing – this enhanced responsibility is the corporates' relationship with their banking provider. No longer can they maintain a straightforward buyer-vendor association, but must instead foster a close long-term partnership that mutually acknowledges and accounts for the other's pain-points. Understanding the interconnected banking, regulatory and monetary policy environment will best equip the treasurer to plan a successful liquidity management strategy.

It is self-evident that a corporate is best served by a solvent, stable bank. In line with the closer, 'partnership' relationship between corporates and banks, corporates should be prepared for changes in their available investment and deposit options that reflect banks' changing circumstances. To achieve a win-win situation – in which they



No longer can this remain a straightforward buyer-vendor association

safeguard the liquidity and returns on investment they need, while meeting the banks' new requirements – corporates must fully understand market appetite for different 'kinds' of money. Ultimately, the principle purpose of regulatory change is to protect the interests of customers by keeping banks financially safe and solvent, so both must adapt their behaviour to succeed in the new environment.

The financial environment: The impact of regulation

While corporate treasurers cannot fail to be aware of the post-crisis metamorphosis of the regulatory landscape, many have yet to fully comprehend the consequences for treasury. 2016 is a landmark year in this respect, ushering in further deadlines for the implementation of key regulatory changes. The indirect and unintended consequences of these will be the main driver of treasurers' liquidity management improvements over the coming years.

In the past, banks were able to leverage end-of-day liquidity to maximise returns for clients, but as regulations have tightened around banks' own operational risk and liquidity, they have altered the way liquidity and deposits are treated. Regulations such as Markets in Financial Instruments Directive II (MiFID II) – now delayed until mid-2017 – will extend the scope of those affected as well as the extent of reporting requirements, resulting in further system costs for banks that will trickle down. MiFID II will cover a broader range of financial instruments, market participants and regulated trading venues. But regulations such as Basel III will have much greater impact.

For example, the Basel III Liquidity Coverage Ratio – established in the European Union (EU) and United States (US) in 2015 to ensure banks have sufficient liquidity to manage a 30-day stress event – requires banks to keep varying levels of reserves for different forms of bank deposits and other borrowings.

This means that banks must at all times hold an adequate volume of

What changes will MiFID II bring?

Venues:

- Organized trading facilities will be included, which are multilateral trading platforms that cover a wider variety of products (e.g. bonds and structured products)
- US swap execution facilities must register as organised trading facilities in order to perform business with EU counterparties

Market participants:

- Bilateral trades will still be allowed, but only if one counterparty is registered as a "systemic internaliser"
- Institutions exceeding a certain market share, volume or frequency threshold for a specific instrument, must be registered within the EU
- This will bring additional compliance requirements and limit smaller market players to bilateral trades, benefiting larger players

Pre- and post-trade information:

- A robust set of information must be reported, including all economic terms of a trade, on a pre- and post-trade basis
- This will mainly affect US players and smaller players as they will be required to do this for the first time. Smaller players in particular will be affected, as they will have to build up a data-capturing and reporting infrastructure which is currently rare

Transaction Reporting:

- Transaction reporting is required for all parties involved in a trade (i.e. both counterparties and the trading venue), via approved reporting mechanisms, including information regarding the trader, involved counterparties and product identifiers. As smaller counterparties currently lack such infrastructure they might make use of third party vendors

Best execution:

- MiFID II will also define business conduct standards for all market participants, who will have to prove best execution of a trade – at the request of a client or regulator – based on quantitative and qualitative metrics (such as price, cost, speed, volume)

unencumbered 'high-quality liquid assets' (HQLAs) – assets that can be easily converted into cash within a day with no value loss. Basel III ranks these Level 1 assets as preferable to other kinds, and requires banks to demonstrate that HQLAs would cover expected net cash outflows from certain deposits over a specified thirty day stress period. The Liquidity Coverage Ratio (LCR) – HQLAs divided

by the outflows – currently required is 70% in the EU, and 90% in the US, but this will increase to 100% in 2017 in the US, and in 2019 in the EU. For example, a non-operating deposit from a financial institution has a 100% outflow factor meaning that for every euro deposit, the deposit bank has to hold another euro in HQLA. This has increased the cost for the bank of holding such a deposit.

Therefore, a distinction is now made between operational and non-operational deposits, as the latter are considered far more likely to be withdrawn in times of stress. Non-operating cash is that which does not relate to the day-to-day operations of a business, whilst operating cash is that used to support business operations, e.g. for payments, payroll and in cash management. So for every euro non-operating cash deposit, the deposit bank has to hold currently 70 cents, soon to rise to one euro (€1) in HQLA, increasing the cost for the bank of holding such deposits. This has transformed bank approaches to customer deposits: deposits of operating cash are now more attractive to banks under Basel classifications, while those of non-operating cash are less so. Hence, opposite to what treasurers have previously been accustomed to, deposits – far from making money – can in fact cost the bank and the client.

On the other hand, other aspects of Basel III (amongst other regulations) are increasing the cost of borrowing as banks deleverage to meet leverage ratio requirements and manage capital requirements. Under this regulation, banks must maintain a leverage ratio – the bank's (tier 1) capital divided by the sum of its exposures of all assets and non-balance sheet items – of over 3%. This has driven banks to shed their risk-weighted assets and reduce loans on their balance sheets.

One thing is certain – treasurers' roles are getting no easier. On constantly shifting terrain, they frequently update their knowledge and adjust their strategies for both borrowing, and managing excess liquidity.

The wider view: market factors

While regulatory developments will continue to have a significant impact, they are far from being the only changes affecting corporate liquidity. Equally consequential are wider economic pressures and policy approaches, notably recent monetary policy efforts which have resulted in an unprecedented landscape of negative rates for many currencies.

For instance, the European quantitative easing programme – the Public Sector Purchase Programme (PSPP) embarked on at the beginning of 2015 and extended to continue at least until March 2017 – is intended to increase the supply of money, kick-starting consumer and business spending and investment in the eurozone, thereby stimulating growth. However, in tandem with this, the European Central Bank (ECB) has also embarked on an unprecedented run of negative interest rates in the eurozone, moving its deposit rate into negative territory in a series of steps commencing in June 2014 with -0.1%, and most recently bringing it down to -0.4% in March 2016.

Sub-zero rates have never been introduced in an economy as large as the eurozone before, and the longer-term effects of the somewhat controversial policy remain to be seen. In theory, similarly to quantitative easing, negative rates should make borrowing more attractive, driving the demand for loans up and revitalising Europe's economies. The eurozone is not the only area where this strategy is being attempted – the Bank of Japan has recently followed suit, as have Sweden, Denmark and Switzerland.

Elsewhere, the US Fed hiked its rates for the first time in a decade at the end of 2015, after seven years of zero-interest rate policy. This is having a global knock-on effect on liquidity as well, as is the strengthening dollar.

What is clear, in addition to the effects on liquidity, is that negative euro interest rates mean an increase in the cost of overnight deposits that banks hold with

Deposits of operating cash are now more attractive to banks under Basel classifications

the ECB, which will have a direct impact on many corporates' investment strategies by making deposits an unattractive option for excess liquidity. Negative rates also mean the possibility of zero or negative yields on traditional investment options such as money market funds (MMF) and sovereign bonds – removing these usual alternatives as possibilities.

In addition, recent money market reforms in Europe and the US have further impacted corporates' investment criteria and choices. In particular, the introduction of a floating net asset value (NAV) for prime and municipal institutional MMFs, and liquidity fees and redemption gates in times of stress, have changed what such investments previously offered corporates. Redemption gates, for example, can mean that mutual funds may not be available daily or overnight – by invoking a “gate” if a fund's weekly liquid assets fall below 30% of its total assets, MMF's boards can suspend redemptions for up to 10 business days.

Such reforms therefore affect the availability of liquidity invested in these products, as well as forcing treasurers to more actively manage such assets. Treasurers will need to review their investment, tax, and accounting policies to understand the suitability, feasibility, and permissibility of such investments after the implementation of these rules in October 2016. Amongst other considerations, treasurers will have to evaluate whether they are comfortable with placing short-term/operating cash in investments that will no longer retain the concept of “dollar-in-dollar-out” on a daily basis (due to the floating net asset value). Treasurers will also need to decide whether the new (infrequent) possibility of suspended redemptions is reconcilable with their needs.

It is anticipated that there will be outflows from prime MMFs in the short-term, as many corporate treasurers will take a patient and cautious approach to analysing the development and behaviour of such

funds post-reform implementation. As a result, the industry should expect larger flows into government and treasury funds, as well as bank deposit products. These changes to demand could create a divergence in yield across the different products, consequently prompting treasurers to re-evaluate their appetite for investing in prime funds.

Today's treasury: the practicalities of the current environment

The key question is: how do these macroeconomic factors affect corporates and their liquidity management? A recent Deutsche Bank-sponsored Economist Intelligence Unit (EIU) report found that four in five firms continue to hoard excess cash, in part as a buffer against forecasting inaccuracies or unexpected stress events.¹ Such cash reserves are likely to increase as corporates face a lack of attractive deployment opportunities, ongoing economic and geopolitical uncertainty and continued growth in eurobond issuance. In addition to the ECB's Public Sector Purchase Programme, it has increased the range of assets it plans to buy, including corporate bonds as well as government bonds, asset-backed securities and covered bonds. In the negative interest rate environment, this has made issuing investment-grade bonds denominated in euros an attractive option for corporates globally.

Across the market, the ECB's impending bond-buying programme has pushed yields lower, impacting the whole bond market. In turn, this has caused some high-yield issuers to slash funding costs via the bond markets, as the squeeze on yield has encouraged investors to look further down the ratings ladder for positive returns. This means strong demand for high yield bonds, and a confluence of factors that has led to a significant increase in cash hoarding.

As the cost of holding deposits rises, corporates have to find other, more suitable solutions. They must also

Negative euro interest rates mean an increase in the cost of overnight deposits



¹McKenzie, H. (2015). Financing the Fragile Economic Recovery. London, The Economist Intelligence Unit, 4-5.

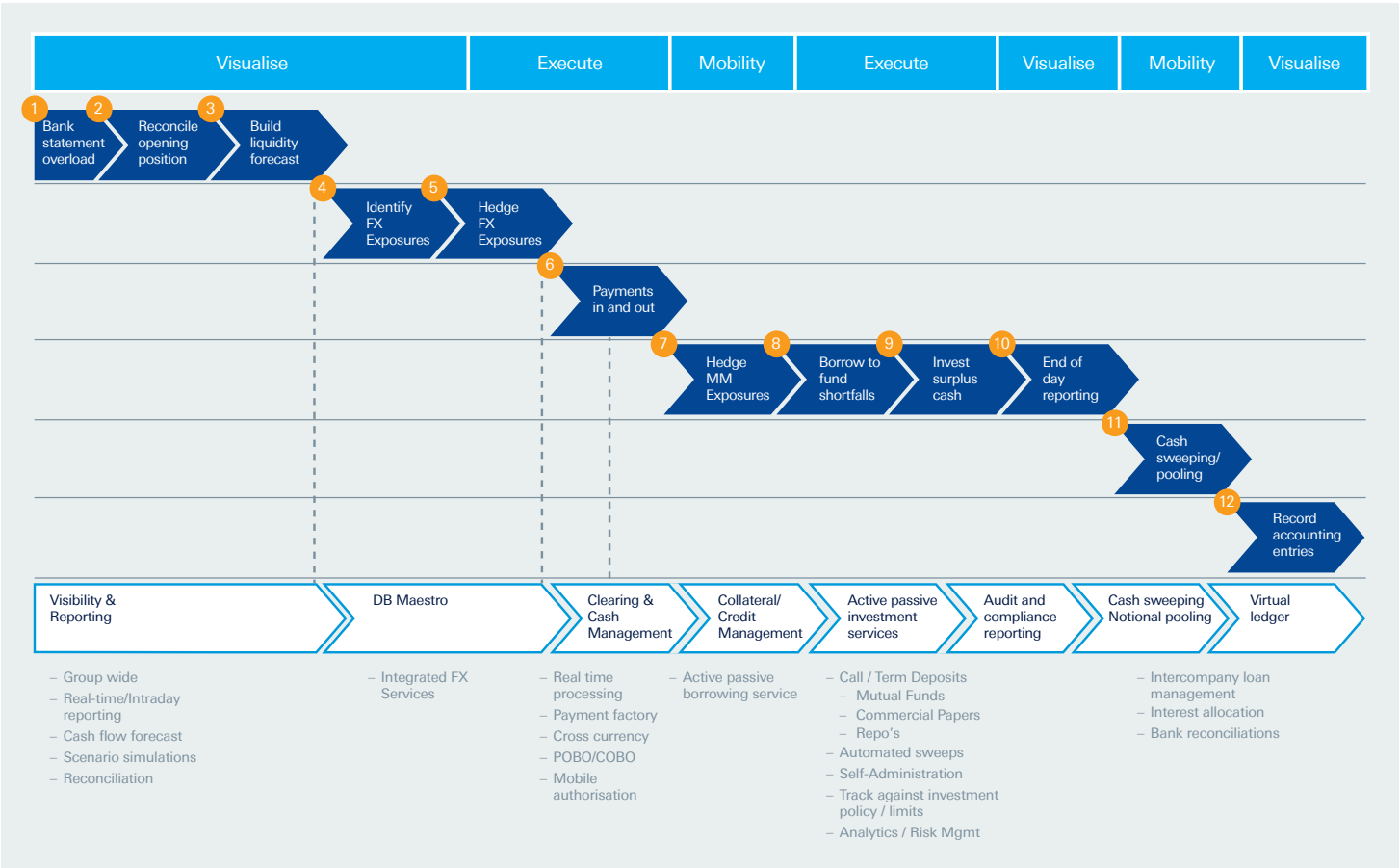


Figure 1: The Treasury Cycle: A Day in Your Life

be more flexible in their investment behaviour, and update their investment policies, to allow for other investment options beyond plain bank deposits.

Banking providers, in turn, must offer new and sophisticated products that allow for more favourable treatment in the new regulatory environment for the corporate’s benefit.

Yet liquidity management is a far broader task than simply avoiding losses around deposits. Every corporate finds itself in a different position across the liquidity spectrum, depending on the nature of its industry, its daily operations, supply chain dynamics and myriad other interlinked factors. In addition, its liquidity requirements fluctuate over time, resulting in a sudden need for

extra liquidity here, or a period of excess liquidity there. It falls to the corporate treasurer to moderate this complex and changing daily reality, and review and update his liquidity strategy to fit the company’s current and future needs.

Whatever the market they are in and whatever the scenario, in order to accomplish this, corporate treasurers need clear and instant visibility of their company’s cash positions globally, and must optimise their liquidity to reduce funding requirements and costs, and maximise potential yield.

Opportunely, recent developments in automation and digitalisation are enabling banks to simplify treasury processes and make available richer data, with forecasting and tailored analytics to



help treasurers anticipate and plan for a variety of events and outcomes – be it dearth or abundance. Improving liquidity management might be as simple as concentrating cash from around the globe to help intercompany lending, or to optimise end-of-day balances for investment, but in many places it may mean negotiating the local regulatory and financial environment to hedge foreign exchange conversions, or invest trapped cash in-country, for example. Treasurers should be aware of all the possible tools in their arsenal, and where and how each of them can be most effectively applied.

II. Dealing with drought: making ends meet through strategic transformation

The challenges for the liquidity-strapped

How can treasurers – especially those with a dearth of available liquidity – improve internal control and efficiency to move cash across increasingly globalised groups, while negotiating local regulations, foreign exchange (FX) exposure, and counterparty challenges?

Tools for managing liquidity

Visibility: Cash Flow Forecasting

Improving cash flow forecasting, analysis, planning and management allows corporates to improve visibility and reporting accuracy of worldwide liquidity processes, as well as realising additional interest opportunities.

Leading banking providers are constantly working on refining tools to improve visibility, and the future should bring yet more advancements, with increasingly greater approximation to real-time views, integration of data streams, customisation of packages and, above all, richer analysis and data flows.

According to recent research, treasurers spend more time on cash flow forecasting than any other activity. To address this, banks are investing in technology to leverage Big Data and analysis of the same, in order to provide faster and more integrated information and reporting. By harnessing the quantity and richer quality of data available around these flows, more accurate and time-sensitive forecasting will be achieved.

Corporates must deploy such tools across the group to best identify and act-on existing opportunities, and approach liquidity with a 'portfolio management' mindset. While automation may eventually deliver all the essential information and execute processes – decision-making needs to be active, highly flexible and hands-on.

Flexibility: Centralisation/ Cash Concentration

Centralised control – managing payments and receivables globally – increases control over working capital. Such a centralised set-up empowers a group treasurer or Chief Financial Officer to use the company's global cash resources more effectively and strategically, aware at all times of the level and deployment of working capital in all subsidiaries, proactively managing the group's currency exposure across its various operations, optimising interest on balances in different locations and rooting out any idle ones. Knowing the precise extent of all its cash resources may of course also lead the group to use a more self-financing approach.

Cross-currency cash concentration

offers clients the ability to consolidate liquidity across multiple currencies into their desired base currency in a single account. This reduces the operational burden and execution risk through complete automation of processes, allows same day settlement of funds with a fully automated service and provides transparency for reporting.

Furthermore, opportunities should be explored to optimise foreign exchange flows in cross-currency payments and collections, and to hedge FX rates using tools such as Automated Rolling Collars, which can lock liquidity and avoid volatility particularly in emerging market currency rates.

Planning and management allows corporates to improve visibility and reporting accuracy



Cash pooling, grouping cash in a centralised account, can allow corporates to optimally allocate funds across a group to improve investment returns or minimise funding costs. It is, however, restricted by local and regional regulations.

Notional pooling – virtually netting balances across a group via central treasury platforms in dedicated locations – creates account autonomy. It also allows for calculating interest on the combined credit and debit balances of the accounts of all those companies which are part of the pooling arrangement, without physically transferring any funds between their accounts. However, notional pooling is also subject to varying regulations.

Subsidiaries benefit from a centralised liquidity position, while still retaining autonomy in their daily cash management. This flexible arrangement may offer increased interest income, and reduced interest expense, to the group and its subsidiaries. It can also facilitate an external financing simplification for unexpected circumstances that lead to shortfalls on individual accounts by maintaining beneficial sight deposits.

Besides these clearly beneficial solutions, opportunities for hedging foreign exchange rates – and for interest rate risk mitigation or capitalising on favourable rates – can be explored. For instance, there may be ways for companies to minimise foreign exchange risk by using financial derivatives such as forward contracts, options or swaps.

Treasurers should also be aware that notional pooling may be an increasingly rare option, due to the fact that it can lead to disadvantages for banks in the current environment. For example, debit balances on participating accounts are classed as Risk Weighted Assets – meaning they consume scarce capital and are subject to strict revenue targets for the use of such capital. In addition, as per International Accounting Standard (IAS) 32 rules, balances on participating accounts must be reflected (on a gross basis) on banks' balance sheets. And this in turn affects the profitability of such structures under Basel III's Leverage Ratio, wherein each

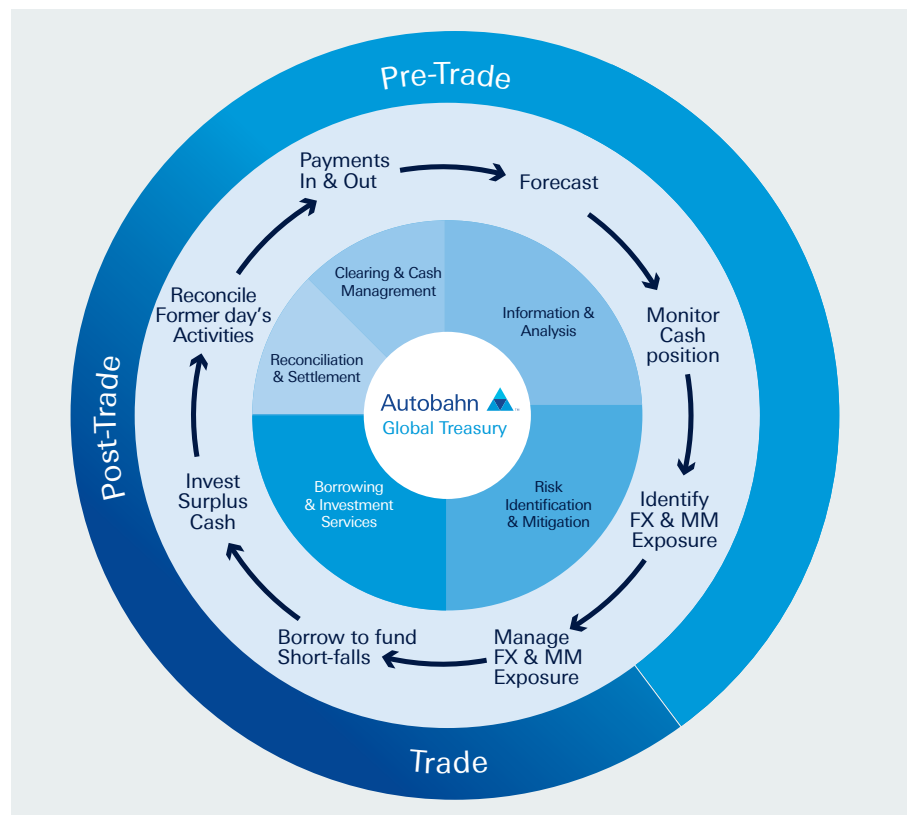


Figure 2: The Pre-Post Trade Cycle

balance sheet position “consumes” 3% of working capital and thereby limits the commercial viability of notional pooling from the bank’s point of view.

Sourcing: internal funding

Self-funded Supply Chain Finance (SCF) allows corporates to extend payment terms and increase Days Payable Outstanding, negotiate lower cost of goods, provide liquidity to critical suppliers and bring early visibility to suppliers. Such measures strengthen supply chain links and allow for the investment of excess cash.

SCF has the additional indirect benefit of stimulating a granular analysis of a corporate’s current efficiency. Because supply chains are so integral to a business’ operational efficiency, implementing self-funded SCF often flushes out inefficiencies in a corporate’s current organisation and external supply chain network.

III. Conserving the harvest: protecting bounty from the harsh climate

The challenges for the liquidity-rich

In today's climate, too much liquidity can be just as great a problem for corporates as too little. Where bank regulation and negative rates cause deposits and other traditional investment channels to cost corporates rather than producing yield, treasurers must seek solutions that prevent losses around excess cash – optimising yield, but also giving due consideration to availability and risk.

Corporates must re-evaluate their investment policies to define the best parameters (while maintaining suitable risk control), including the duration of investments. They can make more efficient use of collateral – such as mutual funds or securities – via various deposit and investment products, which allows them to maintain necessary liquidity in their payment streams as the bank will provide them intra-day lines on that pledge.

Tools for optimising existing liquidity

Redeploying cash

In the changed financial environment, there are still a number of traditional ways in which corporates can allocate excess cash and put it to good use in the interests of the business.

In order to redeploy cash most strategically, treasurers should learn to 'scenario-build' to identify where the cash will bring most benefit, such as furthering operational optimisation through capital expenditure, increased research and development, acquisition of a competitor, or raising the company's profile publicly and among investors by raising an additional dividend.

Corporate development/M&A

The owners of the business may consider buying or absorbing other businesses that augment their long-term strategy, offer operational efficiencies, or diversify into a new market or a contiguous business sector. Excess cash can be used to strengthen such bids.

Capital expenditure

Capital expenditure – to purchase or improve property, buildings, plants or equipment for use in the business – may improve operations or facilitate growth, and as such is often a good long-term investment of excess liquidity.

Research & development

Monies applied to research and development may yield a measurable and high return in terms of innovative products, services or business strategies brought to market. However, it needs to be understood that returns may be longer-term and may carry a greater risk than is provided for in the company's investment strategy.

Dividends

Excess liquidity can be utilised to increase the regular dividend on the company's shares, or issue a special dividend, ensuring the company's owners receive back some of its excess cash.

Raising debt in US dollars (or other non-negative currencies)

Holding cash in dollars (or other non-negative currencies) will avoid the penalties currently attached to the euro and a number of other European currencies, whose central banks have declared negative interest rates.

Returns may be longer-term and may constrain liquidity use for a period of time

Investing cash

Treasurers should review their existing practices, and adopt new investment policies in light of regulatory changes and the market environment, striking a balance between their respective appetites for yield, maturity, principal protection and risk diversification.

Through their banking provider, corporates should be able to access a one-stop platform that offers a full suite of liquidity and investment products – including on- and off-balance sheet, active and passive options – and allows them to plan, simulate and make customised investments that meet their specific risk, return and liquidity needs.

Some of the following tools are likely to be included:

Agency Reverse Repo invests cash with third party banks against securities as collateral, with yield determined by risk preferences.

Call Deposits invest cash for an unspecified term but with a fixed call period, producing a variable yield tied to a market reference rate.

Term Deposits invest cash for a fixed term, producing a fixed (or floating) yield.

Rolling Time Deposits allow corporates the flexibility to withdraw a portion of the investment every month (or quarter) while receiving a yield comparable to longer tenor deposits. The corporate invests in a series of time deposits of the same size with different maturities at the same annual rate of interest. At the end of each investment period one of the time deposits will mature and become available for use/reinvestment.

The Earnings Credit Rate (mainly utilised in the US and region-dependant) invests balances and pays account analysis on an automated, passive basis, thereby lowering expenses and improving budget and financial reporting. In addition, it is preferable to banks due to the “operational” nature of ECR balances, namely that they do not generate a balance sheet return but rather a reduction in fees.



IV. Case study

To imagine how such solutions can be deployed, we should picture the scenario for a corporate treasurer such as “Jones”. Prior to enlisting the support of Deutsche Bank, Jones utilised a robust in-house cashflow forecasting setup to rationalise balances into two separate portfolios; one for supporting the company’s trading and day-to-day operations, and the other classified as surplus cash.

Jones actively considered investing this latter portfolio into a basket of short-term liquidity investments, the goal of which would be to maintain principal protection, yield enhancement, risk diversification and liquidity. These investments would be in-line with the company’s investment policy, which invests both short-term cash and longer-term or strategic investments, and classifies eligible and prohibited investments.

Managing counterparty credit exposures was Jones’ key priority, including the allocation of investments according to internal counterparty limits, and the creation of a counterparty credit portfolio. Jones also needed to manage the currencies in which surplus cash was held, addressing the related FX exposure either in-house or via integrated FX services provided by one of his relationship banks.

The next step was to portion out the company’s liquidity investments into a mix of current account balances, term deposits, commercial paper, government bonds and reverse repos – utilising cashflow forecasting to understand the firm’s liquidity needs and the points at which excess cash might come into play for large payments (such as dividends, supplier payments, salary payments). For Jones, this was expected to be one large dividend payment semi-annually and a batch of supplier payments due quarterly. In addition, Jones needed to retain a certain buffer of surplus cash in case of any emergency or unforeseen payments.



With this in mind, Jones designed his short-term investment portfolio to suit these parameters, and tried to build a weighted portfolio that matched the corporate’s cashflow needs. Jones ensured that the maximum weighted average maturity of the portfolio was programmed to not exceed 3-6 months, in order to maintain sufficient liquidity without forgoing yield.

Specifically, Jones had \$200 million of surplus cash, of which he kept \$50 million as a buffer on current accounts for any unforeseen stress events or forecasting inaccuracies (an overnight liquidity/ counterparty credit risk classified as investment grade for the bank) and \$150 million of which he placed in Money Market Funds for yield improvement (classified as AAA-rated funds).

V. Conclusion

The last few years have brought drastic transformation to both banks and corporates, compelling them both to rethink the way they operate and manage liquidity.

Banks have had to entirely revise the way they manage their own liquidity, including now needing to hold prescribed levels of HQLAs for certain types of customer deposits. In consequence, corporates have found that the market and many of the rules for investing and borrowing cash have changed – and some have been turned on their head.

But emerging from this crucible of regulatory and market pressures are closer bank-corporate ties that will help corporates find their way through the new liquidity labyrinth – in part these arose in response to Know Your Customer and Anti-Money Laundering measures necessitating and encouraging increased face-to-face contact between bankers and their corporate customers. And more sophisticated, strategic products and approaches are being developed which will help make treasury more efficient and flexible, so that it can handle this increasingly difficult new environment.

Strong and efficient liquidity management is more crucial than ever – done badly, it can lead to considerable losses, and actually hinder rather than facilitate operations. The consequence of all this is that leading banking providers have now moved from a solely operational role with regards to corporate liquidity management to a highly strategic advisory role. They can make sure treasurers are aware of all the latest in regulatory and economic developments, and help them sift and choose from among the new tools available to invest cash, minimising costs and maximising yields.

In turn, corporates must understand how circumstances have changed for banks, and what this means in practice for their own liquidity management. Negative interest rates - and their consequences, direct and indirect - changing regulatory environments and shifting investment options, have all contributed to a new, inverted financial world for the corporate treasurer; but options and advice are available to support them in their aim for optimal liquidity. Treasurers must adapt their strategy and tool box, and draw on this support, to best equip themselves to survive and be fruitful in the new environment.



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