

The use of foreign exchange markets by non-banks

By James O'Connor and James Wackett of the Bank's Foreign Exchange Division and Robert Zammit of the Bank's Sterling Markets Division.⁽¹⁾

As part of its Market Intelligence programme, the Bank of England monitors developments in a range of financial markets, feeding information gathered from contacts into its monetary and financial stability policy processes. This intelligence provides the Bank with insights into a variety of rapidly evolving markets, including the foreign exchange market, where turnover has more than trebled over the past decade. This article draws on this intelligence, economic theory and market data to shed light on the role that non-bank participants — both financial and non-financial — play in the foreign exchange market.

Introduction

The Bank of England's Market Intelligence programme, which involves frequent meetings and conversations between Bank staff and a wide range of market participants, allows it to better understand developments in a range of financial markets. This programme, which has been expanded significantly during recent years, gathers information that informs policies aimed at ensuring both financial and monetary stability — the Bank's two core purposes. This article draws on information gathered from contacts, as well as economic theory and market data, to examine one of the financial markets that the Bank regularly monitors — the foreign exchange market. In particular, it focuses on two of the market's 'end-users' — the non-bank financial sector and the non-financial corporate sector.

Understanding developments in foreign exchange markets is important for both financial and monetary stability. For example, the use of foreign exchange markets by non-bank participants, and their motivation for doing so, influences the liquidity of the market, particularly during times of heightened volatility in financial markets. And the degree to which companies use financial instruments to protect themselves against changes in exchange rates can influence the speed with which they adjust dividends, wages or prices in response to unexpected changes in exchange rates.

The article is structured as follows. The first section provides a brief overview of the size and composition of the market, focusing on the non-bank sector. The following section discusses the conceptual reasons why participants might use the foreign exchange market, before the rest of the article explores the use of foreign exchange markets by two particular

groups — the non-bank financial sector and the non-financial corporate sector — drawing heavily on market intelligence. In doing so, it explores not only how these groups use the 'spot' exchange rate market, but also their growing use of the foreign exchange derivatives market. The box on page 122 describes the different instruments used in the foreign exchange market.

Size and composition of the foreign exchange market

Average daily turnover in global foreign exchange markets has more than trebled over the past decade, reaching around \$4 trillion in 2010, according to the 2010 BIS *Triennial Central Bank Survey* (**Chart 1**). Within this, London remained the most prominent financial centre for foreign exchange trading, accounting for more than one third of all turnover. Sterling is the fourth most traded currency — behind the US dollar, the euro and the Japanese yen — and is used in around 6% of all transactions.⁽²⁾

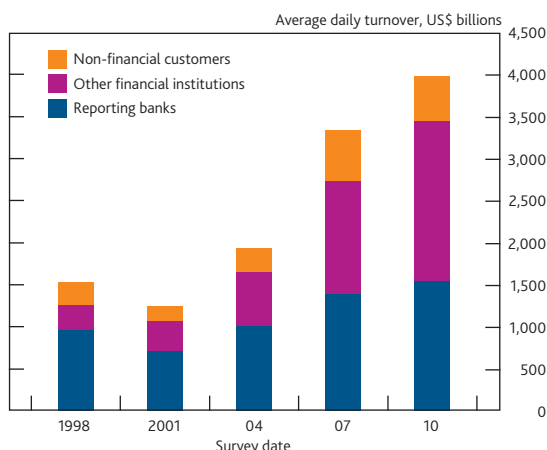
There are a wide variety of participants in the foreign exchange market, which fall broadly into three categories: banks, other financial institutions and non-financial companies.

The banking sector accounted for around 40% of all turnover in foreign exchange markets in 2010 (**Chart 1**). Banks are central to the functioning of the foreign exchange market, including by quoting prices at which they are willing to buy and sell currency with non-bank participants. In this 'market-making' role, banks act as intermediaries, using their

(1) The authors would like to thank Mika Inkinen for his help in producing this article.

(2) The report on pages 158–62 of this *Bulletin*, describing the work conducted by the London Foreign Exchange Joint Standing Committee during 2010, discusses developments in foreign exchange markets more generally.

Chart 1 Global foreign exchange turnover in notional amounts



Source: Bank for International Settlements.

balance sheets to facilitate the interaction between different non-bank participants. But banks also trade currencies among themselves in the interbank market as part of their everyday business, and to clear positions created by making markets for their customers.

The focus of this article, however, is on the remaining two groups. Of these, the largest is the non-bank financial sector (captured within data on 'other financial institutions'), which accounted for nearly half of overall turnover in 2010.⁽¹⁾ This group consists of a variety of institutions. On the one hand, there are investors such as pension funds and insurance companies — so-called 'real money' investors. But the sector also includes leveraged investors, such as hedge funds, who operate using a combination of money injected directly by investors and debt.

The final group is non-financial customers, which largely refers to the non-financial corporate sector. It includes both industrial and service sector companies that use the foreign exchange market as part of their everyday business. In 2010, this group accounted for around 13% of global turnover in the foreign exchange market: this had fallen back from 18% in 2007, reflecting in part the negative impact of the global financial crisis on international trade.⁽²⁾

The role of the foreign exchange market

The size of the foreign exchange market means a vast number of transactions take place on a daily basis. Broadly speaking, these transactions fall under three categories.

First, the foreign exchange market allows companies to exchange currencies to pay for, and receive income from selling goods, services and assets overseas. This article will only briefly discuss this role, however, focusing instead on the two other roles, set out below.

Second, the foreign exchange market allows companies to protect themselves against unexpected changes in the exchange rate that affect the returns they make from their underlying business. This process is known as 'hedging'.

Third, market participants may use the foreign exchange market to seek to earn additional profits. This 'profit-seeking' behaviour may derive from a view that the market is mispriced and hence there are gains to be made by trading.

The manner in which market participants hedge or profit-seek will depend on their specific businesses. The next two sections explore, in turn, the use of the market by non-bank financial institutions and by the non-financial corporate sector.

The use of foreign exchange markets by non-bank financial institutions

Non-bank financial institutions use foreign exchange markets for both hedging and profit generation. There are sparse data on their actions however, meaning that market intelligence plays a prominent role in forming conclusions about non-bank financial institutions' use of foreign exchange markets. Of the two motivations, market contacts attribute the majority of turnover to hedging behaviour, but there is also a significant amount of profit-seeking. This section discusses each of these motives in turn.

Hedging behaviour by non-bank financial institutions

Non-bank financial institutions hedge to avoid unexpected changes in exchange rates leading to variations in the returns derived from investing in overseas assets. For example, the returns to a UK investor from a bond issued by the US government, which promises to pay \$100 in one year's time, are determined not only by US interest rates, but also by the rate at which US dollars can be exchanged back into sterling. If sterling appreciates against the dollar in the period between buying and selling the bond then the total sterling return from the investment will be less than if the exchange rate had not changed.

An investor can protect themselves against — or 'hedge' — this currency risk by simultaneously investing in an instrument for which the pay-off is inversely related to the impact that changes in exchange rates have on the returns from investing in an overseas asset. In this example, the investor could simultaneously enter into a forward foreign exchange contract, guaranteeing that \$100 will be exchanged for a pre-agreed amount of sterling at the end of the year (see the box on

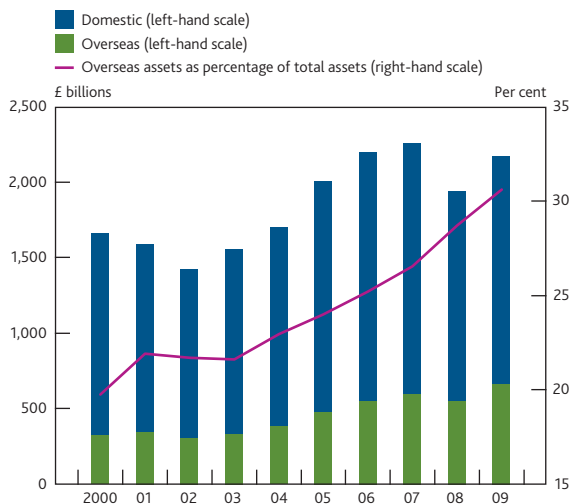
(1) Under the BIS definitions, 'other financial institutions' also includes banks that do not respond to the survey, which are believed to account for a small proportion of the sector. It also includes companies that trade on behalf of retail investors. The data and market intelligence suggest activity by retail investors is limited in the United Kingdom, but much more prominent in other areas of the world.

(2) For further discussion of the collapse in world trade during the financial crisis, see Domit and Shakir (2010).

page 122 for a more detailed description of a forward contract, and other instruments used in the foreign exchange market). Consequently, any change in the exchange rate over the intervening period will have a negligible effect on the overall portfolio, meaning that the investment's currency risk is hedged.

Over the past decade, UK investment in overseas financial assets has increased (Chart 2), which has brought about a concomitant increase in the amount of hedging of foreign exchange exposure. This investment expansion has been motivated mainly by a desire across a range of investors to improve the trade-off between risk and return that arises by investing in a broad range of assets, including in overseas assets (so-called 'portfolio diversification').

Chart 2 Domestic and overseas long-term investments by UK insurance companies and pension funds



In practice, however, contacts reported that investors do not always perfectly hedge the currency risk inherent in their holdings of overseas assets, partly as a result of uncertainty over how long they will invest in overseas assets. Instead they tend to use short-maturity instruments, typically swaps and forward contracts of maturity less than three months, and enter into new short-maturity instruments when the initial contracts mature. The amount of new investment required to continue the hedge will vary depending on the changes that have occurred to the total value of the overseas assets during the period between entering into foreign exchange derivative contracts (the 'roll' period). Contacts reported little use of options, or more complicated foreign exchange derivatives, for hedging purposes by non-bank financial institutions.

The degree to which non-bank financial institutions hedge currency risk depends on the composition of their portfolio. For example, contacts suggest that non-bank financial institutions that invest in a portfolio of debt instruments — such as government or corporate bonds — are more likely to hedge currency exposures than those that manage a portfolio

of equity instruments. This was reportedly because the proportion of volatility in an international bond portfolio as a result of exchange rate changes tends to be larger than would be the case for an international equity portfolio of similar size, and hence hedging was more likely to be necessary in order to protect overall returns. Moreover, contacts suggest some equity investors view currency risk as a source of diversification.

Investing in foreign currencies as a means of generating profits

In addition to hedging the currency risk from investing in overseas assets, some non-bank financial institutions also try to earn additional profits from changes in exchange rates. This may result from investors deliberately not reducing the currency risk from overseas investments, thereby meaning that movements in exchange rates affect their returns. Or investors may invest in foreign exchange instruments even when they have no underlying holdings of overseas assets. Indeed, some investors invest a proportion of their assets solely in currencies and related foreign exchange derivatives for this purpose.

In a perfectly efficient market, investors should not consistently be able to generate positive risk-adjusted returns by investing in financial assets.⁽¹⁾ While investors may expect to earn positive returns from certain investments in exchange rates, this should merely compensate them for the risks they are taking that pay-offs will be lower in 'bad' states of the world, such as recessions. Some argue, however, that inefficiencies in the foreign exchange market — such as informational asymmetries — mean that positive risk-adjusted returns can be made on a consistent basis, justifying the existence of profit-seeking investors in foreign exchange markets.

There are broadly two types of investors looking to generate positive risk-adjusted returns from perceived inefficiencies in the foreign exchange market: 'fundamental' and 'technical' investors. On the one hand, fundamental investors use economic or financial theory to form an opinion about a 'fair value' for an exchange rate. They then either buy or sell a currency in order to profit from their expectation that current exchange rates will converge towards this fair value. On the other hand, technical investors base investment decisions on patterns observed in past values of the exchange rate and place less value on economic data or theory in forming their investment decisions.

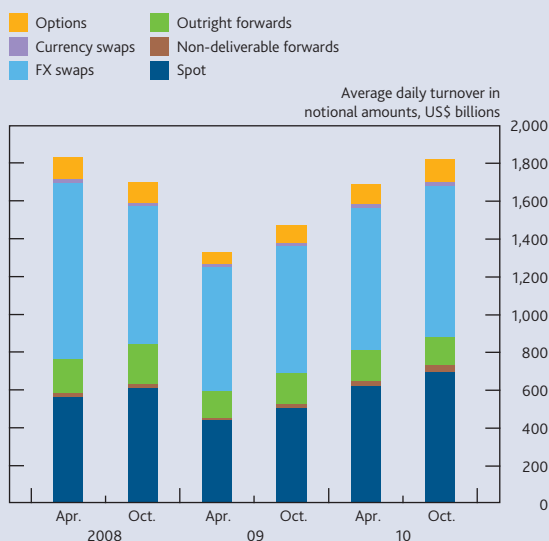
According to contacts, investors looking to profit from changes in exchange rates tend to use foreign exchange

(1) Investors will be willing to pay a higher price, and hence demand lower expected returns, for assets that provide high pay-offs during 'bad' states of the world, such as recessions. And vice versa for assets that provide low pay-offs during bad states of the world.

Instruments used in foreign exchange markets

There are a number of financial instruments that participants in foreign exchange markets can use. A large proportion of turnover is in simple transactions in the spot market (**Chart A**). But there is also significant turnover in the derivatives market, which allows market participants to purchase and sell currency at pre-arranged prices at a future date, and gives them greater flexibility in managing currency exposures via instruments such as options. This box briefly outlines the most common instruments used.

Chart A Average daily turnover in UK foreign exchange markets by instrument type



Source: London Foreign Exchange Joint Standing Committee.

A *spot* foreign exchange transaction captures the immediate purchase or sale of one currency in return for another. The rate at which this transaction takes place is what is commonly referred to as the exchange rate.

instruments that are similar to those used by investors looking to hedge. Real money investors tend to use simple foreign exchange derivatives such as forwards and swaps, typically with maturities of less than three months. Usage is more varied across hedge funds, however; some will use relatively simple instruments and operate in a similar manner to real money investors, while others use options and other derivatives to a much greater extent and degree of complexity.

In recent years, profit-seeking investors known as 'high-frequency traders' have formed an increasingly significant part of the foreign exchange market, facilitated by improvements in technology. There are many different types of participants that trade very frequently in foreign exchange markets, including banks. But high-frequency trading

A *forward* contract is an agreement to buy or sell a certain amount of currency at a pre-determined date in the future at the forward rate of exchange. In a perfectly efficient market, the forward exchange rate is calculated by adjusting the current exchange rate to account for differences in interest rates between two currencies. *Non-deliverable forwards* are similar to outright forwards, but are not physically settled at maturity. Instead, a cash payment will be made by one party to the other, usually in dollars, if the spot rate differs to the agreed forward rate on maturity.

Foreign exchange swaps involve a counterparty agreeing to buy an amount of currency at an agreed spot exchange rate while simultaneously entering into a forward contract that locks it into selling the same amount of currency at a later date at a pre-agreed forward rate.

A *currency swap* is a contract in which two market participants agree to exchange regular (typically quarterly, semi-annual, or annual) floating payments in different currencies. In essence a currency swap equates to a series of forward contracts.

Currency options give the buyer the right, but not the obligation, to exchange one currency for another at a pre-determined exchange rate on, or before, a pre-specified maturity date. Typically, 'European' options are used within foreign exchange markets, meaning that an option holder can only choose to exercise their option on the maturity date, and not before. 'American' options also permit the holder to exercise the option prior to the maturity date. There are also a number of more complicated ('exotic') options used within foreign exchange markets, including Asian options, Bermudan options, forward starting options, compound options and barrier options.

companies can broadly be defined as investors that purchase and sell currencies — predominantly in the most liquid spot markets — with a shorter holding period than other market participants in order to generate profits. The investment decisions of high-frequency traders are determined and executed by pre-defined mathematical models (algorithms), requiring sophisticated information technology systems to analyse large amounts of data. Reflecting this, investments by high-frequency traders typically last for less than five seconds on average, and regularly last for less than one second. Although measuring the foreign exchange turnover accounted for by high-frequency trading companies is difficult, market contacts suggest that they have contributed significantly to the growth in turnover by 'other financial institutions' (**Chart 1**), and are estimated to account for approximately 20%–25% of turnover in London.

High-frequency trading companies typically rely on their relationships with banks — so-called ‘prime broking’ relationships — to access the infrastructure needed to sustain trading activities. A high-frequency trader’s prime broker will lend them funds in return for a fee (or interest rate), but will impose certain constraints on the company, including on the amount of leverage that can be used. According to contacts, much of the growth in the value of transactions financed by prime brokerage in the London Foreign Exchange Joint Standing Committee survey (Bank of England (2011)) can be accounted for by high-frequency traders.⁽¹⁾

Historically, high-frequency trading companies attempted to generate profits primarily by exploiting price discrepancies between different foreign exchange trading venues; known as ‘latency arbitrage’.⁽²⁾ But, as the efficiency of the foreign exchange market has improved over recent years, high-frequency traders’ strategies have evolved. For example, high-frequency traders may engage in activities similar to market-making, profiting from the difference between the prices at which they are willing to buy and sell currencies (the ‘bid-offer spread’). Or they may employ strategies based on their analysis of market flow and positioning, observed correlations between currencies and other asset prices, or in response to data releases.

There are mixed views about the impact of high-frequency traders on the foreign exchange market. On the one hand, increased competition has contributed to the reduction in the spread between the prices at which market participants can buy or sell currency, lowering the costs to the ultimate end-users of foreign exchange markets. In particular, contacts note that bid-offer spreads have fallen, particularly for smaller-sized transactions, lowering the cost of transacting in the foreign exchange market for non-bank participants in normal market conditions. And, since high-frequency traders observe prices across different trading venues, they might increase the efficiency by which liquidity is transferred around the foreign exchange system.

On the other hand, there are concerns about whether high-frequency traders could amplify market volatility during periods of heightened stress within financial markets. Since some high-frequency traders behave like market makers, the perceived liquidity benefits from their presence may be illusionary. In particular, given their short holding period, contacts suggest there may be a risk that high-frequency traders withdraw from the market during periods of volatility, potentially aggravating any deterioration in liquidity conditions. There is, however, some evidence to suggest that high-frequency traders might actually stabilise conditions to some extent (Chaboud *et al* (2009)), perhaps because their behaviour has tended to normalise more quickly than other participants after periods of heightened volatility.

How non-bank financial institutions trade in foreign exchange markets

There are a number of different ways that non-bank financial institutions can execute trades in the foreign exchange market. In recent years, they have increasingly been executed electronically as advances in technology have increased the speed and ease by which trades can be conducted. The latest published survey by the London Foreign Exchange Joint Standing Committee (conducted in October 2010) suggested that over half of turnover by non-bank financial institutions was conducted via electronic trading or broking systems (Bank of England (2011)). The growth in electronic execution methods partly reflects the growth in algorithmic trading — which makes use of computer programs to automate trading based on pre-defined rules. An example of an algorithmic trade is one in which a large trade is split into a series of smaller segments, and executed at the most liquid periods, in order to minimise its impact on exchange rates. Banks will often do this on behalf of their customers in return for a fee.

Discussions with market participants suggest that non-bank financial institutions tend to conduct foreign exchange transactions with the market maker that offers the best price. But non-price factors are also important. For example, contacts noted that the ease with which a market maker could execute large transactions efficiently was also an important consideration; as was their ability to offer trade ideas and provide intelligence on foreign exchange markets.

The use of foreign exchange markets by private non-financial companies

In contrast to financial institutions, which use foreign exchange markets for both hedging and profit-seeking purposes, UK non-financial companies use foreign exchange markets predominantly to reduce the currency exposure arising from their underlying business. The degree to which companies have used foreign exchange markets has increased over time, mirroring the rise in global trade activity. As discussed previously, the foreign exchange turnover of non-financial companies in the London market fell back during the recent global crisis as trade flows collapsed, but rose again in October 2010 (**Chart 3**).

This section outlines why companies might choose to hedge currency exposures, the constraints on them and the ways in which they tend to do so in the United Kingdom.

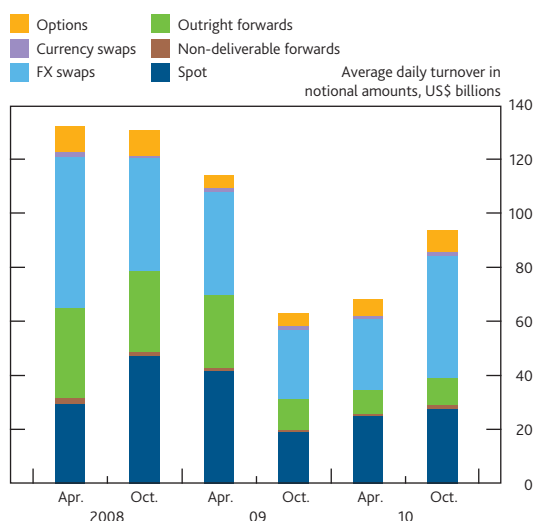
Motives for hedging

In perfect financial markets, in which there are no informational asymmetries, no taxes and no transaction costs,

(1) See also Broderick and Cox (2010).

(2) Latency is the time it takes to deliver an executable price to a client plus the time it takes for the trade record to return to the price maker.

Chart 3 Average daily turnover of non-financial companies in UK foreign exchange markets



Source: London Foreign Exchange Joint Standing Committee.

hedging foreign exchange exposures should not affect the value of a company (Modigliani and Miller (1958)). If investors can hedge unwanted currency exposures themselves at identical costs to the company, they will not reward companies that hedge by demanding lower returns to hold a stake in that company. Consequently, companies' use of foreign exchange markets need not extend beyond using the spot foreign exchange market.

But if the assumptions about perfect markets are relaxed, there are various reasons why hedging currency risk might increase a company's value; either by increasing expected dividends or reducing the additional compensation required by investors to hold an asset with uncertain pay-offs.

Contacts suggest a number of motives for hedging by non-financial companies, the most important of which is the desire to minimise losses triggered by unexpected exchange rate movements. Broadly speaking, there are three channels through which companies perceive changes in exchange rates to influence their profitability. First, the domestic value of international trade may be made less profitable by changes in the exchange rate; so-called 'transactional' risk. Second, companies face a 'translational' risk from movements in exchange rates affecting the domestic value of overseas assets and liabilities. For example, the reported value of an overseas factory owned by a company will change as a result of movements in the exchange rate. And third, companies are exposed to the 'event' risk that returns from potential mergers, acquisitions and overseas investments are determined, in part, by changes in exchange rates.

Companies may also hedge currency risk to help smooth income over time. For example, in countries with progressive corporate tax regimes such as the United Kingdom, reducing the variability of pre-tax income can increase expected

post-tax income.⁽¹⁾ And contacts also reported that investors tend to demand additional returns to compensate them for investing in a company with greater variation in its reported earnings. Companies may therefore use foreign exchange markets to smooth currency exposures and reduce reported earnings volatility.

Hedging currency risk may also provide companies with more time to respond to unexpected exchange rate movements. For example, if companies perceive the change to be persistent, they may respond by adjusting their business model, either to secure alternative funding sources, to change production and supply methods, and/or to find new sources of customer revenues. But these changes take time and hedging can provide companies with an interim period during which they can respond.

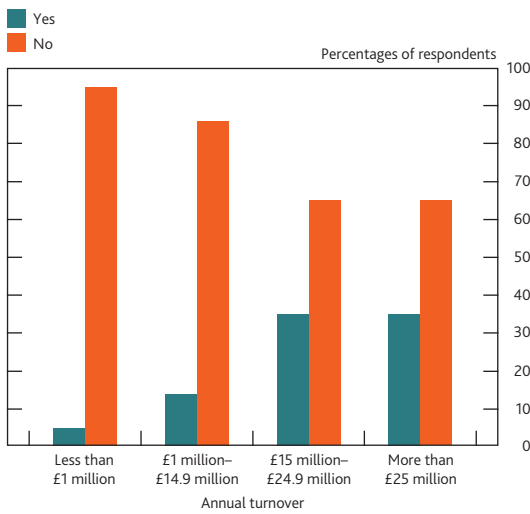
Contacts suggest that while the motives for hedging vary across firms and industries, hedging activity tends to be greater for companies that face a higher probability of financial distress. Companies in highly competitive industries — where products are sold at prices only slightly above the production cost — reportedly tend to hedge a higher proportion of currency exposures than those in less competitive industries. Those companies in less competitive industries are more likely to be able to absorb losses from an adverse change in exchange rates with little impact on the probability of bankruptcy, whereas companies in more competitive industries are more likely to hedge to mitigate the higher bankruptcy risk that they face.

Constraints to hedging

The potential benefits of hedging must be balanced against the costs of doing so. For small companies in particular, the additional costs associated with hedging currency exposures may exceed the additional benefits from doing so, particularly since there are fixed costs to establishing a hedging programme. Consistent with this, the *April 2011 Business Risk Report* (conducted by Lloyds Banking Group) showed that a substantial majority of small and medium-sized companies in the United Kingdom do not hedge currency risk using financial market instruments (Chart 4). This contrasts with large companies, where 88% of respondents to the *2010 Risk Management Survey* of large global multinational companies (conducted by Bank of America Merrill Lynch) reportedly hedged at least some of their currency exposure using financial instruments. As well as reflecting the lower hedging costs for large firms, this finding might also reflect large companies being more likely to earn a higher proportion of revenues as a result of international trade than smaller companies, and thus have greater exposures to changes in exchange rates.

(1) For further information on the tax incentives to hedge, see Graham and Smith (1999).

Chart 4 Small and medium-sized companies with a hedging strategy in place



Source: Lloyds Banking Group.

Companies’ desire to manage currency risk through the use of derivatives may also depend on the accounting treatment of foreign exchange instruments. According to contacts, publicly listed companies’ decisions appear to depend, at least in part, on their ability to obtain so-called ‘hedge accounting’. Derivatives are normally subject to ‘fair value’ accounting, which means that mark-to-market gains or losses are recognised in the profit and loss statements of companies. Hedge accounting allows companies to delay recognising these gains or losses until the associated transaction is realised, lowering volatility in reported earnings. These findings are consistent with the April 2010 *Risk Management Survey* of large companies. When asked about the significance of accounting considerations for hedging purposes, 33% of respondents stated accounting considerations were ‘critical’, 56% noted they were ‘important’ and only 10% said they were ‘unimportant’.

Companies’ ability to reduce currency risks may also be impinged by their ability to forecast cash flows. Non-financial companies tend to be more confident about forecasting cash flows, and hence currency exposures, in the short term, and will often hedge a higher proportion of this currency exposure. In contrast, it is harder for them to forecast longer-maturity cash flows, meaning they usually hedge less at this maturity. According to the 2010 *CitiFX Corporate Risk Management Study* of large multinational companies, most respondents suggested that they tend to reduce the maturity of foreign exchange transactions as uncertainty about future earnings increases.

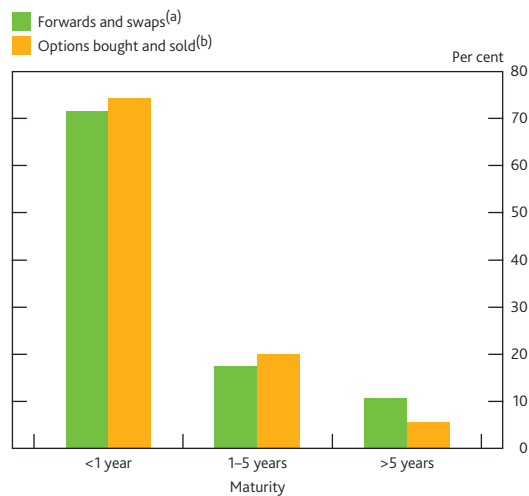
Corporate hedging methods

Before turning to financial instruments, some companies will use so-called ‘natural’ hedges to offset some of their currency risk. Natural hedging refers to methods such as companies moving production facilities to the overseas country in which they have the foreign exchange exposure, or borrowing in the

overseas currency. Reports from the Bank’s Agency network, which gathers information from businesses around the country, suggest that there has been an increasing trend towards companies using these natural hedging methods.

For those companies that use financial instruments to hedge currency risk, contacts report that they mainly use short-maturity foreign exchange forwards and swaps. They typically rely on instruments with a maturity of less than twelve months (Chart 5).

Chart 5 Maturity of foreign exchange derivative contracts used by non-financial participants



Source: Bank for International Settlements.

- (a) Proportion of turnover for specific maturities of forwards and swaps relative to the total turnover of those instruments.
- (b) Proportion of turnover for specific maturities of options bought and sold relative to the total turnover of those instruments.

Contacts reported that the average maturity of foreign exchange instruments used by non-financial companies shortened slightly following the financial crisis. As well as reflecting greater uncertainty about the global trade outlook, and hence future cash flows, this may also have reflected an increase in the cost of long-maturity derivatives relative to short-maturity derivatives. Banks have increasingly incorporated a charge to compensate them for the risk that a company might default on long-term derivative trades, potentially increasing the cost of hedging for companies.

The use of options and more complicated structured products by non-financial companies is less widespread than forwards and swaps. According to the 2011 *Foreign Exchange Services Study* by Greenwich Associates, only 16% of large companies in the United Kingdom use currency options to manage currency exposures. According to contacts, companies that use options tend to have a ‘target’ exchange rate, and will use options to ensure that this minimum target is met.

Contacts reported two main reasons for the lower reliance on the options market. First, companies were particularly averse to the upfront cost associated with purchasing simple

('vanilla') options. For example, the *2010 CitiFX Corporate Risk Management Study* conducted by Citigroup found that 64% of respondents did not use options because of considerations about cost. And, for those companies that do use options, many will reduce the upfront cost by using a combination of purchases and sales of options, or purchasing more exotic options, albeit in return for limits on the potential benefits of these hedges. And second, the accounting treatment of options reportedly made them a less favourable hedging instrument relative to forwards and swaps.

According to market contacts, the majority of foreign exchange turnover by non-financial companies reflected companies trying to reduce transactional currency risk. There was also some reported hedging of translational risk using longer-maturity instruments. Managing the currency risks associated with events such as mergers and acquisitions, or large overseas investments, was typically constrained to the largest companies, with more complicated derivatives sometimes used in these transactions. For example, contacts reported the use of 'contingent options', which give the company the option to exchange a certain amount of currency at a pre-specified exchange rate subject to the 'event' taking place.

The manner in which non-financial companies liaise with banks to manage currency exposures does not appear to have changed markedly since the financial crisis. Companies typically conduct foreign exchange transactions with a relatively small set of banks, often those with which they have a pre-existing lending relationship. And, although contacts suggested that many larger companies have re-evaluated their hedging programmes in light of the financial crisis, there appear to have been few changes in the way that companies protect themselves against the risk that a bank will renege on its foreign exchange derivative obligations. For example, few companies have adopted agreements that ensure that collateral is provided if there is a change in the value of

existing foreign exchange derivatives. The *2009 Foreign Exchange Services Study* of large corporates by Greenwich Associates suggested that only 15% of respondents had established credit support annexes (CSAs) — a legal document outlining the rules governing the mutual posting of collateral — and 10% had collateral agreements in place.

Summary

The foreign exchange market plays an integral role in the economy. This article has described the use of the market by non-bank participants, drawing on market intelligence gleaned from discussions with financial market participants, survey data and economic theory.

In the non-bank financial sector, the majority of foreign exchange turnover is reported to reflect investors hedging currency risk associated with overseas investments. But there remains a significant amount of profit-seeking within foreign exchange markets, both by leveraged and non-leveraged investors. An increasingly important profit-seeking group of participants in recent years has been high-frequency traders, which have changed the dynamic of foreign exchange markets, with smaller trade sizes at a much more regular frequency.

In contrast, non-financial companies almost entirely use foreign exchange markets to reduce the currency risk associated with their everyday business activities. The means by which they do so are varied and are, in part, related to accounting treatments. They typically use relatively simple, short-maturity foreign exchange instruments, although there is also some activity in options markets.

The Bank will continue to monitor developments in foreign exchange markets, in part through its role as chair of the London Foreign Exchange Joint Standing Committee, to help to contribute to both monetary and financial stability.

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