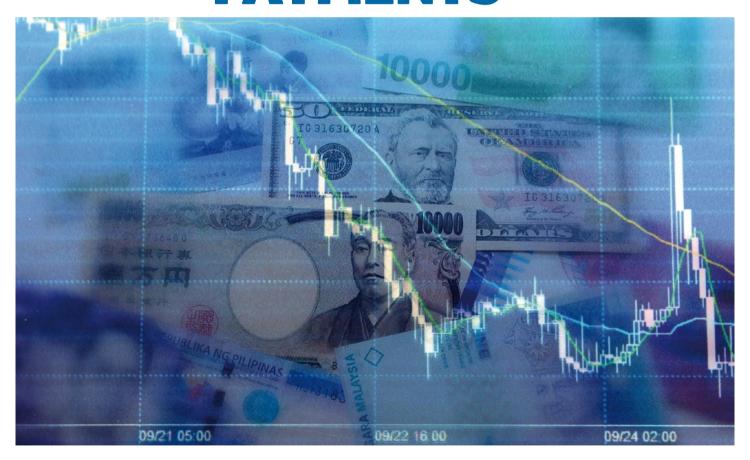


A report from The Economist Intelligence Unit

NAVIGATING THE WATERS OF FOREIGN EXCHANGE AND INTERNATIONAL PAYMENTS



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Worldwide equity and debt markets have surged in recent decades, but less-celebrated foreign exchange (FX or forex) dwarfs both of them. One day of FX trading beats average daily trading in global stock markets by 28 to 1. Even trading volume in the US taxable bond market pales in comparison to foreign exchange. In April 2013, daily forex transactions hit \$5.3trn, equivalent to trading the value of the combined annual world gross domestic product twice a month.

Financial institutions build appropriate strategies to take advantage of mispriced currencies in fractions of seconds, hours or days. Sometimes they face off against corporations that hedge, but more often against rivals with different goals or market forecasts for specific currencies. Non-financial corporations tailor FX exposure to suit lines of business. But temper expectations, Nicholas Fanandakis, CFO of DuPont, warns counterparts. "You can't look at foreign exchange to make money," he says. "You're in it to manage risk."

Yet, surprisingly, the world's largest and most active marketplace lacks the understanding its impact merits in for-profit and philanthropic sectors. What's more, the basic FX tools have changed little in recent decades.

Familiar tools ease currency risk in changing market climates, highlighted in the past year by a plummeting Japanese yen. Spot forex transactions

form the bedrock of a smooth cross currency payments system. Trades settle in two-day windows subject to variations because of time zones. "Outright forwards" arrange FX transactions that settle in a month, two months, three months, six months or a year. Aptly named "broken date forwards" settle at other intervals.

FX swaps transform currency rate exposure into a play on interest-rate differentials. Trading surpasses all other FX instruments, although the pace has slipped of late, according to the Bank for International Settlements. Daily swaps volume at \$2.2trn represented 42% of all FX-related transactions in 2013, two percentage points lower than reported in 2010.

FX futures and options furnish a crucial and dynamic dimension to the FX ecosystem, thanks to the regulatory landscape for exchange-traded derivatives. Regulated exchanges install financial safeguards that maintain markets and wall off assets from the fate of counterparties—even in the sort of economic upheaval that erupted in 2008.

Companies with global aspirations or facing global competition need a firm handle on currency markets. Left to an afterthought, FX invites unwanted consequences to the bottom line.

Treated with due respect, on the other hand, FX supports liquidity, credit relationships, ample cash flow and healthy bottom lines.

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The biggest market on earth

Superlatives sound commonplace today in the financial industry, but foreign exchange earns them year in and year out. It is by a wide margin the world's largest, most liquid marketplace. The 2013 Triennial Central Bank Survey published by the Bank for International Settlements reported that daily FX transactions hit \$5.3trn, a pace equivalent to trading the value of annual world GDP every two weeks.

And FX is everywhere that currency plays a key role.

Travelers exchanging dollars to spend abroad on vacation, global companies devising ways to protect millions of dollars in cross-border revenue, and financial institutions betting on currency fluctuations populate a market defined by unrivaled size and global scope.

Although global equity and fixed-income markets tend to garner more headlines, their volume pales next to FX volume. In one day, the currency market trades 28 times the average daily trading of all of the world's stock markets combined. And in 2013, average daily trading volume in the US taxable bond market—the most active marketplace for corporate debt—edged past \$20bn, according to the Securities Industry and Financial Markets Association. At that pace, bond trading in the US amounted to four-tenths of one percent of the daily volume in foreign exchange.

Not surprisingly, a firm grasp on a market so far-reaching and dynamic eludes all but the most seasoned experts. "Foreign exchange operates on a bit of a mind-boggling scale," warns Robert Hodrick, the Nomura Professor of International Finance at the Columbia University Business School.

"The numbers are astounding," agrees Joseph François, who monitors FX as a professor of economics at the World Trade Institute in Bern. Switzerland, and as director of the European Trade Study Group, an academic forum based in the UK. What's more, says Mr Francois, transparent, "plain-vanilla" FX transactions account for only half of all the activity. The other half of the market comprises swaps, derivatives and more complex transactions, often with multiple parties or currencies.

When computers, cars, cell phones and washing machines cross sovereign borders, money and investments migrate also, necessitating foreign exchange. Nowhere is that trend more striking than in emerging markets, where growing middleclass populations seek amenities familiar in developed nations. As international commerce and investment flourish and mature, so does foreign exchange in the form of spot transactions, forwards, swaps, options and futures.

Surprisingly, FX, the world's largest and most active marketplace, often lacks for the attention its size merits. Investors and finance journalists follow equity and fixed-income markets closely, but as an asset class, it is actually currency that deserves greater prominence.

Indeed, unlike stocks and bonds, the vast majority of foreign exchange occurs between giant

In one day, the currency market trades the average daily trading volume of all of the world's stock markets combined.

financial institutions where consumers don't see it. Corporations that hedge critical financial risks account for just 10% of the activity.

This lack of visibility comes with intrinsic risks, as exposure to currency fluctuations can make foreign exchange a perilous blind spot. Sky-high stakes subject to unpredictable movements can rock FX markets, but leaving their impact to chance can take a punishing toll.

For evidence that deciding not to hedge carries more risk than a prudent hedging strategy just look at Japan. Last year, the yen plummeted 22% in value against the US dollar, the second most heavily traded currency pair after US dollars and euros. Unhedged exposures swamped gains in portfolios or erased robust profits of companies doing business in Japan.

The consequences of FX volatility affect much more than prices for imports and exports.

Underlying exposure to foreign currencies touches goods and services across the board and around the world. Charitable organisations also contend with effects.

In 2013, CARE directed more than \$450m to global initiatives that assist refugees, support education and promote health in 87 countries. "We're in a lot of exotic currencies where hedging is not an option or is very costly," says Peter Buijs (pronounced "Bowse"), CFO of CARE. "Foreign exchange adds a great deal of complexity to our work," says Mr Buijs. "We transact business in all of those currencies."

The US dollar furnishes a base currency for reporting purposes, but CARE donations reside in four currencies: euros, pounds sterling, Swiss francs and Swedish krona. CARE avoids double conversions into US dollars and then into local currencies. "We manage cash flow so that it gets into the currency of the grant, and then we transfer it to the currency where money is needed," says Mr Buijs. "In addition, we reduce currency risk by keeping assets and liabilities in each foreign currency in balance."

For any business with global aspirations, making FX an afterthought ignores the tail that often wags the dog—with unwanted consequences to the

bottom line. Smooth global payments hinge on a cautious balance of local assets and expected liabilities, especially where currencies are thinly traded or banking relationships don't exist. Daily FX transactions would shut down without liquidity, credit relationships, ample cash flow and balance sheets that support credit. Absent means to convert currencies, cross-border activity would soon grind to a halt.

Competing in a complex, opaque arena

The basic building blocks of FX have changed very little in the last several decades, even as trading volume has increased steadily over the same period of time. What is the source of record-breaking volume? Historically, experts pointed to the ebb and flow of trade balances, central banks adjusting interest rates, and the global economic climate.

Yet, in recent years, many newcomers have joined the FX fray. The latest Bank for International Settlements (BIS) report singles out "other financial institutions", meaning banks that are not formal dealers in the currency market. These institutional investors, hedge funds and proprietary trading firms that trade for capital gains, not commissions, have helped boost trading volume, as have swelling ranks of retail investors.

As these newcomers arrive, improved access to data, expertise and execution allow them to face off against giant rivals. According to BIS data, their daily trading surpassed established participants in the 2010 Triennial Survey, a trend also visible in past surveys. Daily trading by "other financial institutions" recorded almost 50% growth since 2010, to \$2.8trn.

"It's great that the average investor can come and at least show interest," says Zoran Mavrinac, senior managing director and head of Curex FX, a firm with financial products that link institutional FX to global capital markets. Yet this new influx poses new questions. Ranks have expanded in a period of relatively low volatility in FX—how will these new market participants react if markets get rocky? An en masse departure might strain liquidity and crowd the exits.

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Peter Buijs, CFO of CARE In this flow of new activity, furthermore, rivers of data create a vast appetite for education and analysis. Issues related to foreign exchange spawn books, motivate research papers, fill text in corporate financial reports and sustain websites aimed at turning rank-and-file investors into currency gurus.

And there's a lot to learn. Interest rates, regulatory regimes, trading venues and geopolitical upheaval also tip the balance in FX strategies. Companies must weigh contingencies and plan ahead so that cross-currency payment chains operate smoothly. Mr Hodrick and academic colleagues parse currency fluctuations by type of instrument, counterparty, means of execution and country issuing the currency moment-by-moment or year-by-year. This work results in scholarly papers that probe, among other things, the relationship between risk premiums and expected future exchange rates, biases in the measurement of FX risk premiums and risks and returns in forward FX.

Hundreds of research titles in the academic space try to make sense of FX complexity—but for the layman, they may only add to the confusion. At the end of each day, the nuances and vagaries of

foreign exchange evoke a description of Soviet Russia by Winston Churchill, the legendary British prime minister: "a riddle wrapped in a mystery inside an eniqma".

This complexity and opacity can lead judgement astray, and so government and industry regulators in every jurisdiction wrestle with transparency and accountability. Since enacting the Commodity Futures Modernization Act in 2000, the US government, through various regulatory arms, has implemented stronger rules to monitor FX transactions. The Commodities Futures Trading Commission monitors compliance and the Department of Justice prosecutes where fraud exists. Abroad, central banks and financial regulators take similar approaches. Nevertheless, FX transactions between the most sophisticated market participants go largely unregulated by American and other authorities.

The most rigorous analysis and regulation cannot predict or control with certainty how markets will move tomorrow, much less in one month, six months or even two years. Absent means to control fluctuations, FX has centered on managing risk ever since modern currency trading began.





Challenges and opportunities

From payments for fast food to payments for passenger jets or financial instruments, the abstract nature of foreign exchange echoes a tale retold by Milton Friedman, the late Nobel laureate, about "the island of stone money" in his book Money Mischief: Episodes in Monetary History.

On the island of Yap in Micronesia's Caroline Islands, locals once devised a unique monetary system. Because they lacked metal, they carved giant wheels from stone. Repayment of a debt required the transfer of one stone wheel by raft from one island to another. All worked well until, at one point, a storm overturned the raft, sending the valuable stone to the bottom. Initially, all value seemed lost, until testimony established agreement on the dimensions of the giant sunken stone. Yap islanders decided that they didn't actually need to see the stone for it to have value. Knowing its dimensions and whereabouts was sufficient to sustain value for generations until westerners arrived.

Fast-forward to trading rooms in financial centres around the world today. Confidence, not precious metal reserves (and much less wheels carved from stone), governs currency prices. Towards the end of the second world war the Bretton Woods Agreement replaced fixed foreignexchange rates with an adjustable rate system that pegged US dollars to the price of gold. The agreement lasted until 1971, when President Richard Nixon finally severed the US currency's link to gold to prevent runs on the dollar. Other governments followed suit, and most currencies

began to trade based on underlying economic merits, subject to local currency restraints.

Two decades later, the Journal of Economic Perspectives reported that rigorous efforts to predict exchange rate movements fared no better than a random walk model. This indicates, as Richard Meese, a UCLA professor and the author, concluded, that "exchange rate changes are hard to explain after the fact, even with the knowledge of actual future values of fundamental variables."

Armed with faith in global currency valuations, financial institutions plunged into over-thecounter foreign exchange, where most currencies still change hands today. By 1998, trading surpassed \$1.5trn.

Even top experts can underestimate FX risk. A wrong bet on Russian currency triggered the much-publicised 1998 collapse of Long Term Capital Management, a fund whose brain trust included two Nobel laureates in financial economics. Emergency meetings convened by the New York Federal Reserve Bank pressured bankers to support a bailout, temporarily staving off lasting damage to the financial system.

Companies may come and qo, but robust FX markets display resilience. After the collapse of Lehman Brothers in 2008 sent equity markets into a tailspin and froze fixed-income markets, FX took a punch but kept on ticking. In the three-year run-up to the 2007 BIS Triennial Survey, daily FX volume surged by 72%. The pace of growth fell over the next three years, but daily activity nevertheless grew by 21%. The latest Triennial Survey, in 2013,

reported a 33% increase in daily FX trading, setting another new record.

As growth in the FX market continues, the increasing speed of trading poses fresh challenges. Transactions occur multiple times a second, from identifying price inefficiencies to executing orders. Whether stock, bonds or currency changes hands, computer algorithms operate according to rules that transform events to numbers. If the numbers dictate a trade, it occurs in nanoseconds.

Debate clouds the merits of high-frequency trading. Proponents emphasise added market liquidity at every instant. Detractors warn that algorithms distort the FX market and snare profits from investors who can't afford costly access to high-speed networks.

Whatever the speed of trading, strategies for managing FX risk rely on data crunched by central banks, global financial institutions, financial regulators and independent economic advisers. Market experts keep close tabs on average daily volumes, values and volumes by type of FX instrument, average daily values by instrument, and average daily spot values by trade size, among other statistics.

For its own part, the US Federal Reserve Bank reports each quarter on the euro-dollar and the dollar-yen exchange rates; performance of the US dollar against the New Zealand dollar, Australian dollar, Japanese yen, Swiss franc, British pound, euro and Canadian dollars; and renminbi spot rates traded offshore in free markets and onshore, subject to restraints imposed by the Chinese government. The Fed's counterparts around the world produce similar reports and analyses.

Learning the language of FX

As market participants have sought to convert risk into opportunity, FX has developed a language of its own. Spot transactions, outright forwards, non-deliverable forwards (where risky currencies never change hands), and foreign exchange swaps and options that balance risk and reward keep market veterans on their toes.

Spot FX transactions form the bedrock of cross-currency payments. Simple currency

exchanges occur within two-day windows subject to time differences around the world that can alter settlement times. Spot counterparties check spot rates and then currencies change hands. If the new currency is earmarked for local payables, subsequent fluctuations are muted. If currency resides in a treasury or portfolio, it can take a hit or, conversely, record a gain when prices change.

Not all transactions are so straightforward. Some currency risks will materialise on deliveries in a month, two months, three months, six months or a year—the typical forward maturities. "Outright forward" transactions contract to exchange cash at these future dates. Prices generally reflect two components: spot prices in both currencies and differentials in local interest rates reported as "swap points". Agreements with other end dates go by a logical moniker, "broken date forwards".

The globalised economy often invites companies and investors to hold currencies subject to thin liquidity or local capital controls that curtail trading. The roster of such currencies includes Indian rupees, Taiwan dollars, Russian rubles, Korean won, Malaysian ringgits and Chinese renminbi, to name only a few. Non-deliverable forwards (NDFs) help firms manage these risks without ever holding the money. The non-exchange of currency for an NDF is a result of capital controls put in place by sovereign nations.

For example, a US company that arranges to import goods from an emerging-market nation in six months' time can do nothing but hope for favorable currency impact when it buys local currency in six months. On the other hand, it might buy the local currency at an artificial rate, subject to change versus the dollar. As a third alternative, an NDF requires counterparties to settle based on the difference between an exchange rate set when the contract is signed and the actual spot rate when the contract terminates. Final payoff, always in the more seasoned currency, hinges on interim performance.

NDFs resemble forward outright contracts in that two counterparties set notional amounts of a non-deliverable currency, says FX veteran Jim Sharpe, the author of *Foreign Currency: The*

Complete Deal. When contracts terminate, counterparties settle differences between forward rates and prevailing spot prices, subject to provisions of the International Swaps and Derivatives Association.

FX swaps routinely surpass trading in all other FX instruments, the BIS reported, although the pace has slipped. Daily volume at \$2.2trn represented 42% of all FX-related transactions in 2013, two percentage points lower than reported in 2010.

FX swaps transform currency-rate risk into a play on interest-rate differentials. Swap flows, says Mr Sharpe, resemble borrowing one currency bought at the spot rate and investing a currency sold at the spot rate. This tool, says Mr Sharpe, arms companies with a great deal of flexibility. Customers can switch currency assets and enhance yields while fully hedged; transfer any borrowing advantage from one currency to the other; and roll positions if receipts are late or contracts delayed.

FX futures and options add a crucial and dynamic dimension to the FX ecosystem. Principal benefits include price transparency and decreased counterparty risk, thanks in part to a well-defined regulatory landscape for exchange-traded derivatives. Hedge funds, asset managers, proprietary trading groups and commercial banks see advantages on a daily basis, starting with price disclosure that puts large and small investors on a level playing field.

Cleared transactions also confer safety in a storm. The FX futures and options marketplace transfers counterparty risk to exchanges, a crucial distinction when financial institutions are under stress. As writ large in 2008, co-mingled accounts make it nearly impossible to identify, much less recover assets, if the financial institution holding them stumbles or goes under. Regulated exchanges, on the other hand, install mark-to-market safeguards that wall off assets from the fate of counterparties. If the original counterparty fails, an exchange can obtain pricing from any healthy institution.

Whether trading foreign currency in US dollars paired with pounds sterling, euros, Swiss francs or

Japanese yen, or conducting "cross currency" exchanges that do not involve US dollars, increasingly fewer banks dominate the marketplace. In April 2013, according to the BIS Triennial Survey, sales desks in the UK, the US, Singapore and Japan handled 71% of foreign exchange trading, up from 66% reported in the previous Triennial Survey.

Micro- and macroeconomic data on currency pairings that are subject to constant change furnish plenty of numbers to crunch to determine FX rates. As an alternative measurement of currency values, many economists point to purchasing power parity, a concept based on the theory that prices for the same product in different parts of the world convey the value of local currency.

Purchasing power parity gave rise to *The Economist*'s "Big Mac Index", which compares the price of McDonald's Big Macs across many countries. If a Big Mac costs \$1 in the US and 100 yen in Japan, then, according to what economists call "the law of one price", \$1 should fetch 100 yen in exchange. Notwithstanding the fact that Big Macs in two parts of the US may fetch different prices, the theory has adherents who readily apply it to items much larger than hamburgers.

Identifying the risks

Earnings calls at 846 publicly traded North American companies reported collectively \$17.8bn in negative currency impact last year, according to the "2013 Corporate Earnings Currency Impact Report" by FX researcher FiREapps. The fourth quarter alone featured \$5.8bn in negative impact, up 39% over the third quarter. Nearly half of the companies reporting currency impact find that more analysts are asking increasingly informed and sophisticated questions about FX.

Market participants ranging from DuPont to individual investors trading on tablets and mobile phones manage FX risk with their four basic levers: spot transactions, outright forwards, non-deliverable forwards and foreign exchange swaps.

As things stand, says William Stutts, an attorney at law firm Baker Botts, European and US regulators

have views that are not fully aligned. In the US, spot contracts enjoy exemption from the raft of Dodd-Frank Act regulations aimed at monitoring derivative transactions. Prolonged delays in settling transactions could invite regulators in the US to revitalise a push to designate some spot transactions that remain open for an extended period as option, forward or currency swap transactions that fall under the regulatory umbrella, closer to the view of European and British regulatory authorities.

In global markets, furthermore, timing sometimes adds complication to spot transactions. Local market closings, holidays, or time-zone coordination issues can preclude simultaneous exchanges of currency, in which case complications can arise.

Yet in all FX transactions, settlement risk holds a trump card. Every deal goes bad when someone comes up empty-handed. "The elephant in the room is settlement risk," says Mr Stutts.

Bill Jellison, CFO of Stryker, a medical-devices company, sees heightened attention to settlement risk. "It's probably more volatile than five-six years ago, before the broader financial turmoil," Mr Jellison says. But sound policy and constant review keeps the risk manageable for Stryker, whose products ring up more than a third of revenues outside the US.

Developing an FX strategy

With analyses and models in hand, CFOs, treasurers, portfolio managers, hedge-fund analysts, bankers and currency traders tend to view this marketplace through different lenses.

Institutional investors take advantage of currency mispricing, sometimes against corporations engaging in hedging strategies, but more often against financial institutions with different goals or market forecasts. "We would add that currency is the quintessential 'macro' asset," says Dori Levanoni, at First Quadrant, a sub-adviser on FX to John Hancock Financial Services. "Macro" is an apt description, says Mr Levanoni, because most economic activity, whether rooted in trade,

investment, inflation or monetary policy, eventually passes through the FX market before working its way into the global economy.

Non-financial corporations tailor FX exposure to suit lines of business. "When we price our sales to farmers in Brazil, we look forward to what dollars we will receive and attempt to adjust local prices accordingly," says Paul Graves, CFO of FMC Corp., a global leader in agricultural, specialty and industrial chemical markets. When agricultural goods from Brazil find their way to supermarkets in the US, FMC's approach to foreign exchange is reflected on the price tags lining the shelves.

Opportunity lies in protecting gains against adversity. "For us it's about reducing the volatility of earnings," says Graves. "What we hedge and don't hedge depends largely on how it impacts earnings volatility. We're not trying to predict movements. We want to make sure we minimise exposure to the effects of foreign-exchange movements that directly affect their earnings."

Savvy managers expect hedging programs to lose some money under the best of circumstances. "I would love to be able to say that I could have a forex program and break even on it", says Nicholas Fanandakis, CFO of DuPont, "but I don't think that's very realistic." If hedges work 100% of the time, the cost of hedging is a haircut. "As long as you don't do worse than the cost portion", says Mr Fanandakis, "you're doing a good job of protecting against risk."

DuPont and other global companies mobilise natural hedges where suitable. Centrally managed natural hedging strategies evaluate and exploit offsetting currency exposures in different lines of business.

With low fees and narrow spreads prevalent these days, investors control cost by managing risks that never go away. The past year saw currency devaluations in Argentina and Venezuela. "That is going to happen periodically," Mr Fanandakis warns. "Any business wants to sell an extra pound of product and get an extra dollar of sales. You have to look at new business in its entirety and then bring in the treasury organisation to make sure that

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Nicholas Fanandakis, CFO of DuPont

if you enter a new region, you're going in with eyes open." The name of the game? "Try to minimise surprises," says Mr Fanandakis.

The bottom line

The largest companies in the world assign a priority to FX for good reason: adverse currency movements can erase expected profits, lower the value of balance-sheet assets or dull the capacity to compete globally. Conversely, favorable movements might boost the bottom line, but that is seldom the goal. "Most companies are not trying to speculate on currency movements," says Martin O'Donovan, deputy policy and technical director for the Association of Corporate Treasurers, a global group based in London.

DuPont's Mr Fanadakis concurs. "You can't look at foreign exchange to make money," says Mr Fanandakis. "You're in it to manage risk."

At Stryker, it's imperative that currency fluctuations do not sap profits from specific transactions with external customers and business units based abroad. Routine foreign exchange hedges that curtail currency risk never venture into bets on currency movements. "We do not use speculative hedges," says Mr Jellison, the CFO. "We're looking only to mitigate risks related to revenues."

Yet caution and sound policy cannot quarantee perfect outcomes when, for instance, the Japanese yen tumbles in value by 22%. Hedging only helps mitigate risk, not eliminate it.

Like most of her counterparts, CFO Pam Strayer is cautiously optimistic about FX hedging strategies at Plantronics, a global manufacturer and distributor

of corded and wireless communications equipment. "We do not hold or issue derivative financial instruments for speculative trading purposes," Ms Strayer says. "We use a hedging strategy to diminish, and make more predictable, the effect of currency fluctuations." Strategies center on balance sheet risks such as accounts payable and accounts receivable and on economic exposures that arise when revenues in multiple currencies are reported in US dollars.

Strategy, not the unmatched size of the market, is the biggest driver of FX trading at global companies. Nevertheless, currency markets command unique respect, even from seasoned CFOs. "Sure, it's a big market," says DuPont's Mr Fanandakis. "A lot of multinationals like ourselves use the currency markets to manage our business risks." Multiply by ten the currency-trading activity in the corporate sector and "big" becomes an understatement.

After a long stretch of low volatility, strategies may require adjustment. When the climate changes it won't stay a secret. Twitter and emerging social business outlets will spread news that dollar trading is mixed, inflation looms, spending has edged up according to the US Department of Commerce or increasing risk-aversion favors the ven over the dollar. High-frequency algorithms will execute hundreds of trades long before the fastest texters hit "send."

"Currency is often the leftover asset, unobserved, forgotten exposure in a portfolio," says First Quadrant's Mr Levanoni. If anything is certain, the world's largest and most liquid financial market is poised to assume its rightful place on the global financial stage.

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