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banking insight

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EXCLUSIVE INTERVIEW WITH TAN SRI TAY AH LEK
FELLOW CHARTERED BANKER
RETURN TO A RELATIONSHIP OF TRUST

RISKS OF 'DE-RISKING'

Regulating Fintech: Undoing the Gordian Knot

COUNTDOWN TO MiFID II

How extraterritorial is the new regulation for Asia-Pacific?

RISK UNDER REVIEW

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Editor's Note

REVITALISING TRUST

THE ISSUE OF TRUST HAS NEVER BEEN MORE PARAMOUNT than in today's banking landscape, as we mark the sombre anniversary of the Global Financial Crisis (GFC) of 2007/2008, which wrecked many formidable financial brands and ravaged economies and communities. A decade later, the financial sector continues to deal with the fallout from the crisis; repairing and strengthening the global financial ecosystem is a work in progress, as is the battle to recoup public trust to pre-crisis levels.

Aptly, this issue delves into the many dimensions of trust, regulations and risks, and investigates how financial institutions can reinforce competency, integrity, accountability and trust in order to future-proof the sector and ensure continuing relevance and sustainability.

As a doyen of the Malaysian financial ecosystem, Fellow Chartered Banker, Tan Sri Tay Ah Lek, Managing Director at Public Bank Berhad and the Asian Institute of Chartered Bankers Council Member is profoundly concerned with enhancing trust and professionalism in the banking sector. With over 50 years of experience under his belt, Tan Sri Tay has witnessed first-hand the evolution of business and banking from simple business models to the current era of digital disruption and emerging risks. In an exclusive interview with *Banking Insight*, Tan Sri Tay calls for bankers to return to their roots and revive the honourable conduct and culture of gentlemen bankers, when "protecting the bank's reputation was akin to defending a lady's honour". Professionalism is key, insists Tan Sri Tay, and this is where the Asian Institute of Chartered Bankers (AICB) and the Asian Banking School (ABS) play a tremendously important role in professionalising the banking workforce and instilling ethical standards of conduct that will inspire confidence in the financial system.

Our collective post-crisis experience has also demonstrated that, contrary to classical free market doctrine, markets require effective regulations. In an effort to curb possible future excesses and irrational exuberance, has the pendulum perhaps swung too far in the other direction? In this issue's cover story, Angela Yap examines the impact of the Markets in Financial Instruments Directive II (MiFID II Directive) and Markets in Financial Instruments Regulations (MiFIR) on financial firms in the Asia-Pacific region that have linkages with the EU. Effective 3 January 2018, MiFID II is poised to unleash an unprecedented wave of compliance changes throughout the lifecycle of bonds, stocks, commodities and derivatives trading. Connected to this is her overview of the state of financial integration since the GFC, which assesses the state of financial globalisation vs deglobalisation, and whether the global financial ecosystem is more stable or less post-crisis.

While regulations are codified at the macro level, what can financial organisations do at the micro level to communicate their values and enhance trust? Frequently, they resort to producing voluminous codes and handbooks on ethics. But Robert Souster ruminates that while codifying ethics is a start, codes are only really effective if: one, they are integrated into all operations, conduct, and communications from top to bottom; two, if everybody is compliant and wholly committed to placing the customer's interests first, and; three, there are no compromises or exclusions on ethics.

Finally, as we head into the New Year, it's an opportune time to look into the new developments shaping the industry and the subsequent risks and unfolding opportunities. This issue presents insights into some of these salient trends – regtech, cybercrime, de-risking, artificial intelligence and machine learning – and their future implications for banking and finance.

Yet, even as digital and AI go mainstream, it is worth remembering that behind every banking transaction, every regulation and every machine stands a human being. Bankers are people who are responsible and accountable for their own conduct; machines will never be a substitute. By behaving professionally and ethically, professional bankers are the ones who will be able to restore confidence and trust in the financial system, perhaps even above pre-crisis levels. Here in Malaysia, the AICB and the ABS are committed to imparting professionalism and exemplary ethics to banking professionals, in 2018 and beyond. Here's to a prosperous 2018. ✱

Hope you have a fruitful read.

The Editor

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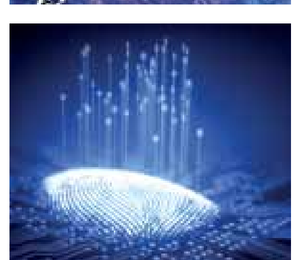
CONTENTS PAGE

December 2017 - Issue 3



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Emerging Asia

TIPS GLOBAL UPSWING

Better-than-expected 1H2017 growth figures clocked in emerging Asia – China, India, and the five ASEAN countries Indonesia, Malaysia, the Philippines, Thailand and Vietnam – contributed to the upward revision in projected global growth, the International Monetary Fund wrote in its October *World Economic Outlook* report.

The fund published a 0.1 percentage point increase for both its 2017 and 2018 projections, bringing growth to 3.6% and 3.7% respectively since its previous April tally.

Other contributing factors were broad-based revisions clocked in the eurozone, Japan, emerging Europe and Russia which more than offset downward revisions in the US and UK. Overall, recovery in many countries remain weak with these risks:

- Rapid and sizeable tightening of global financial conditions.
- Financial turmoil in emerging market economies.
- Persistently low inflation in advanced economies.
- A broad rollback of improvements in financial regulation and oversight achieved since the global financial crisis.
- An inward shift toward protectionist policies.
- Non-economic shocks including geopolitical and domestic tensions, weak governance, extreme weather and terrorism concerns. ✱

'LEAVE NO ONE BEHIND'

UN Women recommends shifts in macroeconomic policies to advance the financial inclusion of women. Its discussion paper 'Macroeconomic Policy and Women's Economic Empowerment' advocates that policymakers meet Agenda 2030's 'leave no one behind' goal by:

Looking beyond growth and broadening the definition of macroeconomic goals beyond fiscal and monetary policy to include women's economic empowerment.

Using monetary policy to channel credit to marginalised women.

Removing gender bias in policymaking.

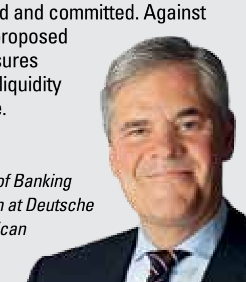
Expanding fiscal space via key investments in infrastructure for the working poor.

Strengthening women's voice and participation in macroeconomic decision-making through informal economy budgeting and gender-responsive budgeting. ✱

Only 23% of surveyed **COMPANIES HAVE EFFECTIVELY INTEGRATED RISK AND FINANCE FUNCTIONS;** 43% expect closer coordinating within two years. This pattern was also evidenced in the 2015 study, indicating this ambition is difficult to achieve.

– Accenture 2017 Global Risk Management Study 'Exposed: The Hidden Value of Risk'.

It is important to guarantee a level playing field, not to look for only ostensible national advantages. The US [is] expected to adhere to the agreements concluded and committed. Against this background, the proposed US deregulatory measures regarding capital and liquidity rules are questionable.



Andreas Dombret
Head of the Department of Banking and Financial Supervision at Deutsche Bundesbank, in an American Banker interview.

RETURN TO A Relationship of Trust

IN AN EXCLUSIVE INTERVIEW, **FELLOW CHARTERED BANKER TAN SRI TAY AH LEK, MANAGING DIRECTOR AND CHIEF EXECUTIVE OFFICER AT PUBLIC BANK BERHAD AND THE ASIAN INSTITUTE OF CHARTERED BANKERS COUNCIL MEMBER,** DELVES INTO WHY PROFESSIONALISING BANKING IS A CALL FOR THE INDUSTRY TO RETURN TO ITS ROOTS.

Q As a Fellow Chartered Banker with over 56 years of experience in Asian banking and finance, how has the conduct and culture of banking evolved? Why is professionalism of the industry mission critical in today's banking landscape?

The banking landscape in the region has evolved tremendously over the decades. A bank's role has advanced from basic financial intermediation to more sophisticated service and product offerings in line with the growing demands of society.

With a growing middle class and an increasingly educated and urbanised population, the customers I faced back in my early days in banking are drastically different than from the customers that bankers face these days. The business community has also seen rapid transformation since the early 1960s – small local companies to the birth of more multinational conglomerates; from companies participating in a largely commodity-based economy to the booming industrial and manufacturing sector in the last decades of the 20th century; to the 21st century knowledge economy that sparked the rise of tech firms; and mushrooming start-ups which define the current generation.

Today, the way banks do business has evolved, from product offerings all the way to the business model. This change inevitably comes packaged with different challenges and risks that banks may or may not be aware of. Sometimes, as history has shown, we learn the hard way and react, but increasingly there is a need to pre-empt and manage risks to navigate the slippery slopes of change safely. It is imperative that we do this well as banks are the backbone of the economy and any banking crisis would trigger massive repercussions to the country's well-being.

Hence, given the importance of the role that banks play and the changes and risks faced, banks must give serious consideration to the conduct of bankers and banking culture in general. In the old days, during the early years of my banking career, protecting the bank's reputation was akin to defending a lady's honour. Back then, bankers were well-regarded and were seen as upholding good principles. Bankers took their fiduciary duty – a relationship of trust – with their clients to heart and the emphasis is on having sustained and continued relationships with clients. Trust is a simple five-letter word. Yet it takes time and consistency in effort to embed it into the system and gain acceptance.

The high profile scandals which shocked the world since the beginning of the 21st century changed it all. From Lehman Brothers to Wells Fargo and countless other incidents, the unethical behaviour that was unthinkable during the early days eroded the public's trust in our financial institutions. The long arm of foregone professionalism eventually caught up.

Globally, central banks including Bank Negara Malaysia have tightened their regulatory control on banks. Regulations however, cannot do everything. Even the best designed, implemented and enforced regulation can neither guarantee that customers will be treated fairly nor market participants act with honesty and integrity. A strong, sustainable and competitive banking sector needs effective regulation and compliance; but it also needs something more. It needs bankers who have their customers' interests at heart and who within this ethical framework have the ability, autonomy and confidence to exercise the right judgement when presented with situations that are not straightforward. In other words it needs a culture in which professionalism is the norm.

Culture shapes behaviour and culture shapes results. Now more than ever, bankers need to be highly competent and conversant in order to manage risk, perform their jobs competently and minimise breaches of banking conduct and regulations. This is where the Asian Institute of Chartered Bankers and Asian Banking School play a tremendously important role. To quote Governor Muhammad bin Ibrahim, FCB, "The Chartered Banker qualification reflects the aspirations of Bank Negara Malaysia and the industry to professionalise the banking workforce and hold it to standards of conduct that will inspire confidence in the financial system", and I share his passion.

Q The Chartered Banker designation, recognised as the gold standard in banking, is proof that one has mastered the technical as well

In the old days, during the early years of my banking career, protecting the bank's reputation was akin to defending a lady's honour. Back then, bankers were well-regarded and were seen as upholding good principles. Bankers took their fiduciary duty – a relationship of trust – with their clients to heart and the emphasis is on having sustained and continued relationships with clients.

as abstract skills such as good judgement, duty in the public interest and big-picture thinking. How do you see this transforming next-generation bankers and the future of Malaysian banking?

As I mentioned earlier, banking has grown immensely more complex over my many years of experience in the industry. The confidence chasm between customers and bankers have also widened with onslaught of the global financial crisis which brought to the fore the importance of trust, confidence and integrity in the financial services sector. The banking industry is now subjected to continuous scrutiny on their values, professionalism and work ethics. It is therefore in the industry's interest to always place public trust above everything else to ensure the long-term growth of the industry.

I strongly believe that the Chartered Banker programme can help bring the banking and financial industry to new heights in the near future. The Chartered Banker Pathway is one that is designed to ensure bankers are equipped with the knowledge that is critical in performing our duties right whilst placing strong emphasis on the ethical dimensions of being a banker. This moulding of the mindset will enable Chartered Bankers to be professional and exercise their good judgement in the interest of the public and to open their minds to big-picture thinking.

In other words, the Chartered Banker is a holistic qualification that not only fulfils the demands of the industry but also that of the public as they take comfort in knowing that the banks are in good hands. If one aspires to be in this industry, he or she should aim to achieve this gold standard. While recognition that comes along with the title is a motivation, aspiring bankers can also count on the pathway to provide an avenue for self-enrichment and continued education.

I am confident that with Governor Muhammad bin Ibrahim taking a personal interest to drive the Chartered Banker qualification, we will soon be able to look forward to high calibre next-generation bankers who are competent, ethical and broad in their outlook to lead the industry to the next stage of growth while being recognised and respected as authorities in their chosen field.

This would bode well for the future of Malaysian banking. The collective professionalisation of the industry will result in protection of the banking sector against risks, including loss of reputation. Local banks will develop an edge to be more globally competitive.

Q Managing reputational risk is a unique challenge. Unlike credit, liquidity and operational risks, there is difficulty quantifying reputational risk because it is a matter of public perception. How will professionalism of the sector boost banks' reputations and effectively manage reputational risk?

Reputational risk is a great threat to the livelihood of all bankers as public trust is our most important asset. The actions of one errant banker can affect the reputation of an entire financial

Trust is a simple five-letter word. Yet it takes time and consistency in effort to embed it into the system and gain acceptance.

institution, threatening public trust that forms the core of financial stability in our country.

Indeed, one of the lessons that we can learn from the 2008 crisis is that while the financial losses arising from this crisis managed to be quantified, the dollar effect of loss of reputation in the banking industry as a whole is still, until now, undetermined. Such incidents have created a trust deficit against bankers in some countries and serve as a reminder that we need to protect the integrity of the industry here – at home – to ensure that we continue to retain the public's trust in the Malaysian banking system.

As the banking landscape becomes more and more competitive, the industry increasingly becomes susceptible to bankers who will do whatever it takes to win. On the other hand, as we are dealing with a more educated and discerning customer base, a banker would only be able to earn the trust and respect of the public by having an adequate level of competence. When unethical practices begin to creep in or when customers feel that bankers are simply incompetent, the public perception of the banking industry will deteriorate, resulting in reputational loss.

It is therefore imperative that bankers have their ethical compasses rightly calibrated to weed out unacceptable business practices so that the integrity of the banking sector is preserved. Further, bankers, also need to ensure that they attain a high level of competence and that continuous education takes place effectively to ensure that they are ahead of the curve.

Educating bankers on their role can

help to mitigate reputational risk as they become more aware of what is expected of them professionally. Efforts to professionalise the banking industry through competency and character building values such as honesty, integrity, transparency and accountability will ensure that such values govern corporate behaviour so that bankers in their line of duty act in accordance with the law and regulations stipulated and display virtuous behaviour in line with the Financial Services Professional Board's Code of Ethics for the financial services industry. By doing so, bankers will be able to build positive public perception in regard to the financial system and inspire public trust.

Nevertheless, I would like to stress that professionalisation is not merely about attaining qualification or designation. A self-regulatory mechanism is part and parcel of a professionalised industry. Similar to other professional bodies, this self-regulation will enable the industry to weed out the bad apples and contribute significantly towards creating a respected and reputable banking industry.

Bank Negara Malaysia's plan to name and shame errant banks next year onwards will further put all banks on their toes to ensure that their respective staff comply with set guidelines and regulations.

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Q Banking associations such as ombudsman are principally established to enforce a code of ethical conduct and provide an alternative resolution process between consumers and banks to maintain a fair banking sector. As Deputy Chairman of the Omsbudman for Financial Services, a non-profit body under the initiative of Bank Negara Malaysia, how has this public watchdog reinforced financial probity?

The Ombudsman for Financial Services was set up as an alternative complaint/dispute resolution body to assist financial consumers to resolve their complaints/disputes with financial service providers. Set up by Bank

However, while it is important that banks adopt and embrace technology in providing financial services to its customers, banks should avoid jumping into each and every technology blindly. The one lesson that we can learn from the innovation culture is that failure is part of the process and sometimes a necessary learning curve. This is consistent with the quote by Professor Clayton.

Negara Malaysia to be independent and impartial in nature, the Ombudsman plays an important role in moulding the behaviour of banks to that of the highest ethical standard.

Financial stability relies heavily on the public trusting the institutions that make up the financial system and this trust arises from the public having confidence that there are institutions in place to protect their welfare and interest. The message that we want to deliver to the public with the establishment of the Ombudsman is that your rights as customers are protected. In not having a minimum claim amount and providing the service free of charge, it shows that we are very open to the masses and we want the public to know that in the event that there is a complaint or dispute with a member institution, they can rely on us to ensure fair resolution, so long as it is within the scope which we are empowered for.

From the perspective of financial probity, the Ombudsman serves as an industry disciplinarian and a reminder for member institutions to take responsibility for their actions; penalising wrongdoers and setting them straight in order to avoid similar unfavourable situations in future. Having a system of checks and balances is always important for the effective functioning of all institutions. The Ombudsman serves as one such 'check and balance'. The empowerment of customers by the Ombudsman and general contribution towards strengthening the customer protection framework should then discourage rogue behaviour and at the same time ensure that member institutions toe the ethical line.

Q Disruptive technologies spur banks to innovate. Yet, As Prof. Clayton Christensen of Harvard Business School, said: "Innovation almost always is not successful the first time out." What advice do you have for banks striving to manage the challenge of disruption?

I believe that banks are already past the awakening stage and that fellow Malaysian bankers are in general consensus that you either disrupt yourselves or be disrupted by others. As Bill Gates put it, "banking is necessary but banks are not".

Truth is, necessity is the mother of invention. In the face of disruptive technologies brought to the fore by a new generation of technopreneurs, banks are taking heed that the demand and attention that fintech firms are getting is reflective of demands from our customers for better ways to deal with us. This calls for banks to constantly reimagine banking and asking difficult questions of ourselves on the whole suite of our offerings from products to processes so that we remain relevant in the eyes of customers.

However, while it is important that banks adopt and embrace technology in providing financial services to its customers, banks should avoid jumping into each and every technology blindly. The one lesson that we can learn from the innovation culture is that failure is part of the process and sometimes a necessary learning curve. This is consistent with the quote by Professor Clayton.

Having said that, failure is less tolerable when it comes to banks compared with start-up firms. For a bank, making mistakes may have far reaching consequences which can include reputational and financial damages and spillover effects on the wider economy. In this respect, I believe that Bank Negara Malaysia had set the right tone for banks to follow with the introduction of the Regulatory Sandbox. In the same spirit, innovation or collaboration with fintech partners should be promoted within a regulated and safe environment to identify and manage risks.

Historically, banks have created value through their specific banking functions or services. In a future where these are readily replicable, banks' value will have to be centred on the quality of the customer relationships we maintain. Digital solutions with the human touch should form our core competitive advantage. Hence, in managing disruption, innovating service delivery methods whilst retaining the highest standards of customer service is crucial.

Ultimately, changes in technology will be an ongoing process and not a one-off transformation. It is therefore important for banks to assess the technology that is right for them and plan transitional changes with a clear sight of the long-term objectives of the bank. The aim should be to create a positive customer experience by meeting the demands of the 21st century customers who expect banks to be more efficient in providing solutions to their everyday needs while maintaining a sense of security that banks traditionally have been relied upon to deliver. ✱

 | BY ANGELA YAP

How extraterritorial is the new regulation for Asia-Pacific?

Countdown to MiFID II

As you read this, financial firms throughout the Asia-Pacific (APAC) region are bracing themselves for the 3 January 2018 launch of the European Union's (EU) overhaul of trading rules.

The Markets in Financial Instruments Directive II (MiFID II Directive) and Markets in Financial Instruments Regulations (MiFIR), which together form MiFID II, present an unprecedented wave of compliance changes throughout the lifecycle of bonds, stocks, commodities and derivatives trading. Whilst MiFIR's effect is directly binding on all EU members, MiFID II governs transposition into national law.

Devised to increase investor protection since the introduction of MiFID I in November 2008, the latest iteration of expanded rules will now – in addition to equities trading on regulated platforms – apply to equity-like and non-equity instruments on all trading platforms including multilateral trading facility (MTF) or organised trading facility (OTF). Systematic internalisers (SIs) are not technically considered trading venues but are counterparties to a transaction and bound by MiFID II provisions.

Its impact on APAC is by way of export compliance. All APAC banks, sell-side and buy-side firms that trade within the EU, service EU-based client or subcontract on behalf of EU-based MiFID II-regulated entities must adhere to the new EU standards and mandates upon go-live.

+ The end game of MiFID II is to promote greater confidence in trading through enhanced transparency measures. Additionally, buy-side firms may potentially become price makers as data on volume, price and liquidity become more easily available.

The end game of MiFID II is to promote greater confidence in trading through enhanced transparency measures. Additionally, buy-side firms may potentially become price makers as data on volume, price and liquidity become more easily available.

STATE OF PLAY

Before examining the APAC impact, it's necessary to take stock of Europe's current position on the regulations, including taxonomies in understanding the evolution of this regime.

The Markets in Financial Instruments Directive II (MiFID II Directive) and Markets in Financial Instruments Regulations (MiFIR), which together form MiFID II, present an unprecedented wave of compliance changes throughout the lifecycle of bonds, stocks, commodities and derivatives trading.

MiFID, as with other EU banking regulations, follow the Lamfalussy architecture which streamlines the rollout of the regulatory process in financial sectors to enable faster adoption. The Lamfalussy approach involves 4 levels. Level 1 involves setting out framework legislation and core principles. The market is currently at Level 2 to adopt, adapt and update technical implementation measures with consultative bodies. The European Securities and Markets Authority (ESMA) is now moving towards Level 3, issuing guidelines, Q&As, opinions to give greater clarity to stakeholders and ensuring consistency in approach throughout the EU. Level 4 will see stronger enforcement of EU rules once harmonised implementation is secure.

Transparency mandates are set out in the delegated acts, regulatory technical standards (RTS) and implementing technical standards (ITS) which were drafted via public consultation between ESMA, market participants and adopted by the European Commission (EC). RTS and ITS cover a range of requirements FIs must meet from transparency mandates to standard forms and procedures for information transmission. Currently, 28 RTS have been adopted with most ITS still in the draft stage.

The spotlight is also on algorithmic and high-frequency trading as the regime regulates how it is to be conducted in Europe. This is to avoid a repeat of the 2010 US Flash Crash when a mutual fund's automated algorithmic trading on the New York Stock Exchange issued a USD4.1 billion sell order, triggering USD56 billion worth of shares to change hands within 20 minutes.

MiFID II also proposes to introduce a consolidated tape service (CTS), essentially a continuous electronic live data stream with price and volume for each financial instrument collated from regulated markets, MTFs, OTFs and approved publication arrangements.

Although transparency-wise, the benefits are clear, the business case isn't too strong for CTS in non-equity markets due to the heterogeneity of asset classes. Thus, ESMA's Final Report on the Draft RTS for non-equity instruments issued 31 March 2017 maintained that continuous tape providers – firms authorised to provide CTS – can specialise in only one or a group of asset classes rather than offering the entire universe of instruments.

On 16 October 2017, ESMA also launched the second phase of the Financial Instrument Reference Database (FIRDS) enabling FIs to identify instruments subject to data reporting requirements, easing the way for future reporting requirements.

PURSUIT OF EQUIVALENCE

Word in the market is that since mid-2017, many Asian firms have set MiFID II as top priority. Although last minute scrambles are expected in December especially in obtaining legal entity identifiers (LEIs), most affected firms

Transparency calculations have to be performed for trading equity and non-equity instruments. Delegated National Competent Authorities (NCAs) – member state regulators – will have oversight over performance of these transparency calculations.

have been readying themselves by re-examining and restructuring operations and functions to best approach compliance.

According to Greyspark Partners' May 2017 research 'Mastering MiFID II: Asia-Pacific Implementation & Compliance', there is no non-EU regulatory regime equivalent to MiFID II but certain third-country rights and protections are provided for under existing EU laws which will cover third countries and third-country firms.

The new regime's 'passporting' will allow non-EU professional investors and eligible counterparties cross-border access to EU clients subject to meeting certain equivalence standards of their home jurisdiction. Currently, services can only be rendered by establishing a subsidiary in the relevant member state and applying for an authorisation. Cross-border services can also be provided without a licence on a reverse solicitation basis i.e. when an investor approaches on its own initiative, although this rule is to be interpreted restrictively by applying the 'exclusive initiative' test included in MiFID II.

The branch model is another option for non-EU investment firms to conduct business through an EU branch subject to meeting minimum requirements for authorisation, which is governed by member states who elect to allow this model. For instance, France has opted 'ay' to this but Germany has voted 'nay' and will treat a branch of a non-EU investment firm as a separate entity subject to licence requirement under national legislation.

BRACE FOR IMPACT

An August 2017 survey by *International Financial Law Review* polled its readers on MiFID II headaches in Asia-Pacific listing their main concerns as unbundling of research costs from trading fees (44%), lack of trading equivalence (22%), low adoption of legal entity identifiers (22%) and divergent data protection laws (12%).

However, a more thorough assessment is required by APAC firms in these areas to qualify as MiFID II-compliant:

+ Best execution

Firms should be ready to furnish order execution policies to regulators. The policy document defines how individual firms handle customer orders and represents what they see as "best execution" results for clients. The burden of proof is greater upon financial institutions – both buy- and sell-sides – that they are taking "all sufficient steps to obtain, when executing order, the best possible result for their clients taking into account price, costs, speed, likelihood of execution and settlement, size, nature or any other consideration relevant to the execution of the order", as stated by ESMA.

+ Pre- and post-trade transparency

Transparency calculations have to be performed for trading equity and non-equity instruments. Delegated National Competent Authorities (NCAs) – member state regulators – will have oversight over performance of these transparency calculations. Nonetheless, there are conditions under which pre-trade/post-trade transparency requirements may be waived/deferred at the discretion of the NCA. This deferred publication regime is covered under RTS 2 that specifically defines large-in-scale (LIS) orders and size-specific to the instrument (SSTI) thresholds that would expose liquidity providers to undue risk.

+ Post-trade reporting and instrument reference data

Reporting obligations by market participations – trading venue, SI, qualifying investment firm – of basic trade data for executed trades must now be publicly available on a reasonable commercial and non-discriminatory basis, broadcast as near real-time as possible. After 15 minutes, it will be available free of charge. This will push firms' abilities to accurately and quickly retrieve reference data and require significant investments in beefing up its systems and data architecture.

MiFID II also details a market data framework that standardises securities identification and reporting. This serves as a preparatory measure for publication of data to CTS. Managing multiple identifiers, each with its specific purpose, including International Securities Identification Number (ISIN), Market Identifier Code (MIC) and LEI is part and parcel of a MiFID II regime.

In this vein, some explanation is needed on LEIs – a 20-character alphanumeric code – which is mandatory. The code's objective is to establish a common global identifier to clearly identify all legal entities of a financial transaction. This follows the due diligence process under Know Your Client procedures for onboarding and review of accounts. See our story "Why 'LEI' should be part of Asia's vocabulary" on page 62.

The LEI codes allow for greater market surveillance and transparency as well as data harmonisation in the EU. The European Securities and Market Authorities' latest briefing published 9 October 2017 urges that time is of the essence and APAC banks and firms can obtain their respective LEIs within a short time frame and will cost a mere few hundred euros.

+ Research unbundling

This is seen as a critical component ensuring there are no conflicts of interest and that research is not an inducement to trade.

For buy-side firms, they must explicitly prove that such research contributed to better investment decisions and there was no inducement to buy. The amount paid for research will no longer be dependent on the value of trades executed, as is currently the case. The new regime will require an upfront budget for research with charges commensurate to the quality and quantum of research given to the end investor.

For sell-side firms, they must explicitly and correctly separate cost of execution from cost of research. Transparency is expected in pricing mechanisms whether it is a flat-rate, commissions built into spreads or ad hoc payment for bespoke advisory.

Already, a diverse range of strategies have emerged. Goldman Sachs, BlackRock and Allianz, amongst others, have announced they will absorb the cost of research in order to comply with unbundling rules, whilst premium research packages from Nomura Holdings and Credit Agricole SA are rumoured to be within the €120,000 price band per annum.

However, categorisation will be a challenge as the spectrum between research and marketing isn't always clear-cut. A thorough audit of buy- and sell-side materials and services within affected firms will need to be done and documented as part of new governance measures.

In jurisdictions such as the US, unbundling has in some cases also resulted in FIs needing to change their business model by registering an investment advisory legal entity to separately charge for research or risk running afoul of local laws.

Far from non-exhaustive, the abovementioned does give a broad overview of the immensity of the task related to MiFID II, even for extraterritorial compliance.

AN ASIAN 'MiFID II'?

With many APAC firms going back to the drawing board for repapering exercises, administrative redesignations and platform testing for MiFID II, sources who requested anonymity inform that there has been talk in the market on the possibility of a similar regulatory convergence within the APAC region.

When posed this tricky question, Vijay Chander, Executive Director of the Asia Securities Industry & Financial Markets Association, in a 21 September 2017 interview with *International Financial Law Review* (IFLR) proffered: "In terms of Asian regimes trying to aspire to a benchmark of equivalence to MiFID II, again I cannot speak for the regulators – but given the immense amount of cost, resources and time that has gone into MiFID II compliance exercise, all I can say is that I hope the local regimes are not considering something similar, at least in terms of all-encompassing reach and complexity."

He also chimed that it was too early to say if the regulations will see fewer Asian participants in the European market or decreased European participants on Asian trading venues: "Again, it is too early to speculate or jump to conclusions on this topic… these will become clearer only with the passage of time. Of course, each institution will look to resolve these eventualities in their own proprietary ways and there will be some visibility only after the fact, but I think it is fair to say that there is most definitely recognition with respect to these issues."

Though it seems like full compliance will take more time in the making, 3 January 2018 may be the litmus test for APAC on whether a more coordinated regional response to exogenous rules will be necessary. ✱

■ *Angela Yap is a multi-award-winning entrepreneur, author and founder of Akasaa. She was previously a corporate banker, strategist with a Big Four firm and an officer with the United Nations Development Programme. She holds a BSc. Economics (Hons) from the LSE.*

FINANCIAL GLOBALISATION
FAR FROM 'PEAK FINANCE'

Economic indicators point to evolution of financial globalisation – one that is more inclusive, stable and led by developing markets.

The motto for one of the world's leading financial newspaper is "We live in Financial Times." True, but what of it?

Ten years since the global financial crisis (GFC), the financial landscape has oscillated from a 'lighter-touch' regime to greater regulation and, most recently, signs are surfacing that it may swing yet again to the former with talks of deregulating Wall Street.

However, new quantitative research show that the nature of global financial integration has evolved since 2007 to one that is more deeply connected, stable and diverse. It also refutes recent claims by economists that the world has reached "peak finance" – the thesis that the world has experienced the peak of global finance and is on its way towards financial deglobalisation.

ZEITGEIST

In analysing the effects of globalisation, we distinguish between two types of integration: The cross-border flow of goods and services – termed 'real integration' – as distinct from that which arises out of financial flows, known as 'financial integration'.

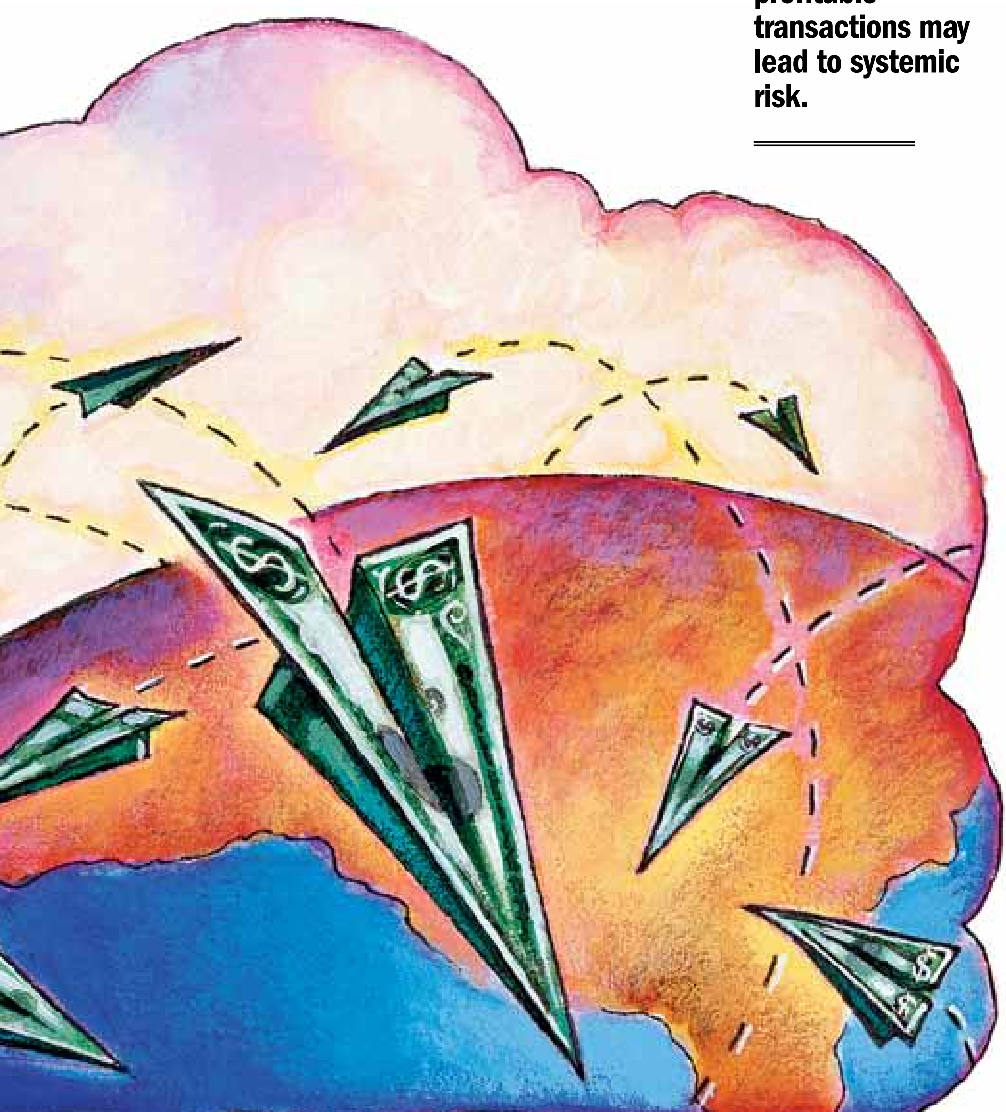
The distinction is vital. While academicians have near-consensus that the net effect of 'real integration' is positive for all participant countries, the jury is still out on the benefits of 'financial integration'.

Nobel Laureate and former

Ten years since the global financial crisis (GFC), the financial landscape has oscillated from a 'lighter-touch' regime to greater regulation and, most recently, signs are surfacing that it may swing yet again to the former with talks of deregulating Wall Street.

chief economist at the World Bank Prof. Joseph E. Stiglitz wrote in a National Bureau of Economic Research paper in 2010, 'Risk and Global Economic Architecture: Why Full Financial Integration May Be Undesirable' - "Integration of global financial markets was supposed to lead to greater financial stability, as risks were spread around the world. The financial crisis has thrown doubt on this conclusion. A failure in one part of the global economic system caused a global 'meltdown'. The recent crisis has shown that in the absence of appropriate government intervention, privately profitable transactions may lead to systemic risk."

He also posits that between full financial integration and autarky (national economic self-sufficiency), the latter clearly wins out. That was in 2010.



The recent crisis has shown that in the absence of appropriate government intervention, privately profitable transactions may lead to systemic risk.

Since then, standard setters have moved to regulate financial markets in order to avoid another financial meltdown. Have these measures made any impact?

CHANGING TIDES

The World Bank's most recent policy research working paper, 'Financial Globalization and Market Volatility: An Empirical Appraisal' published June 2017, presents the Financial Globalisation Index, a new quantitative measure on the subject matter.

The paper is much like an interim report card on the state of financial integration since the GFC, posing these question to the reader: Has the world become more financially integrated in the last decade? Are the patterns of financial globalisation the same in developed, emerging and frontier markets? Have they changed after the GFC? Is financial globalisation a stabilising or destabilising force?

Far from being the first to provide a measure of globalisation/integration (previous ones being the Chinn-Ito Index measuring openness of capital accounts and the Lane Milesi-Ferreti capital flows-based measure), it does justifiably compare its findings against prior models and posits that, unlike the other models, the right indicator to understand the link between financial globalisation and volatility is via each country's stock market volatility expressed in its domestic currency.

The research, comprising data from 84 countries (21 advanced, 20 emerging, 36 frontier, seven transitioned from emerging to frontier) between 1991-2016, is primarily based on year-on-year returns from stock market indices and 'cleans' the data for variations caused by changes in global volatility. This correction for heteroscedasticity is a key feature of the research, without which results will be ruined when running massive regression analyses, and we are

This correction for heteroscedasticity is a key feature of the research, without which results will be ruined when running massive regression analyses, and we are presented with a clearer picture of financial globalisation – pre- and post-crisis. This research sheds new light and, if correctly applied, can greatly inform and refine policy actions.

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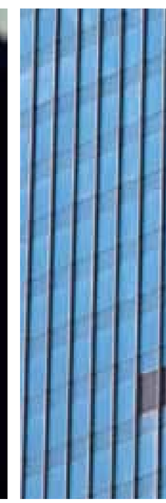


The analysis detected distinct trends for and among developed, emerging and frontier markets:

While patterns of financial globalisation are similar for developed and emerging markets, frontier markets remain relatively isolated from global dynamics.

Financial globalisation has a stop-and-go pattern; increasing when global financial markets are calm and experiencing setbacks when they become turbulent.

Pre-GFC, a converging of the less developed and more developed financial markets appeared. The crisis further narrowed the difference in financial globalisation between country groups. Post-crisis, a divergence appeared as developed and emerging markets recovered to pre-crisis financial globalisation levels whilst frontier markets appeared to enter a phase of deglobalisation.

The research also unmasked the correlation between financial globalisation and financial volatility:

This is different in tranquil and turbulent times – financial globalisation dampens turbulence when turbulence is low, and amplifies it in periods of financial distress.

On average, the dampening effect dominates, but its magnitude of stabilising/destabilising effects vary across country groups, depending on conditions.

Domestic shocks play a relatively smaller role in developed economies than in emerging or frontier ones.

Financial globalisation tends to reduce volatility in frontier and emerging markets more than in developed ones.

Country-to-country differences in effects of financial globalisation may be due to the frequency and magnitude of domestic shocks relative to external events. When the former dominate, financial globalisation provides diversification opportunities; when the latter do, it may instead be a source of instability. This could explain the likelihood of financial globalisation reducing stock market volatility in emerging and frontier economies as compared to developed ones.

Cutting through the mountainous data calibrated to produce the FGI, the takeaway here is that post-

+ Country-to-country differences in effects of financial globalisation may be due to the frequency and magnitude of domestic shocks relative to external events.

If Chinese banks were to move in the direction of banks in other advanced economies, whose foreign assets often make up 2% or more of total assets, this would imply tremendous further growth in the foreign activities of Chinese banks. However, it remains to be seen whether this overseas activity will prove profitable and be sustained.

GFC, financial globalisation has evolved and can counterbalance volatility to promote much-needed stability in cross-border financial flows.

NON-EUROZONE BANKS TAKE LEAD

The defining features of this new wave in financial globalisation is outlined in McKinsey Global Institute's (MGI) August 2017 publication, 'The New Dynamics Of Financial Globalization':

+ **Eurozone retreat account for over 50% of global cross-border capital flows but banks in other countries have expanded foreign activity.** At the height of the crisis, Eurozone banks' made headway beyond its shores as total foreign claims stood at USD15.9 trillion. Today, that figure is USD7.3 trillion attributed to greater regulatory oversight and rising compliance costs, intense capital rebuilding exercises, headcount withdrawal in foreign operations, retreats from investing in cross-border assets and interbank lending – all potentially healthy developments, given pre-crisis misconceptions about the risks of international banking.

In its place, non-EU banks have expanded their foreign activity, notably Canada, China, and Japan. Canadian and Japanese banks have doubled their foreign claims since 2007 by a total of USD2.3 trillion.

Canadian banks, faced with a saturated home market of limited scale, now have half of their assets in foreign markets, particularly in the US. Japanese banks have also stepped up their international activity, including taking part in syndicated lending deals in the US and expanding retail operations across Southeast Asia.

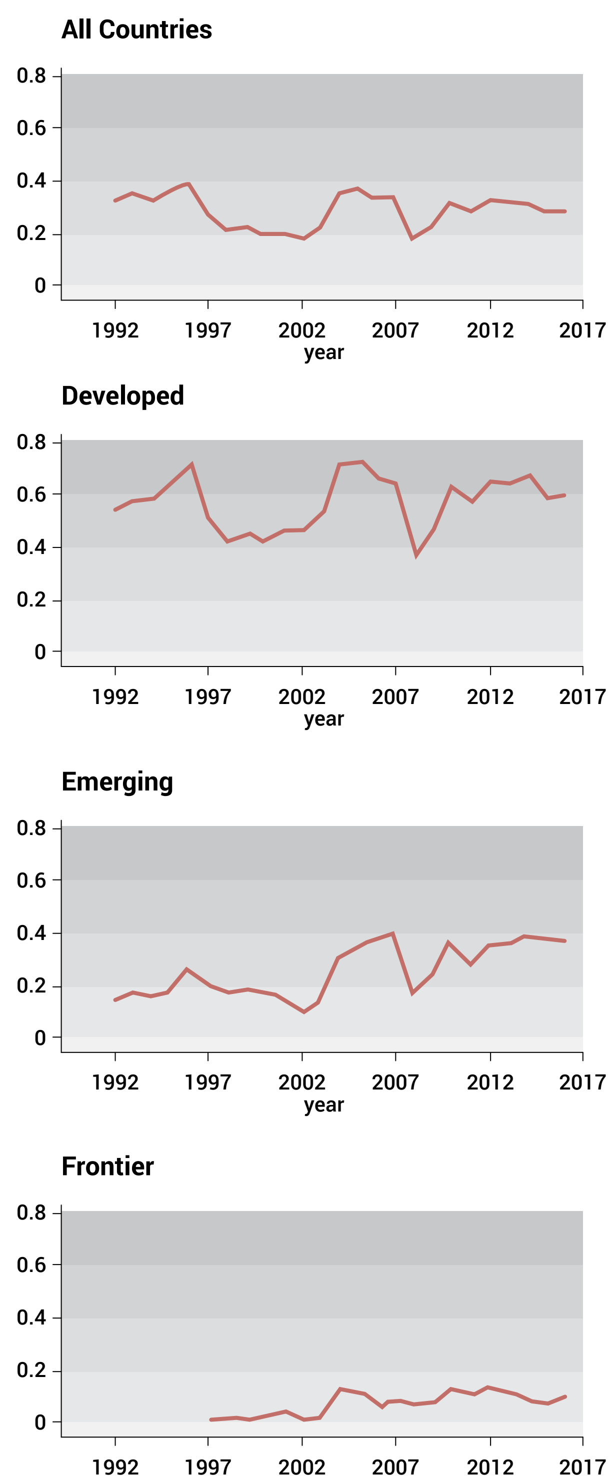
China's four largest commercial banks have expanded their foreign activities rapidly, quadrupling their share of foreign assets since 2007. These four banks now have more than USD1 trillion of assets in foreign markets, which represents only 9% of their total assets. If Chinese banks were to move in the direction of banks in other advanced economies, whose foreign assets often make up 2% or more of total assets, this would imply tremendous further growth in the foreign activities of Chinese banks. However, it remains to be seen whether this overseas activity will prove profitable and be sustained.

+ **Global financial markets remain deeply interconnected.** The value of foreign investment as a share of global gross domestic product (GDP) has changed little since 2007, although its rapid growth pre-crisis has ended. Globally, 27% of equities around the world are owned by foreign investors, up from 17% in 2000. In global bond markets, 31% were owned by a foreign investor in 2015, up from 18% in 2000. Lending and other investment is the only component of the stock of foreign liabilities that has declined as a percentage of GDP since 2007.

+ **Central banks are playing a larger role in financial markets.** Not by choice but by necessity in response to the GFC. For instance, the combined balance sheets of the Bank of England, the Bank of Japan, the European Central Bank, and the US Federal Reserve expanded by USD9.7 trillion after 2007 to reach USD13.4 trillion in 2016; assets now equal 36% of their combined GDP, triple that of 2007. The Bank of Japan's assets are almost 100% of Japan's GDP. The trend may continue to maintain financial stability, making this a permanent feature of a new financial environment.

+ **A more stable financial system, but risks remain.** The nature of global

FINANCIAL GLOBALISATION INDEX



SOURCE World Bank Group

financial flows and connections has changed in ways that could promote a return to a more stable system. Importantly: (i) global banks have become significantly more capitalised and are subject to stress tests to gauge their resilience; (ii) the largest systemically important financial institutions must hold an additional capital buffer; (iii) all banks must hold a minimum amount of liquid assets; (iv) foreign direct investment (one of the least volatile type of capital flow) and equity flows now account for 69% of cross-border capital flows, up from 36% before 2007; (v) remittances to developing countries from foreign migrants are relatively stable and have climbed steadily, reaching almost USD480 billion in 2016 or equivalent to 60% of private capital inflows to developing countries, and three times official development assistance.

ON THE HORIZON

Far from resting on laurels, the latest statistics by Bank for International Settlements indicate that we may not be out of the woods yet.

+ Although early 2017 clocked some rebound in international banking activity, data as at 30 June 2017 saw some reversal:

Cross-border bank credit contracted by USD91 billion between end-March and end-June 2017, despite continued growth in credit to non-bank financial institutions.

Lending denominated in euros was especially weak, falling by USD161 billion in 2Q2017.

Overall, cross-border lending to most emerging market economies declined except China, which rose for the third quarter in a row, up USD78 billion in 2Q, taking its annual growth to 25%.

Weak international banking activity declined by USD185 billion.

However, credit to non-bank financial institutions increased, continuing the expansion that started in early 2016. The latest quarterly increase of USD127 billion took its annual growth rate to 7% at end-June 2017 with the largest increases to non-bank financial institutions in the US and UK totalling USD90 billion.

Given this scenario, how should banks prepare themselves? MGI suggests actions on several fronts.

Digital technologies may accelerate cross-border flows and change the nature of financial connections. With the influx of investment into financial technologies by incumbents and new players in swathes of technology segments from artificial intelligence to blockchain, customers will now focus on faster, cheaper and more efficient cross-border transactions that will perhaps accelerate growth in global capital flows. It is up to banks to meet expectations.

On the regulatory front, global banks must adapt their business models not only to new regulation but also to digitisation, pursuing both strategically and simultaneously. For instance, a model that is already in the works with some banks is to operate exclusively as a universal bank in very few key markets, booking as much as possible of their domestic and international business on one balance sheet through foreign branches, avoiding subsidiaries with their own balance sheets in order to minimise capital and liquidity "waste". This improves the cost-benefit analysis. Likewise, incumbents need to fully embed digital strategy into the broader corporate strategy.

Lastly, regulators need to continue efforts to manage the risks associated with cross-border capital flows. Completing the risk architecture will entail continued macroprudential regulation, monitoring of systemic risk, bank stress testing for a more stable financial system, as well as monitoring and managing volatility, bubbles, contagion and other hidden risks.

Can this 'weather-proof' banks against the inevitable storms in an increasingly financially-integrated world?

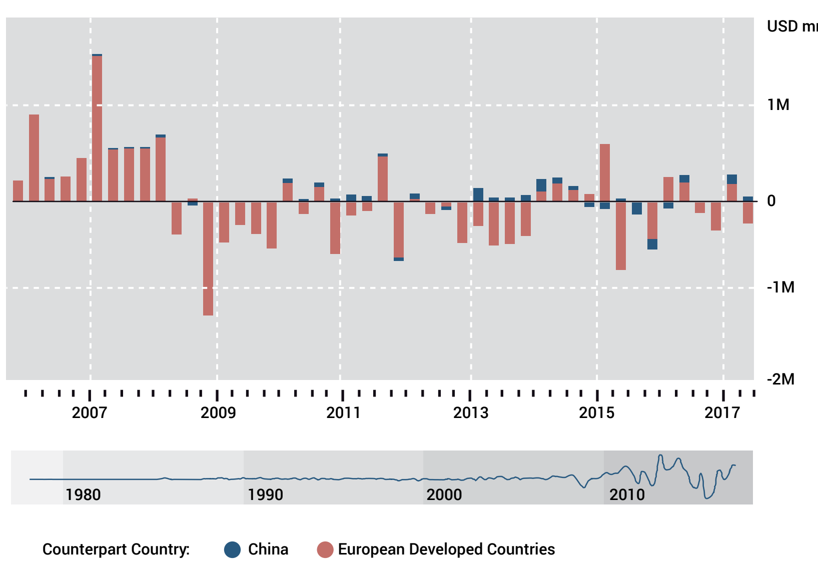
No. But as corporate maven Jack Welch recommends, it's best to be vigilant and "change before we have to." ✱

AVERAGE FGI ACROSS TIME AND MARKETS

SOURCE World Bank Group

Year	World	Developed	Emerging	Frontier
1992	0.32	0.54	0.14	0.07
1993	0.36	0.59	0.17	0.08
1994	0.33	0.59	0.15	0.05
1995	0.37	0.65	0.18	0.12
1996	0.39	0.72	0.26	0.02
1997	0.28	0.52	0.20	0.01
1998	0.22	0.43	0.17	0.01
1999	0.23	0.45	0.19	0.01
2000	0.21	0.42	0.18	0.02
2001	0.20	0.46	0.14	0.03
2002	0.18	0.46	0.09	0.01
2003	0.22	0.55	0.13	0.02
2004	0.36	0.72	0.30	0.12
2005	0.37	0.73	0.35	0.11
2006	0.34	0.67	0.38	0.06
2007	0.35	0.65	0.39	0.08
2008	0.18	0.37	0.16	0.07
2009	0.22	0.48	0.25	0.07
2010	0.32	0.64	0.36	0.12
2011	0.28	0.58	0.27	0.11
2012	0.34	0.66	0.37	0.13
2013	0.32	0.66	0.36	0.11
2014	0.32	0.67	0.38	0.08
2015	0.28	0.59	0.37	0.07
2016	0.30	0.59	0.36	0.09

ADJUSTED CHANGES IN EU AND CHINA BANKS' CROSS-BORDER CLAIMS



SOURCE BIS locational banking statistics

BY CHUAH KUE PENG AND ZUL-FADZLI ABU BAKAR

OUTCOMES OF THE REFERENCE RATE FRAMEWORK

MOVING TOWARDS MORE EFFICIENT AND TRANSPARENT PRACTICES

The Reference Rate Framework (RRF) was introduced in January 2015 to replace the Base Lending Rate (BLR) with the Base Rate (BR) as the main reference rate for the pricing of new retail floating-rate loans and financing facilities. Further details can be obtained from *Bank Negara Malaysia's Annual Report 2014 Box Article: The New Reference Rate Framework*.

The RRF aims to achieve three key outcomes: to benefit consumers by providing more efficient pricing and transparency; to better reflect funding strategies of financial service providers (FSPs) while encouraging greater discipline in the pricing of retail financing products; and to effectively transmit monetary policy **(Figure 1**).

This article discusses how the three objectives have driven the implementation of the RRF and the revisions made to the framework in August 2016. It also highlights the extent to which the intended outcomes have been achieved.

Specifically, consumers need to be aware of what constitutes the benchmark cost of funds used to calculate the BR and how this can affect movements of the BR. The characteristics of the benchmark cost will determine the pass-through from changing funding conditions of FSPs to BR.

(I) BENEFITS CONSUMERS WITH MORE EFFICIENT PRICING AND GREATER TRANSPARENCY

The BR is an important consideration for consumers when taking a floating-rate loan as changes in this rate will affect monthly loan repayments **(Figure 2).** Specifically, consumers need to be aware of what constitutes the benchmark cost of funds used to calculate the BR and how this can affect movements of the BR. The characteristics of the benchmark cost will determine the pass-through from changing funding conditions of FSPs to BR.

For example, a more volatile benchmark cost of funds may result in larger and more frequent fluctuations in the BR and monthly instalments, while a more transparent benchmark cost would let borrowers anticipate future BR movements.

The effective lending rate, which is the BR plus a fixed spread charged by FSPs, is another key consideration for consumers. The spread reflects other loan pricing components, including credit risk, liquidity risk, operational costs and profit margins of the FSPs. Therefore, the spread can be considered as a comparable measure of efficiency across FSPs, which in turn facilitates a more informed decision-making by consumers.

The shift to the BR regime serves to benefit consumers given the more efficient and transparent features of the framework. The components of the BR are clearly defined and determined only by the FSPs' relevant benchmark cost of funds and the Statutory Reserve Requirement (SRR). As such, the adjustment mechanism of the BR is more efficient as it only reflects movements in funding costs of FSPs that are either driven by changes to monetary policy, market conditions or SRR adjustments.

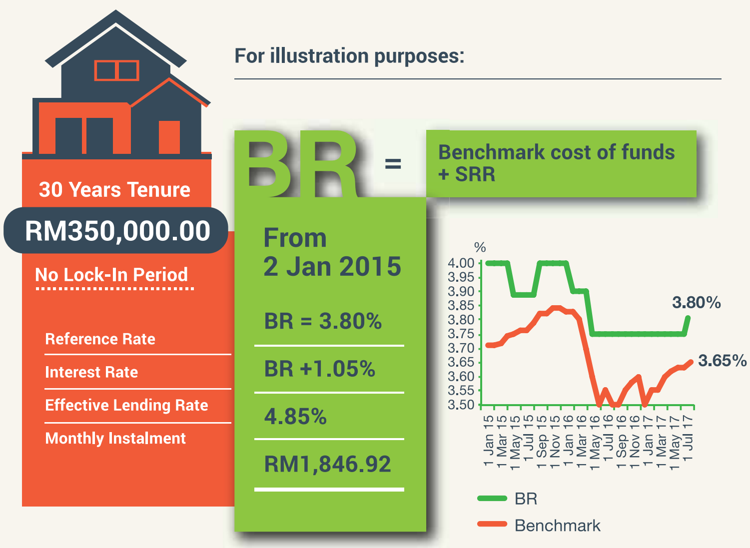
Another aspect of an efficient pricing practice is that only sustained changes in funding costs are allowed to be passed on to the BR. This requirement under the RRF serves to safeguard consumers from excessive BR fluctuations. The revision of

FIGURE 1: THREE OUTCOMES DRIVE THE IMPLEMENTATION OF THE REFERENCE RATE FRAMEWORK

Consumers	Financial Service Providers	Monetary Policy
Benefits consumers by promoting a more efficient pricing of floating-rates loans and a more meaningful comparison of loan products through greater disclosure and transparency	Reflects the funding strategies of the FSPs when FSPs price the loans and allows FSPs to vary BR given fluctuations in market funding conditions	Enhances transmission of monetary policy by ensuring sufficient pass-through from adjustment in the policy interest rate (OPR) to revisions in the BR

SOURCE Bank Negara Malaysia

FIGURE 2: CONSIDERATIONS FOR CONSUMERS WHEN TAKING A FLOATING-RATE LOAN



What should you do as a borrower?

1. Compare the effective lending rates quoted by different financial institutions before taking a new floating-rate loan.
2. Ask for a Product Disclosure Sheet (PDS) that constitutes the effective lending rate and total repayment amounts for the loan.
3. Ask the financial institution to explain what constitutes the benchmark cost of funds used to compute the Base Rate and the factors that may lead to a change in the benchmark cost and the Base Rate. The Base Rate should reflect the movements of the benchmark cost of funds.
4. The amount of monthly repayments will increase or decrease or the financing tenure may change when there is a change in the Base Rate.
5. Compare the different Base Rates and benchmarks offered by different financial institutions. A comparison table is provided on Bank Negara Malaysia's website. http://www.bnm.gov.my/index.php?ch+en_announcement&pg=en_announcement&ac=19
6. Borrowers should assess the affordability of loan repayments if the effective lending rate increases in the future.
7. Borrowers should receive notifications from the financial institution when there is a revision to the Base Rate and monthly repayments, and if the financial institution changes the definition of the benchmark cost of funds.

SOURCE Bank Negara Malaysia

the RRF in August 2016 further mitigates BR fluctuations by only allowing FSPs to revise their respective BRs at quarterly intervals.

Implementation of the RRF creates greater transparency to borrowers through several ways.

First, FSPs are required to publish their BR, by prominently displaying the BR on their websites and at all their branches, and disclose the indicative effective lending rate for a standard housing loan i.e. a housing loan with financing amount of RM350,000 for a tenure of 30 years with no lock-in period.

These disclosure requirements are intended to facilitate a meaningful comparison by the consumers amid the varying BR offered by FSPs.

Second, following the revision of the RRF in August 2016, FSPs are now required to disclose the benchmark cost of funds used to compute the BR, factors that would result in movements of the BR, and to notify borrowers of a change in the benchmark cost of funds. These requirements are intended to make the movements of the BR more transparent and help consumers better anticipate movements of the BR.

Third, FSPs are required to provide advance notice to borrowers prior to a change in the monthly loan repayments, to ensure that consumers are aware of the changes.

Close to three years after the implementation of the RRF, consumers are increasingly more responsive to the greater transparency of the RRF.

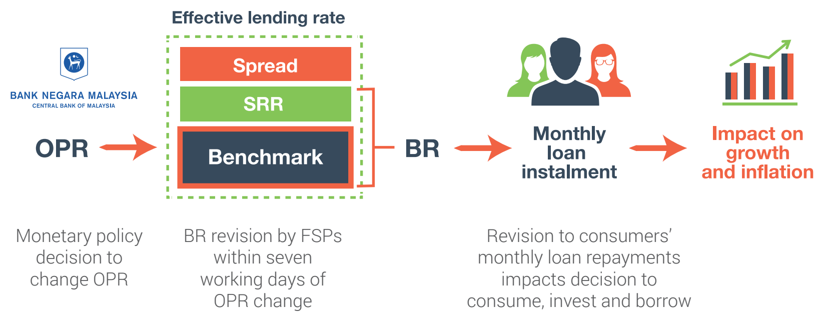
From April 2017 to June 2017, the number of views received on the BR comparison table provided on Bank Negara Malaysia's website has increased more than three-fold compared to that in the first year after the implementation of the RRF. A comparison table for the BR, BLR and indicative effective lending rate of 24 FSPs is published at *http://www.bnm.gov.my/index.php?ch=en_announcement&pg=en_announcement&ac=19*.

The transparency in the RRF has empowered consumers to make well-informed comparisons and decisions when choosing from a variety of loan products offered.

(II) MORE EFFICIENT AND TRANSPARENT PRACTICES BY FSPs

For FSPs, the implementation of the RRF incentivises banks to efficiently manage their funding risks and pricing of floating-rate loans. The RRF ensures that FSPs compute their BR using only benchmark funding costs that reflect

FIGURE 3: MONETARY POLICY TRANSMISSION (OPR PASS-THROUGH TO BR)



SOURCE Bank Negara Malaysia

their funding strategies. This way, the framework ensures that only relevant costs are used in the pricing of loans and in future adjustments to the consumers' monthly loan repayments.

Furthermore, as the lending rates on BR-based loans adjust to changes in market funding conditions, the RRF better facilitates FSPs' management of interest rate risk.

Under the RRF, other risk premia and non-cost factors are now captured in the fixed spread above the BR. Once a loan is contracted, the spread remains fixed and can only change over the life of the loan if there are substantial changes to the creditworthiness of the borrower. This requirement encourages greater discipline in managing funding risks by FSPs when determining the pricing of their loans.

To ensure effective implementation of the RRF, FSPs are required to select the benchmark cost of funds that is most reflective of their funding strategies. Initially, when the RRF was introduced in early 2015, the 3-month Kuala Lumpur Interbank Offered Rate (KLIBOR) was a popular choice for the benchmark cost among FSPs due to its simplicity.

However, towards the end of 2015, the BR began to diverge from developments in the 3-month KLIBOR. Competition for more stable sources of funding during the period had led to higher wholesale and retail cost of funds for FSPs. While market conditions began to stabilise by early 2016, deposit costs remained elevated before gradually moderating. This led to some upward revisions in the BR between January and May 2016 despite the decline in the 3-month KLIBOR.

Following this temporary divergence between the 3-month KLIBOR and the BR, some FSPs began to review and adopt a new benchmark cost to better reflect funding strategies. As a result some FSPs began to compute their BR using a composite rate that comprised the 3-month KLIBOR and their internal funding costs such as deposit rates.

(III) ENHANCES MONETARY POLICY TRANSMISSION

The BR is intended to vary with fluctuations in the cost of funds stemming from both changes in market funding conditions and adjustments in the Overnight Policy Rate (OPR). The latter provides a transmission channel from OPR adjustments to lending rates on both new and existing retail loans, and consequently influence the domestic economy **(Figure 3)**.

Following the latest OPR reduction of 25 basis points in July 2016, a higher pass-through from monetary policy to the reference rate was observed. Specifically, the weighted average BR of commercial banks declined by 21 basis points, equivalent to an 84% pass-through, within two weeks of the OPR reduction. In comparison, the pass-through to the BLR was historically lower at around 70%.

Despite the improved transmission, with most FSPs reviewing a shift in their benchmark cost of funds from the 3-month KLIBOR towards a composite of the 3-month KLIBOR and internal funding, there was a concern that the strength of future monetary transmission might diminish over time. The choice of the benchmark cost of funds used to calculate the BR is important as it will influence the strength of the pass-through of monetary policy. A KLIBOR-based benchmark cost for example, will have a strong pass-through since the KLIBOR tends to be very responsive to changes in OPR.

With FSPs increasingly referencing their internal funding costs, there was a concern that these funding sources may not necessarily be as responsive to the changes in the OPR. To address this concern, the revision of the RRF in August 2016 required the computation of the BR to be based on the FSPs' marginal cost of funds of the benchmark cost chosen. The marginal cost of funds refers to the incremental cost that would be incurred by the FSPs to obtain new funding. This requirement would ensure that the transmission of monetary policy to lending rates remains strong.

Furthermore, FSPs are also required to revise their respective BR within seven working days of the OPR change to facilitate relatively quicker monetary transmission to lending rates.

With revisions made to the RRF, movements of the BR are expected to be more responsive to changes in monetary policy. The intention is to build a stronger relationship across the OPR, BR and market interest rates, which would facilitate a more complete adjustment from monetary policy to consumers and real economic activity.

Going forward, Bank Negara Malaysia will continue to monitor closely the implementation of the RRF to ensure that the intended outcomes achieved continue to improve, marking a step towards more efficient and transparent practices as the financial landscape develops further. ✱

■ *The article is written by Chuah Kue Peng and Zul-Fadzli Abu Bakar and is a contribution from Bank Negara Malaysia.*

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IN A BID TO WREST ILLICIT FINANCING, **BANKS MAY HAVE UNDERMINED** THE VERY OBJECTIVES OF AML/CFT REGULATIONS.

Risks of ‘De-Risking’

+ Financial institutions (FIs) have boosted compliance and risk management capabilities using a combination of tools including integration of new technologies, increasing Chief Risk Officer powers as well as upping budgets and headcounts in risk and compliance.

Supervisory reform of the financial services sector is increasingly robust, particularly on the anti-money laundering and counter financing of terrorism (AML/CFT) front.

In March, Taiwan’s newly-created AML office saw Taipei upping the ante on money laundering prevention ahead of the Asia/Pacific Group on Money Laundering’s third round of the mutual evaluation. On 20 July 2017, the UK announced its latest proposed AML watchdog – the Office for Professional Body AML Supervision hosted by the Financial Conduct Authority – to oversee its 22 professional bodies. By all accounts, the global AML/CFT calendar is packed to the brim.

Concurrently, for close to a decade, financial institutions (FIs) have boosted compliance and risk management capabilities using a combination of tools including integration of new technologies, increasing Chief Risk Officer powers as well as upping budgets and headcounts in risk and compliance. According to new figures from *WealthInsight*, global spending on AML compliance is set to grow to more than USD8 billion by 2017 (a compounded annual growth rate of almost 9%).

Yet, despite shoring up resources to combat AML/CFT, results continue to fall short. PwC’s *Global Economic Crime Survey 2016* states that one in five banks have experienced enforcement actions by a regulator with failure to curb illicit business practices and many are balking at increasing compliance spend without seeing a light at the end of the tunnel.

As a result, many banks have opted to err on the safe side of caution by ‘de-risking’, a strategy that entails exiting markets and closing the accounts of clients considered “high risk” irrespective of potential monetary returns.

Unfortunately, the global effect of this “misapplied” strategy has perhaps brought the world two steps back in combating ML/FT activity.

DE-BANKED

The US Treasury’s AML arm, the Financial Crimes Enforcement Network, defines de-risking, also known as de-banking, as “instances in which a financial institution seeks to avoid

perceived regulatory risk by terminating, restricting, or denying services to broad classes of clients, without case-by-case analysis of risk or consideration of mitigation options."

Under particular scrutiny by banks are:

- **Money services business (MSB)** Entities that transmit or convert money outside of the traditional banking sector such as remittance agents.
- **Politically exposed persons** Elected officials, prominent public personalities and related entities that would immediately trigger enhanced customer due diligence (CDD) reporting.
- **Foreign correspondent banks** Global intermediaries that facilitate international transfers such as cheques or wire payments on behalf of another bank.

The broad-brush application of de-risking has resulted in termination of accounts across the spectrum – from advanced economies such as the US, UK and Australia to wholesale exits from underdeveloped nations such as Sudan, Samoa and Vanuatu – and ironically, resulted in undermining the very objective of AML/CFT to effectively capture and reduce systemic risk.

Most recently, in February 2017, the *FDI Intelligence* website reported that financial centres in the South Pacific left many Pacific islanders high and dry, unable to remit monies for up to a week as correspondent banks cut its lines to underdeveloped nations such as the Cook Islands, Samoa and Vanuatu. In the instance of Samoa, where 20% of gross domestic product comprises remittance flows, this resulted in people carrying cash by hand, counter-intuitive to the AML objectives.

The disproportionate negative perception of MSBs has also clouded effective decision-making such as the al-Barakaat debacle – Somalia's largest MSB that was shut down by the American government immediately following September 11 claiming that it was channelling funds to al-Qaeda. These accusations were later disproved but the stigma lives on despite the fact that MSBs are a vital lifeline for underbanked communities. There have also been significant strides in regulation imposed to bring MSBs in line with international standards. Though compliance levels vary between jurisdictions, MSBs have nonetheless improved and continue to evolve with additional regulatory measures such as electronic Know Your

DRIVERS OF DE-RISKING

Driver	Elaboration
Perceived or assessed risk	Underlying the practice of de-risking is the assumption that the affected customers present a higher risk of using their bank accounts as a medium for raising, moving and storing funds that are somehow tainted, in particular MSBs where transactions are deemed particularly risky even when they are in full compliance with the sending jurisdictions' regulations. This may be due to the recipient jurisdictions' inadequate AML/CFT frameworks, its shared borders with a sanctioned jurisdiction, limited governance capacities or areas of conflict.
Client profitability	Low profitability of customer base arising either from (i) difficulties in navigating complex and dynamic frameworks; (ii) increased scrutiny from regulators heightens concerns that procedures will be deemed inadequate, work to ultimately increase the cost of compliance. Ultimately, this rising cost is shifted to the bank's customer in the form of higher fees, restricted credit and a reduction in available services and products.
Increased compliance costs and pressures	Divergence of regulatory approaches across state, national and international jurisdictions is a key factor in driving up compliance costs. This is often cited as a key factor in the decision to de-bank clients as rising compliance costs further cuts into profitability of certain customer bases.
Rising fines and penalties	Further influencing the risk-versus-profitability analysis for financial institutions is the imposition of massive fines for AML/CFT deficiencies and sanctions violations.
Reputational concerns	Additional losses can be seen in the forced end of a business line or limitations on the provision of specific products. In extreme cases, it can even result in the revocation of the bank's operating charter and potential reputational damage incurred. This can negatively affect relationship with investors and have a volatile impact on stock prices.
Enhanced corporate and individual accountability	Instead of criminal prosecution, regulators in the UK and US traditionally relied on deferred prosecution agreements where banks voluntarily agree to a set of conditions in exchange for suspension of criminal charges. However, regulators have made a deliberate shift toward stronger enforcement of both corporate and individual accountability including direct personal impact on both corporation and employee. This includes routine naming and public dismissal of individuals in the aftermath of enforcement, causing career-ending reputational damage.

SOURCE Adapted from Global Center on Cooperative Security, *Understanding Bank De-Risking and Its Effects on Financial Inclusion*.

Client and enhanced CDD.

By de-risking, banks could effectively cut off the financial lifeline for legitimate businesses and nations, further isolating communities from the global financial system, driving financial activity underground and increase the attractiveness of shadow banking – the final go-to for spurned legitimate customers and businesses.

Little empirical data exists on the severity and impact of de-risking but it is by no means a small matter.

In mid-2016, the World Bank together with the Association of Certified Anti-Money Laundering Specialists (ACAMS) organised its inaugural Stakeholder Dialogue on De-risking and issued a set of findings and recommendations for the sector.

Insights can be also gleaned from The Global Center on Cooperative Security exploratory study, *Understanding Bank De-Risking and Its Effects on Financial Inclusion* **(see table)** whose key themes include financial integrity and inclusion in the global system. The paper, published in November 2015, indicates just how far back this "market failure" began visibly impinging on the financial system.

COUNTERACT

Tackling this issue head-on, Thomas J. Curry during his tenure as US Comptroller of the Currency addressing an ACAMS audience in March 2014 said: "You shouldn't feel that you can't bank a customer just because they fall into a category that on its face appears to carry an elevated level of risk. Higher risk categories of customers call for stronger risk management and controls, not a strategy of avoidance."

But warning against substituting risk management with risk avoidance has had limited effect. To arrest the rising unbanked segment, some regulators have stepped in to take decisive action, stating banks should have valid reasons for denying financial lifelines to potential and existing new customers, markets or face penalties.

In May 2016, the Financial Conduct Authority warned UK banks they could be fined for using AML as an excuse to stop providing financial services to swathes of customers. While FIs insist that exiting these accounts "helps them comply with their legal and regulatory obligations in the UK and abroad", the UK watchdog opined that ejecting these broad-based customer categories from their portfolio had more to do with the lack of profitability associated with these clients, potentially a run-in with anti-competition regulations.

The risk-based approach (RBA) does not mean "zero failure". Instead, it is for banks to assess, understand and mitigate identifiable AML/CFT financing risks. Oftentimes, RBA fails due to the lack of knowledge of what it entails which is certainly not wholesale creation of unbanked market share.

In a June 2016 interview with web portal *FinOps*, Micah Willbrand, Director of Global AML Product Marketing for

NICE Actimize, a New York and London-based financial crimes and compliance technology firm explained: "The bank will need to carefully explain how the decision was related to its revenue requirements or the methodology it has established for the fees it needs to earn to offset the costs involved."

"The compliance department can't simply say let's drop this entire client base just to make its job easier."

DIFFERENT

How does one solve this Catch-22?

The answer might be as simple as a change of perspective or innovation of the mind.

Such as more judicious interpretation of rules. Sam Woods, Deputy Governor of the Bank of England and Chief Executive of the Prudential Regulation Authority (PRA) stated earlier this year the possibility of a "series of tweaks and improvements" to insurance regulation and estimated that by interpreting the regime "intelligently", the PRA had already delivered a £59 billion reduction in capital requirements.

Similar "intelligent" interpretation of the RBA may hold the key to avoiding misapplication, leading to improved cost-benefit analysis for banks in scenarios which they would otherwise have adopted de-risking.

And sometimes, all it takes is just better coordination. In Mexico, regulators have established a special mutually-accepted central database for due diligence of respondent and correspondent banks, providing an equitable solution for both parties. It also proves that harmonisation of rules from various jurisdictions for a specific purpose can be done relatively fast and at the national level.

Although it sounds unsexy and predictable – not even old wine in a new bottle – banks coordinating hand-in-hand with regulators may just be the optimal solution to end the de-risking conundrum. ✱

■ *Julia Chong is a Singapore-based writer and researcher.*

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+ SUMMARY OF RECOMMENDATIONS BY THE WORLD BANK & ACAMS STAKEHOLDER DIALOGUE ON DE-RISKING

Proactive interaction between regulators and correspondent banks about risks arising before the relationship commences.

Regulators/supervisors should:

- Provide greater clarity and consistency concerning regulatory expectations.
- Provide guidance and engage with FIs in addressing problems before resorting to enforcement action/fines.
- Be more transparent on how they will deal with infringements for greater predictability.
- From the respondent side, do more to provide information on what their jurisdictions are doing on AML/CFT risk identification and mitigation.
- Encourage the use of CDD utilities/platforms by banks that would lower due-diligence costs.
- Internationally, cooperate to ensure harmonisation of regulations to facilitate global compliance.

Correspondent banks should use regulator-approved digitisation and data analytics for CDD of respondent banks.

To further these recommendations, stakeholders should support the creation of a research project undertaken by a neutral party to develop a clear set of regulations/guidance plus accompanying methodology.

Risk under review

Legislation designed to prevent financial crime may, in fact, be undermining the effectiveness of organisations tasked with protecting humanity's most vulnerable, writes **HELEN KING.**

There is a reason that financial inclusion was such a strong theme at the G20 summit in July. Non-profits – organisations which are relied upon by all governments to address both the root causes and the aftermath of conflict and terrorism – appear to have become the unintentional victim of the very legislation designed to protect the vulnerable.

No one questions the need for the global financial community to work together to develop a united and unflinching approach to tackling money laundering and the funding of terrorism.

But the legislation which drives this agenda – anti-money laundering and counter financing of terrorism (AML/CFT) – lays a burden on the financial services sector to conduct the due diligence required to make sure it does not facilitate criminal activities.

For high-value opportunities, the cost of this greater scrutiny on customers and their transactions is absorbed by banks. But for less lucrative projects, it is becoming much harder to find the required funding or banking facilities. This is because these ventures are often the

ones with a lower profit margin, based in countries or sectors where there is a higher risk profile – think charity programmes in Africa or an SME travel firm in the UK that organises trips to a sanctioned country.

TIME TO KEEP IN TOUCH

While it is a necessary evolution, strengthened AML/CFT has made its presence known in other, and perhaps unforeseen, ways over the past decade. This includes contributing to a range of factors driving a decline in correspondent bank relationships that can, ultimately, restrict access to international financial systems for some of the most vulnerable countries and organisations that assist them, says Rupert Thorne, Deputy to the Secretary General, Financial Stability Board (FSB).

This represents a threat to the health of the global economy, he explains, because it could slow economic development in emerging markets and hold back low-value but vital programmes, such as those run by non-governmental organisations (NGOs). "Which is why this issue is the concern of the FSB, and why we have developed a strategy for tackling this decline," he says.

The FSB published a progress report on its 2015 four-point action plan in July, which details the regions and countries that have been most affected by AML/CFT.

"We are most concerned about countries in which banks have reached a stage where they are down to their last two or three remaining correspondent banking relationships," Thorne says.

"Data shows that it is regions such as the Caribbean, Sub-Saharan Africa, the Middle East – and even parts of Europe – that are experiencing continuing decline. And there is a mixture of causes, from regulatory pressure relating to AML/CFT compliance to the economics for banks of maintaining correspondent banking relationships."

TACKLING CORRESPONDENT BANK RELATIONSHIP DECLINE

The FSB plan is coordinating actions in four areas:

1. Gathering better quality data on the decline in correspondent banking relationships, its causes and implications.
2. Working with bodies such as Financial Action Task Force (FATF) and the Basel Committee to form a more co-ordinated approach to clarifying regulatory expectations around AML/CFT compliance.
3. Helping countries and banks to strengthen AML/CFT compliance and to communicate the improvements they make.
4. Helping banks to improve their processes so they can streamline and promote due diligence.

While there is no silver bullet, Thorne does highlight that there is an appetite to address this issue on all sides. This is evidenced by the fact that this decline in correspondent banking relationships has been on the agenda of private and public sector meetings held in the margins of International Monetary Fund (IMF) and World Bank annual spring meetings. But, as Thorne says, one of the challenges is that each body has its own perspective.

"AML/CFT regulators are focused on compliance, bank supervisors look at the safety and soundness of the banking system, the IMF and World Bank are working to promote global growth and development, and central banks are looking at how robust the world's payment systems are. The FSB's role is to now

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bring everyone together so they discuss the bigger picture and take combined action," he says.

GLOBAL SYSTEM AT A TIPPING POINT

Having access to the international financial system is paramount if smaller countries are to achieve strong, sustainable growth – put simply, businesses and individuals need to be able to make and receive international payments through correspondent banking.

And it is not a problem the private sector can solve on its own, according to Tom Keatinge, Director of the Centre for Financial Crime and Security Studies at the Royal United Services Institute (RUSI).

When an issue has geo-strategic implications, he argues, it is time for policymakers to work with the private sector. The banking sector must be embraced by governments around the world as a "potential force for good".

This, he argues, may make some financiers uncomfortable, given the "opprobrium still heaped on banks by many politicians". But until senior banking executives are appointed to a UK geo-financial strategic taskforce and governments take on greater financial risk, the decline will continue.

"De-risking is not good for global financial stability. It is not good for global trade and continues to balkanise the banking system," he says. "Ethiopia, for example, is a country suffering the full impact of de-risking. This is a country that is trying to build an export economy. But, to do that, it needs access to the international financial system: otherwise it can't meet the demands of the IMF."

ENGAGEMENT NEEDED AT THE TOP

Apart from the FSB, which has been addressing this point in recent years at the behest of the G20, there has been little action – at present, Keatinge says, rhetoric from policymakers and the private sector appears to be in direct conflict.

"There is a need for multilateral financial institutions. Yes, the World Bank and export/ import banks provide guarantees for important national investment opportunities, but these kinds of tools should also be used to help private sector banks act in more industry segments than they would naturally choose to do," he suggests.

"Where analysis shows that risks are too high or returns are too low, these institutions could work with private banks in these countries to help them raise their standards; governments could also help unlock finance that wouldn't happen otherwise."

After all, he argues, it was governments that created the system that the private sector now operates within. "So, they should take ownership," he says. "Policymakers need to consider what they would like the international financial system to do."

HEAD OUT OF THE SAND

The barrier for policymakers is that decisions the private sector makes

De-risking is not good for global financial stability. It is not good for global trade and continues to balkanise the banking system. Ethiopia, for example, is a country suffering the full impact of de-risking. This is a country that is trying to build an export economy. But, to do that, it needs access to the international financial system: otherwise it can't meet the demands of the IMF.

based on how governments and regulators communicate AML/CFT requirements don't always align with policymaker desires, Keatinge continues.

"Take Iran as an example," he says. "Policymakers want financial institutions to re-engage with Iran so the country feels the economic benefits of signing the Joint Comprehensive Plan of Action (Iran Nuclear Deal).

"As things stand, banks on the Continent are beginning to engage with Iran, encouraged by their governments, but not in the UK. The financial sector in the UK seems unwilling to get involved until the UK government helps change the industry's decision calculus and takes on some of the perceived risk."

Germany, with its broader financial base, has a different approach, using its export bank effectively and financing a wider range of projects. "It is also less concerned about what the US thinks about its actions," Keatinge says.

"It is not just UK NGOs that are suffering, our SMEs are too – they also need access to the international financial system."

HUMAN IMPACT

Mike Parkinson, a Legal Policy Advisor with Oxfam, says the charity feels the impact of de-risking every day as it attempts to run programmes around the world, often in countries that have been designated as having active terror groups.

Yes, charities are seen as high risk – but this does not take into account how our programmes are designed or how much scrutiny we are under from our donors.

Mike Parkinson
Legal Policy Advisor
Oxfam

Parkinson's role means he is faced with investigating a range of compliance and regulatory challenges that arise from operating in sanctioned countries. And banking, he says, has become an ever more pressing issue in recent years.

To fulfil its objectives, Oxfam needs to move money and cash around the world – which is an inherently risky activity. "Those banks that do want to engage are setting their own thresholds for risk," he says.

"This is a problem even where programmes are already designed and often government funded," he explains. "Finding a private bank in Syria that the international banking community is prepared to work with, for instance, has been extremely difficult."

TIME TO STEP UP

This is a gap that governments should be filling if they want NGOs to help them to pursue their foreign policy objectives.

"Without this access, charities will find alternative financial systems – from driving cash around the country to using traditional 'hawala' systems – but these are less secure and do not provide the transparency that we or regulators want."

"Unfortunately" Parkinson explains "banks look at what actions they could be fined for and apply that standard to clients, no matter whether they are charities or businesses."

And because NGOs and SMEs are low-margin opportunities, the private sector cannot justify the cost of the due diligence required. Parkinson points out: "Yes, charities are seen as high risk – but this does not take into account how our programmes are designed or how much scrutiny we are under from our donors.

"We're invited to go and work in dangerous places, but we carry all the risk – and how are we meant to run long-term programmes if we cannot be sure we have the secure banking facilities we need to access money?

"Governments need to provide clarity about their expectations for the humanitarian sector. In the absence of guidance on what sound risk management looks like in the humanitarian context, banks will continue to be forced to make commercial decisions that avoid all possible risk rather than decisions which support the delivery of humanitarian aid to some of the most vulnerable people in the world." ✱

■ *This article was previously published in the Chartered Banker Magazine, August/September 2017.*

 BY ROBERT SOUSTER

Codes of Ethics Do They Work?

CODIFYING ETHICAL CONDUCT IS MERELY A FIRST STEP IN THE ENFORCEMENT AND CONTINUED REINFORCEMENT OF GOOD BEHAVIOUR.

There is nothing new in codes of ethics, but there is no doubt that an increasing number of organisations have adopted codes in recent years, and their popularity as a means of communicating values to stakeholders has certainly increased since the financial crisis. Most listed companies include either a code or statement in the investor relations page of their websites, and it would now be unthinkable for a major financial institution not to make at least some reference to the standards that stakeholders can expect.

But do codes of ethics serve the purpose for which they are intended? The creation and publication of codes is often reactionary, in that they imply an acknowledgement that something was wrong and needed to be fixed. So, when faced with a statement that a bank will respect its customers and treat them with honesty, respect and dignity, the customer might be forgiven for responding with, "Well, they would say that, wouldn't they?".

As confirmation that codes are not new, here is an extract from a code that was published over 15 years ago:

> *'An employee shall not conduct himself or herself in a manner which directly or indirectly would be detrimental to the best interests of the company or in a manner which would bring the employee financial gain separately derived as direct consequence of his or her employment with the company. Moral as well as legal obligations will be fulfilled openly, promptly, and in a manner which will reflect pride on the company's name.'*

Few observers would argue with the noble aspirations set down in this statement of obligations. A more cynical reader might even suggest that there should be no need to make these promises at all, as they commit to behaviours that in an ideal world will be taken for granted. It may be surprising to learn that the paragraph is taken from the code of ethics published by the Enron Corporation, which became spectacularly bankrupt in December 2001, with many of its woes attributable to criminal and unethical decisions and actions at the very top of the organisation. It should also be noted that the paragraph cited above is no brief allusion to ethical values; the Enron code of ethics extended to 64 pages.

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WHAT SHOULD A CODE OF ETHICS CONTAIN?

Codes vary from brief, general statements of ethical commitments to comprehensive documents of many pages. A more comprehensive code might address the following:

> **Fundamental principles:** These are the minimum standards that must be followed by all employees. They may be stated briefly but succinctly, leaving it up to the individual to interpret how the standards should be applied in a given set of circumstances. The fundamental principles may be amplified by explaining how the principles will be applied. There should be some acknowledgement that any set of principles cannot cover every set of circumstances, but that the 'spirit' of the principles will be all-important.

> **Applications:** The code may build on the principles by explaining what the various stakeholders of the organisation are entitled to expect from those who work for it. This may extend to behaviours expected of counterparties who deal with it.

The code may give specific examples of how the code will be applied.

PURPOSES OF CODES OF ETHICS

The late Professor David Campbell of Newcastle University set out the following purposes of codes of ethics:

A code should specify and guide **behaviour** within the organisation, so that by complying with the code, ethical standards will be maintained and enhanced.

A code should encourage **best practice** and improve management performance, while minimising the risk of damage to the **reputation** of the organisation.

Investor and market **confidence** should be underpinned by knowing that the organisation has made explicit commitments in respect of ethical behaviour. No code can eliminate illegal or inappropriate behaviours altogether, but can go some way to reducing their occurrences.

The introduction of a code should also reduce the likelihood that **government and regulators** will feel compelled to intervene by imposing standards directly and policing them.

PROBLEMS WITH CODES OF ETHICS

As codes are often reactionary, they may be regarded as 'soundbites' produced to impress, rather than genuine commitments of their originators.

Codes or ethics suffer the dual problem of dealing with 'soft', intangible concepts that are difficult to measure. Company performance can be measured in relation to asset growth, profit, cost containment and so on, but how can it measure honesty, integrity, trust and commitment? These are behaviours that are observed over time, but even when there is a poor outcome, how do we know whether it materialised due to poor intentions or poor judgement?

As many of the concepts addressed by codes are intangible, the words and phrases used can be ambiguous. There is also the problem of human nature. For example, a personal customer whose loan application has been declined may accuse a bank of lacking loyalty to its customer or even lacking integrity, when the real problem is that the bank has made a commercial judgement with which they disagree. Unfortunately, acting ethically does not always equate with being popular.

Codes rely on the commitment of everyone. Their strength will always be compromised by the weakest link in the organisation. In a bank with thousands of employees, it cannot be assumed that every individual will offer the same commitment to ethical behaviour, or that some people will have the occasional 'bad day at the office'.

HOW CAN WE MAKE CODES WORK?

It is reasonable to assume that the vast majority of people who come to work in banking organisations are inherently good and will commit themselves to noble standards for the mutual benefit of the organisation and its stakeholders. So why does unethical behaviour occur at all? Undoubtedly, the answers lie in factors such as:

- self-interest, and more specifically, greed;
- conflicts of interest;
- ethical dilemmas for which there may not be a clear cut right or wrong answer;
- imperfections in the culture of the organisation, such as an over-commitment to selling or under-commitment to systematic needs identification.

The solutions may not be delivered at the top but must start at the top. Perhaps one of the most overworn terms in the field of corporate governance and ethics is 'the tone from the top'. But this term is used so often for a reason. Directors and senior executives must lead by example, as they know. But the commitment to ethical standards has to be explicitly driven from the top and placed at the top of the agenda when dealing in all aspects of bank administration. Ethical standards should feature in board discussions, in staff communications and even in the directors' report.

Much of the responsibility for securing the right climate lies in human resource management functions. Ethical standards begin before new staff walk through the door to be interviewed, are emphasised during the selection process, rammed home during induction and reinforced at every opportunity in subsequent training.

Performance standards should be multi-dimensional. Too often in the past, these have concentrated on capital balances, sales, cross-sales and up-sales. While these are important, there should be at least equal focus on fair dealings with customers and colleagues, and doing the right thing.

Reporting and feedback systems have a role to play. It is desirable to have a whistleblowing procedure which offers genuine protection to those who have the courage to use it. Likewise, employees should not feel intimidated when challenging the bank's policies and practices on ethical grounds.

In short, ethical standards equate to putting customer interests at the heart of the business, treating stakeholders fairly and respectfully, and never compromising the standards that are promised. ✱

Ethical standards begin before new staff walk through the door to be interviewed, are emphasised during the selection process, rammed home during induction and reinforced at every opportunity in subsequent training.

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Regulating Fintech

UNDOING THE GORDIAN KNOT

Regulations are rising to **meet the challenges posed by digital disruption.** How will it reshape this bold new space?

In the city of Gordium, in modern-day Turkey, was an ancient wagon with its yoke tied in impossible knots. Legend was that he who could undo the knots would conquer all of Asia. Unable to resist, Alexander the Great took it upon himself and with a swoop of his sword, cut through the offending tie – nicknamed the 'Gordian knot' – and the rest is history.

The Gordian knot reminds us that the distance between an intractable problem and its solution is cleared through bold, decisive action.

In the case of financial technology (fintech), the tangle, or Gordian knot, for regulators is this: How should fintech be regulated without hampering its innovative spirit?

This is the central question regulators are faced with today, as it wades into uncharted territory, governing a windfall industry tipped to be worth USD4.7 trillion by Goldman Sachs.

A recent PwC report noted that 86% of polled chief executive officers (CEOs) in financial services worry about excessive regulation, not just for its cost implications but also its impact in an industry that thrives on creativity without boundaries.

On all sides, there is an acute sensitivity, and perhaps fear, that regulating fintech will end up creating another mirror of the existing banking system. Rather than 'coopetition' – the spirit of healthy collaboration amongst forces competing for the same pie – a heavy regulatory hand could, ironically, extinguish the fire that spurred disruptive innovation.

Haskell Garfinkel, PwC's Fintech Co-lead, told CNBC that regulators in the US are keenly aware that they must balance the twin mandates of financial services regulation – safety and soundness, and consumer protection – against the "flood of innovation occurring on the periphery of the regulated industry."

Over the past year, the tone from the top indicates regulators and overseers are rising to the challenge, setting landmark frameworks to give clarity on regulatory hurdles for incumbent banks and technology start-ups.

Solution

The Gordian knot reminds us that the distance between an intractable problem and its solution is cleared through bold, decisive action.

'LIGHT-TOUCH' IN A BOLD WORLD

At an October 2016 standard-setting bodies conference in Basel, Jaime Caruana, General Manager at the Bank for International Settlements, the world's oldest international financial organisation fostering cooperation among central banks, expressed this to setters and overseers of the fintech sector:

"Technology-driven change is inevitable, and it brings with it massive potential for disruption. I believe this will be an overall positive development, although the final balance will depend on, among other factors, how the authorities respond – both at the domestic level and at the global level."

A case in point: Switzerland. Regulators in Zurich introduced in 2016 a 'light-touch' regulatory regime, marking a new era of regulation designed to lure fintech start-ups to hubs such as the popular 'Crypto Valley' in Zug, a small Swiss town that has become a worldwide hub for entrepreneurs in digital currency.

Under the previous regime, the low-tax haven classified cryptocurrency firms – companies such as Bitcoin and Ethereum that produce digital currency used for transfer of funds and operate independently of a central bank – as deposit-takers. This subjected it to an out-of-sync legislation, including a CHF10 million paid-up capital requirement when their deposits passed a certain threshold.

Strides were made when on 5 July this year, the Swiss Federal Banking Ordinance was amended, easing the regulatory framework for fintech.

+ This 'light-touch' regime, which came into force on 1 August, provides for three key elements:

Longer exemption period of up to 60 days (previously seven days) for third-party monies in non-interest bearing settlement accounts. This will specifically allow platforms to run longer crowdfunding campaigns and payment service providers to do batch processing.

Creation of an innovation space or 'sandbox' whereby fintechs can hold up to CHF1 million in public deposits without triggering a banking licence requirement. However, depositors must be alerted that firms are unencumbered by the Swiss Financial Market Supervisory Authority supervision and the deposits do not qualify for Swiss depositor protection.

Proposed new licence for fintech allowing innovators to hold up to CHF100 million in public deposits. Pending approval from Swiss Parliament to amend the Swiss Federal Banking Act (Fintech Bill), this will be debated at the autumn plenary session of the National Council.

These swift measures, aimed at creating a more attractive legal regulatory framework for fintech, coupled with the reported ease of doing business in Zug, have led to an influx in digital innovation start-ups. Switzerland has also leveraged on this as a way to remain relevant given the greater scrutiny on offshore accounts post-global financial crisis. In Zug Valley, taxes can now be paid in bitcoin and in June 2017, cyberspace was abuzz that the Valley would house Europe's first diversified indexed fund based on cryptocurrency.

'ON THE SAME SIDE'

Just as regulators and overseers are evolving, so too are entrepreneurs in fintech, intent on catching the next wave. And many are aware that regulator support is crucial in navigating the digital innovation landscape.

Kevin Covington, CEO at Sydney-based Metamako LP – one of the world's top three firms in deterministic network devices and low latency switches for financial institutions (FIs) – spoke to *Banking Insight* on how regulation and innovation don't necessarily stand at opposite sides of the innovation spectrum. To some extent, the more mature players in the space see regulatory oversight as necessary and could even create opportunities for the sector.

"Metamako is not a regulated entity in itself," he said, "but as a general observation, I can say that changing regulations do create opportunities."

A case in point, he said, is MiFID II – Markets in Financial Instruments Directive – the European Union legislative framework governing investment intermediaries that provide services to clients around financial instruments e.g. firms such as Metamako.

With implementation in January 2018, MiFID II is a top concern for around three-quarters of global and alternative asset managers, with 59% polled by State Street Corp worried about pre/post trade transparency.

"MiFID requires firms to be able to provide timestamping on orders to be able to determine the sequence in which they were received and executed. But this doesn't go far enough."

With overwhelming market volume or trades done in a day, he said, hundreds or even thousands of orders will have the same timestamp. The granularity imposed by MiFID II means that FIs need some serious tech that they don't currently possess.

Firms like Covington's provide the necessary granularity to ensure that an organisation knows the exact order sequence of trades, alleviating the burden of FIs' compliance with ever-changing regulatory requirements.

"MiFID II is a great example of this (regulation creating opportunities for fintech)," said Covington.

This begs the question: If innovation is truly in-built into fintech DNA, can regulation ever stop fintechs from innovating or will these hurdles merely drive them underground to evade the system?

In a nascent industry, only time will tell how regulators find common ground with fintech players in tackling groundbreaking technologies.

IN ON THE ACTION

The vastness of fintech makes it impossible to recount all that is simultaneously occurring on the regulatory front. However, one area that is bearing some excitement is the regulatory sandbox.

A lynchpin creation, the regulatory sandbox assists start-ups to get through the regulatory barn doors and to market ASAP. The sandbox is a safe space for fintechs to test their innovations – ideas, products and services – without the encumbrances of complying to the full set of regulatory preconditions. By relaxing certain rules and giving fintechs access to real clients under controlled conditions, regulators hope to foster innovation faster and cheaper. For fintechs, having gone through a regulated test environment also adds credibility to their product offering.

Although the philosophy driving the regulatory sandbox is one and the same i.e. to spur financing or investments in its economy, each jurisdictional regulator will adopt different nuances in its legislation and implementation.

Take Malaysia, for instance. On 18 October 2016, Bank Negara Malaysia (BNM) or the Central Bank of Malaysia,

after a month-long consultation with stakeholders, issued the Financial Technology Regulatory Sandbox Framework to guide participating FIs or fintech firms. Between April and May 2017, the Malaysian regulator announced the four fintech firms approved as participants in the sandbox and issued a call for participation in 'Fintech Hacks', an initiative to identify industry pain points and solicit solutions for the financial services industry.

Aznan Abdul Aziz, Chairman of BNM's Financial Technology Enabler Group said, "The Framework reflects the Bank's long-standing policy in striking an optimal balance between promoting innovation whilst preserving financial stability and protecting consumer interest. Based on the level of queries and feedback received during the consultation period, the Bank is encouraged and looks forward to receiving applications to test new ideas and deploy new solutions under the sandbox."

BNM provides directional guidance to applicants on how its innovations should address key issues within its list of priorities, including sound financial and business practices consistent with monetary and financial stability, consumer protection, cracking down on anti-money laundering and counter terrorism financing activities.

BNM provides directional guidance to applicants on how its innovations should address key issues within its list of priorities, including sound financial and business practices consistent with monetary and financial stability, consumer protection, cracking down on anti-money laundering and counter terrorism financing activities.

A distinctive feature of its Framework is the 'informal steer' approach, where the regulator guides participating firms on the modifications to its solutions in order to comply with existing legislation. The central bank also requires that applicants should not use the sandbox to circumvent existing laws; however, it reserves the right to exercise discretion and consider relaxing certain regulatory requirements for fintechs that possess compelling value propositions.

BNM's allotted testing period for participants in the sandbox – 12 months versus six months in Australia, and three to six months in the UK – gives stakeholders in the process substantially more time to refine product development and iron out deployment and compliance risks before they go to market.

At the end of the testing period, participants must submit a final report within 30 days. BNM will then assess if it will allow commercial deployment.

Finally, the Framework states that unsuccessful applicants to the sandbox will encounter a 'cooling off' period of six months, allowing fintechs and FIs time to beef up their ideas before resubmission, ensuring that the sandbox captures the most innovative ideas.

CHANNEL, NOT CONTROL

The fluidity of fintech, the newness of it, is what keeps it sexy for consumers as well as developers. By its very nature, innovation is impossible to contain. Regulators who recognise that fintech requires their channelling, not control, will see their hubs flourish. Those who don't, won't.

Ravi Menon, the Monetary Authority of Singapore's Managing Director, expressed it thus: "To be sure, many of these technologies are disruptive to existing jobs and existing business models. But if we do not disrupt ourselves – in a manner we choose – somebody else will – in a manner we will not like."

Menon's 'disrupting ourselves' alludes to the 'old school' paradigm of regulatory action *à la* Basel, which if applied to fintech, is destined to fail. To harness the power of fintech, the quantum leap in understanding must first occur in the regulators' mind.

Taking a page out of Alexander the Great's playbook, it seems that the necessary way forward in undoing this Gordian knot, is to boldly cut through it. ✱

■ *Reporting by the Banking Insight Editorial Team.*

REACHING REGTECH'S FULL POTENTIAL

WITH REGTECH'S RISE, FINANCIAL INSTITUTIONS, FINTECHS AND REGULATORS MUST OVERCOME MULTIPLE CHALLENGES IN ORDER TO SEE SUCCESSFUL IMPLEMENTATION.

Technology empowers people and businesses to stay constantly 'switched on' in a rapidly changing environment, and we are increasingly reliant on it. Increased mobile usage, the rise of social media, and growing digitalization have led to an exponential increase in the amount of data available. Of the data currently available, over 90% was created in the last five years alone — this has enabled big data analysis as well as the use of machine learning and artificial intelligence (AI) to generate insights that were not previously possible.

In addition, competition in the financial services industry has increased significantly with the rise of financial technology (fintech). Many new business models are emerging from both fintech and incumbent financial institutions to address changing customer preferences as consumers are increasingly voting with their feet to whoever can provide quicker, cheaper services on demand.

+ The regtech landscape is rapidly evolving and covers a wide range of possible services, ranging from those specific to industries such as financial services and healthcare, to cross-industry services such as vendor risk management, cybersecurity and identity/ background checks.

OVERVIEW

Meanwhile, banks have faced an unprecedented level of regulatory scrutiny since the global financial crisis. Despite spending billions on regulatory compliance remediation programmes, many financial institutions have been dealt heavy fines and are still struggling to comply with regulatory requirements, resulting in the advent of regulatory technology or regtech.

Regtech is defined as "the use of new technologies to solve regulatory and compliance requirements more effectively and efficiently" as per the Institute of International Finance in its March 2016 article, 'Regtech in Financial Services: Technology Solutions for Compliance & Reporting'.

The regtech landscape is rapidly evolving and covers a wide range of possible services, ranging from those specific to industries such as financial services and healthcare, to cross-industry services such as vendor risk management, cybersecurity and identity/ background checks.

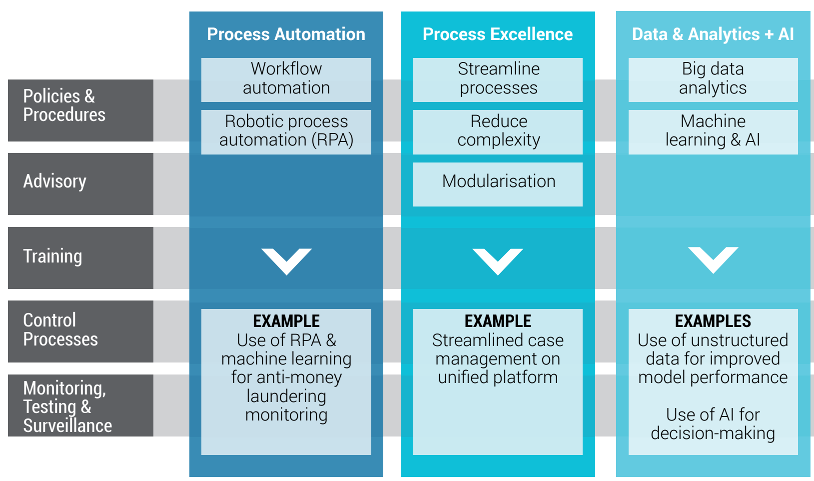
REGTECH APPLICATIONS FOR COMPLIANCE IN FINANCIAL SERVICES

Many financial institutions are currently investing in the following levers for improving regulatory compliance:

+ **Process automation:** Most regulatory compliance processes are currently manual and comprise collecting and consolidating

The interplay between technology and finance, until now prominent in the area of fintech, is also increasingly being witnessed in the regtech space. Both regtech players as well as incumbent financial institutions are actively focused on providing solutions in the following areas: data analytics, identification (ID) verification/KYC, compliance, and cybersecurity.

LEVERS FOR IMPROVING REGULATORY COMPLIANCE AND HOW REGTECH CAN HELP



data from multiple sources, indexing and cleaning the data before conducting analysis. The first step for many financial institutions is on automating data collection and workflow. The next is to consider robotic process automation (RPA). RPA creates 'software robots' that replicate tasks performed by humans without disrupting existing processes, and range in complexity from simple task bots/meta bots that automate simple repetitive rule-based tasks relying on structured data to IQ bots that use fuzzy logic and have the ability to process unstructured data.

+ **Process excellence:** Process automation typically focuses on automating existing processes and workflows to reduce human intervention. However, process excellence focuses on redesigning processes from scratch to simplify and streamline the number of steps required as well as take advantage of modularisation and open application programming interfaces (APIs) to connect to external sources/service providers.

+ **Big data analytics, machine learning and AI:** There are many applications for big data analysis - some involve the use of unstructured data for improved fraud monitoring, investigation of suspicious activity reports, or a reduction in false positives in trade surveillance, for instance. Machine learning focuses on the development of computer programmes that can access data and use it to learn for themselves, allowing for more complex, non-linear algorithms to improve the predictive power of existing models.

While many banks are experimenting with different applications of regtech and are at various levels of maturity, we are seeing some promising results in these areas:

> **Optimising client onboarding and know your customer (KYC):** Designing a digital and modular approach to client onboarding and KYC processes through the use of open APIs to connect with external data/service providers, automated workflow tools and RPA to reduce the need for human intervention **(see Figure 1)**.

> **Optimising transaction monitoring**: Using advanced pattern recognition and machine learning to reduce false positives in suspicious activity report conversion ratios.

> **Next-gen trade surveillance:** Bringing together trade data, written and voice communications and other data, and using advanced analytics, natural language processing and machine learning to detect and prevent potential market abuse. Advanced approaches include monitoring of tone and context in which conversations are held.

> **Integrated intelligence and investigations:** Augmenting investigation data with alerts from external data sources and using machine learning to help with complex investigations.

> **Compliance advisory self-service:** Creation of compliance chatbots to manage simple compliance advisory queries from the business.

REGTECH PLAYERS IN FINANCIAL SERVICES

The interplay between technology and finance, until now prominent in the area of fintech, is also increasingly being witnessed in the regtech space. Both regtech players as well as incumbent financial institutions are actively focused on providing solutions in the following areas: data analytics, identification (ID) verification/KYC, compliance, and cybersecurity.

+ **Data analytics:** Firms in this space are focusing on the creative application of big data analysis and a combination of traditional bank data and alternative data sources to address a number of issues such as trade surveillance, credit card fraud monitoring and behavioural analytics.

+ **ID verification/KYC:** Given increased global regulatory scrutiny on anti-money laundering and counter financing of terrorism, KYC is a key focus for all financial institutions. However, the cost of complying with this is immense as the amount of documentation and verification required varies by regulatory jurisdiction. Firms in this space offer services such as identity verification and background checks with real-time screening from multiple data sources.

+ **Compliance:** These firms provide tools to manage and monitor impending regulation, reforms and legislation. Some focus on providing broad electronic governance risk & compliance solutions to provide a common database for risk, compliance and audit functions, and help improve workflow productivity. Others focus on specific activities, such as client onboarding and screening, regulatory reporting, insider risk monitoring.

+ **Cybersecurity:** These firms provide tools to identify, monitor, and mitigate cyber threats. Some focus on identifying potential external cyber threats, while others focus on user and entity behaviour analytics to analyse large amounts of data and human behaviours to pinpoint potential anomalies and threats.

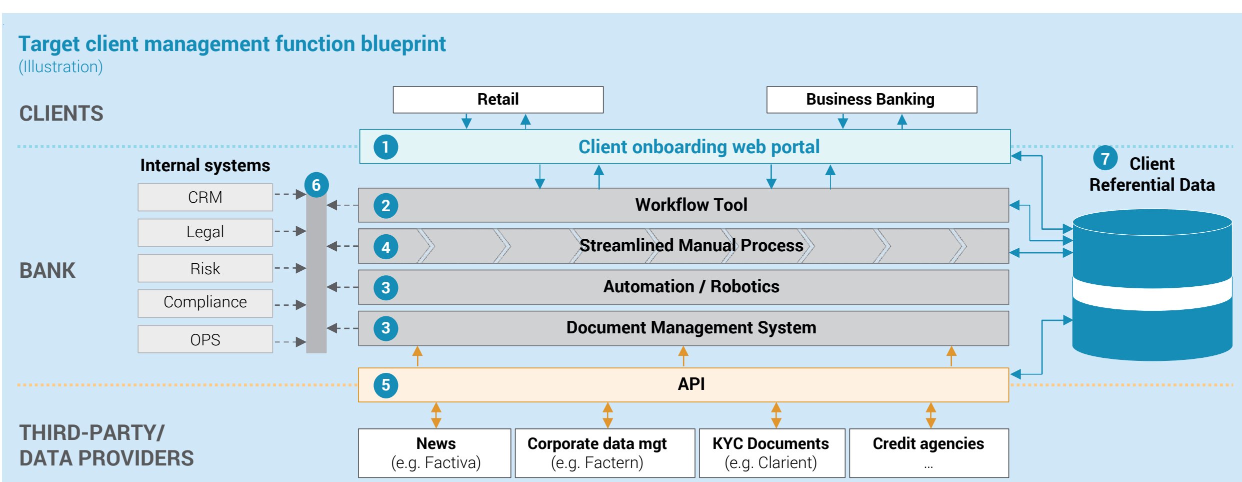
REGTECH IN ASIA

The regtech industry is still relatively fragmented globally, with a large number of small-scale players and no dominant player in the market or even the region. While most regtech firms are based in the US and Europe, they are beginning to expand their reach into Asia. For example, American Express plans to export KYC regtech to Asia after its success in Australia, which led to reducing client onboarding times in half after adopting Simple KYC's cloud-based technology platform as reported by Australia Financial Review.

Local players are also starting to appear in Asia. Notable startups include Fintellix, an Indian firm that leverages existing data infrastructures to manage local regulatory reporting rules; Cynopsis Solutions, a start-up from Singapore that specialises in transaction monitoring to combat money laundering and terrorism financial activities; and KYC-Chain, a blockchain-based customer onboarding platform.

Singapore is leading the Asian regtech space and hosts numerous regtech players such as Datarama, which

FIGURE 1: EXAMPLE REGTECH APPLICATION – OPTIMISING CLIENT ONBOARDING AND KYC



Key components

New tools and technology

1. Client web portal interfaced with internal systems and functionalities (document upload/download, data capture…)
2. Workflow tool to coordinate each step and to provide dashboards
3. Automation of processes (robotics, document management system…)
7. Centralised data source and data analytics capabilities

Processes upgrades

4. Process streamlining & standardisation
4. Roles and responsibilities clarifications and documentation

Modularity / interfaces

5. APIs to connect with external data / service providers
6. Interfaces between client management tools and other bank systems (e.g. Risks, CRM…)

provides a risk management platform to make compliance-driven due diligence more efficient and affordable. Singapore-incorporated Otonomos uses blockchain technology to change how companies are incorporated, administered, and funded. Separately, the Singapore Exchange (SGX) recently launched a 'Members' Surveillance Dashboard', which allows the reporting of data which "could be related to market misconduct", including details of alerts from SGX's own surveillance system.

Citibank, OCBC & DBS have recently launched chatbots in Singapore. Citibank and DBS each have a chatbot on their Facebook pages that answers customer enquiries, and OCBC has two chatbots - one that does home loans and another for internal human resource purposes.

India is catching up too - Bangalore-based Signzy, for example, provides an online contracting solution that uses technology, including biometric signature and blockchain, to complete the entire online digital trust system. The India Fintech Forum is currently running an annual competition to recognise emerging fintech innovations in the Indian ecosystem, and a shortlist of 20 fintechs have been chosen to pitch.

REGULATORY APPROACH TO REGTECH

The rise of regtech in recent years has not gone unnoticed by regulators. The Financial Conduct Authority in the UK was the first to respond by launching the first regulatory sandbox in 2015. The concept of a "sandbox" is to create a safe space for firms to experiment with new technologies before getting final approval from the respective financial regulators or authorities and offering them to customers.

As with the launch of any new business or technology, there are multiple risks in the financial world. Will the new technology work? What are the risks relating to client data and confidentiality? How secure is it from cyber risks?

The creation of a regulatory sandbox not only allows firms to experiment freely within a controlled environment, it also allows the regulator to get a better understanding of the new technologies and possible applications. More importantly, it helps the regulator avoid burdening the new business with overly restrictive regulations before an actual launch.

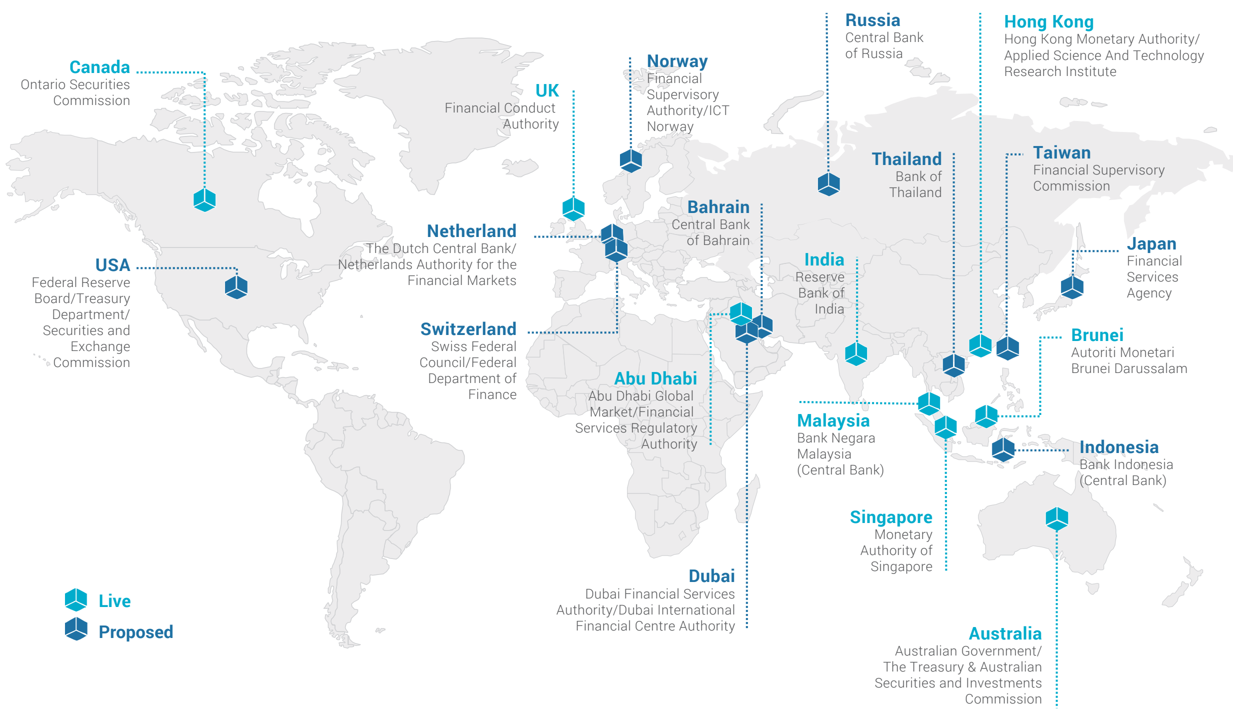
The regulatory sandbox approach is gaining traction and is now spreading rapidly globally - it is in various stages of development and implementation in countries such as the US, Switzerland, Australia, Hong Kong, Singapore, Malaysia, Thailand and the UAE.

Beyond just setting up regulatory sandboxes, regulators should also consider the possibility of using some of these regtech technologies themselves to potentially supervise the financial sector more effectively. For example, they could apply big data analysis and machine learning to information collected from banks and identify potential emerging risks, or they could create cross-firm data that all firms could leverage (mutualisation of KYC).

The Indonesian government is setting an example by opening the country's ID card database to financial institutions for KYC purposes. ID cards

OVERVIEW OF REGTECH PLAYERS IN FINANCIAL SERVICES (NOT EXHAUSTIVE)

MAP OF EMERGING AND ESTABLISHED REGULATORY SANDBOXES



SOURCE http://industrysandbox.org/regulatory-sandboxes/; "Regulatory 'Sandboxes' in Asia Can Foster Fintech Innovation", 6 September 2017, www.brinknews.com

there are already used as the basis for issuing passports, driving licenses, tax documentation, insurance policies, land rights certificates and for biometric data. Thus far, more than 190 financial institutions and service providers have signed up to access the ID database for KYC purposes according to Bloomberg's article 'Regtech in Asia: Regulators are Playing Catch-Up' on 1 December 2016.

CONCLUSION

While regtech is rapidly growing, there are a number of key challenges that financial institutions, fintechs and regulators need to overcome with regard to successful implementation.

First, firms need to have a clear strategy with regard to the use and application of regtech and think about digitalization more holistically — when designing customer journeys and new product offerings, for example. Firms also need to be careful in evaluating opportunities — efficiency cannot come at the cost of compliance or customer experience. Additionally, they must be aware of new emerging risks as a result of increasing digitalization and interconnectedness.

Second, regulators should aim to streamline or simplify rules where possible while ensuring that security is not compromised. Various regulatory jurisdictions have different requirements for data security and privacy as well as restrictions on the sharing of information across institutions or national borders. While regulators in the region are encouraging the proliferation of regtech within their respective national borders, they should also look to have regular dialogues across the region to enable the application and adoption of regtech solutions across borders. This will lead to data harmonisation, and will enable more powerful insights to be generated through greater pooling of available data and applications.

Not addressing these issues will make it difficult for regtech to achieve its full potential. ✱

■ *Wei Ying Cheah is a Principal in Oliver Wyman's Finance & Risk practice, having spent 10 years working with European and Asian financial institutions across a broad range of topics. She co-leads on Non-Financial Risk themes and projects in the Asia-Pacific region.*

Oliver Wyman is a global leader in management consulting that combines deep industry knowledge with specialised expertise in strategy, operations, risk management, and organisation transformation.

BY ANGELA YAP

Of Privacy, Hackers & Cybercrime Unicorns

A global authority on cybersecurity weighs in on the shifting sands of **digital financial crime** in this exclusive interview.

Mikko Hyppönen is masterful on two counts: his remarkable ability to de-jargon technical concepts and the engaging manner in which he delivers it. His TED Talk has been watched over 1.5 million times and translated into 40 languages. *Foreign Policy* has named him one of its Global 100 Thinkers and he's lectured at Stanford, Oxford and Cambridge.

Hyppönen works with law enforcement officers in the US, Europe and Asia to combat cybercrime. As Chief Research Officer at F-Secure Corporation, one of the largest Nasdaq Helsinki-listed security firms in the world, he and his team took down 2003's lethal *Sobig.F* worm that wrecked over USD37.1 billion in damages. He warned the world about the *Sasser* outbreak and conducted classified briefings on the operation of the *Stuxnet* worm designed to sabotage Iranian nuclear enrichment facilities.

Operating the second-largest lab in the world out of Kuala Lumpur, his cutting-edge research involves hunting down cybercriminal attacks, malware outbreaks and predicting where the next vulnerability might arise.

Q In less than six months, we've seen large-scale cyber attacks launched against financial institutions. Equifax, a US credit monitoring agency, was hacked, compromising over 145 million Americans' private data, and Deloitte recently announced hackers had accessed sensitive blue-chip client information. Where are companies falling short?

Both companies you mentioned, Deloitte and Equifax, are great examples of companies that have a hard time securing their networks because they are so large.

When your organisation grows big enough, it's guaranteed you have some kind of a breach at some part of your network at all times. When you have 100,000 work

stations in 100 different countries with servers and data centres all over the globe and you have 20,000 laptops travelling somewhere right now, it's guaranteed that there's something wrong somewhere.

So, if the question is: How many of the Fortune 500 are being hacked right now? The answer is 500.

Every single one of them will have some breach and the breach might not have to be huge. It might be a single laptop getting infected at an airport lounge. But you will never be able to create a scenario where you will be able to keep the attackers out all the time…and you shouldn't assume that either.

You should assume that there is always a breach and you really should be focused on detecting and responding to that breach. I think this is where these companies have failed. They have put a lot of effort into building this hard, ultra core to keep everyone out all the time and if that fails, then everything fails.

So you should assume that you always have a breach and you should put a big part of your resources into detecting and responding to that breach.

So, if the question is: How many of the Fortune 500 are being hacked right now? The answer is 500. Every single one of them will have some breach and the breach might not have to be huge. It might be a single laptop getting infected at an airport lounge.

Q In both cases, there were lags reporting stolen data. Deloitte detected the hack as early as March whilst Equifax knew in July, but they only informed customers in September. Should there be standards for this?

The real victims in data breaches are the people whose data are lost. Of course, if that happens, regulation should guarantee that the victims are notified. But if it's not mandatory to inform your customers that you've been hacked, then companies won't because it's embarrassing.

In the EU right now, we have no legislation or regulation which would guarantee that you get notified if your credit card information was stolen from an online store. But this is going to change next May with the General Data Protection Regulation that will come into effect.

In the USA, similar regulation has been in effect for a decade. This is why we hear about Equifax and other hackings of US companies – they have to tell their customers.

In Asia, we still have a long way to go with regulation. Right now, it really depends on the country. Some countries have local regulations making victim notification mandatory, others aren't even working on that. Singapore and Malaysia have rules on this but countries like Vietnam and mainland China don't. It's really a mixed bag.

Q In a bid to stress test their security systems, corporate-sanctioned hackathons are increasingly popular. Is this effective or do sanctioned hackathons only attract 'amateur' hackers?

Hackathons and bug bounties work. The basic idea is that you take the skill and power of hackers and you use them for good rather than bad. So you can either try to fight hackers or you can try to work with hackers.

This is especially true with bug bounties where organisations invite hackers to break into their system – they actually give them permission to break into their system with one clause: If you are able to break in, you have to tell us how you did it. And as they tell how they did it, they get reward money.

Bug bounties are not only a great way for organisations to find the vulnerabilities they were not able to find themselves, it's also a great way for young people to learn these skills without doing anything illegal. I get a lot of young people contacting me who are really itching to hack something, they'd really like to break into somewhere and I always tell them: "Don't do it, that's illegal, you're going to destroy your future. You can get exactly the same rush, the same thrill legally by participating in bug bounties. There are lots of companies running bug bounties – Apple, Microsoft, Google – and you can try and break their systems. If you're successful, then they will pay you. How cool is that?"

Hackathons are a little bit different. You often see both [bug bounties and hackathons] combined but hackathons don't always have to be about breaking security. It could be about innovation or creating new ways of communicating. But you really have limited time and you use unorthodox ways of inventing new solutions to a problem.

Nevertheless, the hacking culture is at the core of hackathons and bug bounties. I like both.

Q How have cybersecurity risks evolved in today's digital world, especially with the emergence of fintech?

Many of the issues are related to cryptocurrency ransomware trojans. Before bitcoin, we didn't really have a problem with ransomware because it was so difficult for trojan authors to collect the ransom payments without getting caught. And now with cryptocurrencies, they can absolutely collect the ransoms without getting caught. This has been the main fuel for the revolution.

Another example of cybercrime linked to new technologies is rogue mining where attackers use other people's computing power to 'mine' for cryptocurrencies. They infect machines,

MALAYSIA TOUGHENS CYBERCRIME STANCE

ON 17 July 2017, the Asian Institute of Chartered Bankers (AICB) facilitated the signing of a Memorandum of Understanding (MoU) between UK-headquartered Council of Registered Ethical Security Testers (CREST) and *Persatuan Penguji Keselamatan Siber Kuala Lumpur, Selangor dan Putrajaya*, otherwise known as CREST Malaysia Chapter, to help promote an internationally recognised certification and accreditation framework for the domestic cybersecurity industry.

Held at the sidelines of AICB's Global Discourse Series event on 'Cyber Landscape in the Malaysian Financial Industry', the MoU to establish the CREST Malaysia Chapter marks a milestone in the Malaysian cybersecurity industry in its continuous pursuit of more rigorous standards and enhanced professionalism in the cybersecurity industry.

Its strategic aims are two-fold: internationally-benchmarked CREST-certified penetration testers will provide greater assurance to clients, and industry-driven growth will arise from knowledge transfer between international industry expertise and Malaysian cybersecurity providers.

The MoU signing, witnessed by Donald Joshua Jaganathan, Assistant Governor, Bank Negara Malaysia and Prasad Padmanaban, AICB Chief Executive, aims to embed a comprehensive framework in penetration testing – simulated exercises allowing authorised parties to hack into an organisations' IT infrastructure to uncover vulnerabilities – as a pre-emptive measure for organisations to stress test and optimally fix infrastructure risks, in light of the escalating frequency and sophistication of global ransomware attacks such as *WannaCry*.

You don't infect a million computers a day, you only infect a few thousand computers a day, and then you use those computers to steal credit card numbers or valuable information or install ransom trojans on them. But you keep your operation small enough that they don't attract too much attention from law enforcement, media or security companies. These are the cybercrime unicorns.

network those machines together and then use their combined power as a supercomputer to mine cryptocurrencies, typically currencies like Monero that can be fairly easily mined on consumers' computers.

It's a different type of attack because the victim doesn't lose his or her own money but the victim is effectively losing computing power or electricity. He or she pays for the infection with his or her electricity bill because the computer is now using it to mine money for someone else.

This kind of attack would have been hard to imagine just a couple of years ago. Now, it's a reality.

Q You've also talked about cybercrime unicorns, a term you've coined. Few are aware of how scaled and organised financial crime has become in the digital space. But the average user still looks at a security breach as an isolated, one-off scam.

There's a wide range of hackers but for the average computer user, they don't really understand or think about how different, different hackers are. They have this abstract idea of an evil hacker hacking stuff for fun and, of course, that's not the full picture.

We do have [that] but we also have hackers who hack for protest, for political motive, government hackers doing espionage for their countries, military hackers. Then we have organised crime.

Now, when I speak about cybercrime unicorns, it's a way of illustrating just how large the largest online crime gangs have become. They are making huge amounts of money with their attacks and in many cases, they do it quietly.

They are not behind these massive ransomware outbreaks like *WannaCry* or *Petya* that become frontpage news.

If you wanna make a lot of money you stay silent, you stay small and you operate below the horizon. You don't infect a million computers a day, you only infect a few thousand computers a day, and then you use those computers to steal credit card numbers or valuable information or install ransom trojans on them. But you keep your operation small

One particular problem seems to be Malaysian hosting companies. Take phishing sites – websites claiming to be a bank or PayPal. These are located all over the world but, surprisingly often, they are being hosted in Malaysia. There are a couple of large, bulletproof hosting companies – guarantees that your site will not be taken down even if the hosting provider gets complaints – operating in Malaysia.

enough that they don't attract too much attention from law enforcement, media or security companies. These are the cybercrime unicorns.

We know that many of them are making tens of million in revenue every month. A normal start-up making that sort of revenue, its valuation would be a billion dollars or more. That's the definition of a unicorn company – a start-up that is valued at over a billion dollars.

The question is: Do we have cybercrime unicorns? The answer is that we probably do.

Q In securing the Internet, could regulation head in a direction that would curb innovation especially in fintech?

That's a very good point. We must be careful to balance what we're doing if we don't want to hurt new ideas and this is a trade-off we have to carefully consider. I worry about the same thing.

We do want to make sure that law enforcers, regulators have good enough tools at their hands, but we don't want, for example, to prevent new start-ups from being started because they can't fulfil regulations. So we will have to balance this carefully.

Q Your insights on the Asian, specifically Malaysian, landscape: Where you think it stands and its pain points in terms of cybersecurity?

There's a long way to go. There are many reasons why there are big challenges ahead in Asia. One of the megatrends closely linked to cybersecurity problems is how up-to-date systems are.

For example, on running the latest version of Windows. When we look at Microsoft statistics – which Windows version is most popular where – the places that are lagging behind are Africa and Asia.

Here, there are a lot of old operating systems, old hardware, old computers, old phones, old versions of androids in use, much more than in Europe or the US. When you have outdated systems, it means you're not getting security patches; that means you're much more vulnerable.

Windows XP – which is over 10 years old – has a global market share of 6% and hasn't been supported in more than a year. In Asia, Windows XP's market share is over 20%. This is one of the reasons why there are bigger challenges in Asia – there are more outdated machines.

When we look at Malaysia in particular, with regard to cybercrime, we are regularly locating Malaysian cybercriminals or international cybercriminals operating in Malaysia.

One particular problem seems to be Malaysian hosting companies. Take phishing sites – websites claiming to be a bank or PayPal. These are located all over the world but, surprisingly often, they are being hosted in Malaysia. There are a couple of large, bulletproof hosting companies – guarantees that your site will not be taken down even if the hosting provider gets complaints – operating in Malaysia. It will cost more to host but you're able to host illegal content.

Likewise, we know some of the Tor (a free software for enabling anonymous communication) underground marketplaces are physically hosted in here.

Malaysia has a major cybercrime problem and that's why there needs to be more work done in this field.

Q Your prediction on how cybersecurity risk will evolve and where the 'next big hole' will appear.

That's easy – it's going to be IoT (Internet of Things) or connected devices.

For the last 25 years, we've lived through a revolution where every computer that was offline, is today online.

The same revolution is now happening with everything else. We've seen computers go online, now we will see everything else go online.

This means everything else becomes a target because everything becomes a computer – in your home, at the workplace, your car, the plane that you're flying.

This is a big challenge for us to fix in the upcoming years – how we secure a billion new devices going online since we can't run antivirus software on these devices. ✱

 | BY GERRY HARVEY

MARKET BEHAVIOURS

PRE-EMPTING MISCONDUCT

Latest study of finance history reveals patterns of malpractice behaviour.

It is said that there is nothing new under the sun – this is true of market misconduct.

In 1814, Charles de Berenger landed in Dover disguised as a Bourbon officer. He and his associates widely proclaimed the death of Napoleon, including in a letter transmitted to the Admiralty in London, using the latest modern technology – the semaphore telegraph. The group had bought gilts in the weeks before and made £500,000 (some £70 million today) in profit as the market rose on the news. The conspirators were prosecuted and their case set precedent and established the offence of Common Law Conspiracy to Defraud. Thomas Hayes was prosecuted under this same law for London Interbank Offered Rate (Libor) manipulation in 2015.

Has this technique for manipulating markets been repeated – do people "dress up" to manipulate markets in the modern world? The surprising answer is yes. In 1987, Federal Bureau of Investigation agents disguised themselves as traders to gain entry to the Chicago futures pits to uncover trading frauds. They were so successful that two years later a group of conmen copied the ploy. They disguised themselves as traders and wearing fake trader jackets and identity flashes they managed to trade fraudulently in the pits for over a year.

The ploy has been more recently adapted. In 2015, James Craig used the modern disguise of identity theft and social media to carry out the same manipulative strategy as de Berenger in 1814: publishing false market information. He imitated the Twitter accounts of two genuine broking houses to post false corporate information, causing rapid share price falls. Craig bought near the lows and sold on the market retracement.

A key problem in managing conduct risk is its potential scope. Many people assume that the range of potential malpractice in markets is limitless; in the words of the judge in a now-famous US enforcement case:

> **"The methods and techniques of manipulation are limited only by the ingenuity of man."**
> *- Cargill, Incorporated v. Hardin (1971).*

However, analysis of the behavioural patterns in actual cases of misconduct establishes that the number of malpractice techniques is more limited. At FMSB, we call this Behavioural Cluster Analysis. It demonstrates that the same market-abusive techniques are repeated and adapted and it is reasonably rare that a genuinely new ploy is invented.

This methodology is simple. Enforcement cases are reviewed to ascertain the pattern of malpractice behaviour indicated. These are then compared to determine whether the same behaviours repeat or are unique or different in each case. FMSB has reviewed over 400 cases from 26 countries over a 200-year period in all of the main asset classes. We found that just 26 patterns of behaviour repeat over time and across markets, asset classes and jurisdictions. This is the first-time analysis of this type has been undertaken with cases collated in a single place as a point of reference for, and as an input to, governance and oversight structures and methodologies.

The use of disguises in the cases of de Berenger and the Chicago markets is a somewhat peculiar example, but this type of analysis has a serious application in today's markets. Conduct risk is now systemic in scale. In the past five years, banks globally have paid some USD375 billion in conduct fines and misconduct has damaged trust in financial services. Identifying malpractice techniques is the essential first step to forestalling them, in particular if there is a more limited core group of identifiable practices.

As to the patterns, some are more common, others more intermittent. The list of 26 includes wash trades, the manipulation of closing and reference prices, ramping, layering and spoofing, market corners, front running, insider dealing and client confidentiality breaches. An exposition of each pattern is a considerable essay but a description of

some of them is set out below.

One of the most common and resilient patterns is wash trading. A typical wash trade involves a purchase and sale of securities that match in price, size and time of execution, and which involves no change in beneficial ownership or transfer of risk. Wash trades are fictitious transactions used to give a false impression of price or market activity. Its history in the 20th century starts with the boom in railroad stocks in the US in 1908 but it has also been used to manipulate government bonds, floating rate notes, oil and even sunflower seed futures. We find them used more recently in the Libor problems.

Market corners and squeezes have been attempted in commodities markets and, more recently, in bond markets. A corner arises where a party attempts to achieve a dominant controlling market position to dictate price. A squeeze arises where a party does not seek dominance but attempts to gain control of sufficient amounts of a commodity or security to impact prices.

A typical wash trade involves a purchase and sale of securities that match in price, size and time of execution, and which involves no change in beneficial ownership or transfer of risk.

Many commodities markets have suffered corners and squeezes. 20th century cases include soybeans (1941), silver (1947), butter (1947), eggs (1947), oats (1951), potatoes (1955), cattle (1979), wheat (1991), copper (2001) and cocoa (2010). A famous event arose when two onion traders, Vincent Kosuga and Sam Siegal, cornered the onion futures market on the Chicago Mercantile Exchange between 1952 and 1954. The resulting scandal led to the passing of the Onion Act in 1958 which bans the trading of futures on onions in the US. The ban remains in effect.

The first-ever issue of US Treasury Bonds was the subject of a corner attempt in 1792. More recent attempts have been made. In 1991, two dealers used unauthorised trades on client accounts to exceed limits on purchases in Treasury auctions to attempt a squeeze on two US Treasury issues. Two years later, in June 1993, Fenchurch Capital Management attempted a classic squeeze by acquiring a large long position in Treasury Note futures contracts and gaining control over the supply of the cheapest-to-deliver Treasury Notes as the futures moved to expiry. Similar tactics are possible in the corporate market. In 2013, Harbinger Capital created a short squeeze in a small distressed debt issue. Harbinger purchased 113% of the issue notional and then refused to lend bonds to short sellers. The price doubled.

Patterns of malpractice repeat, but they also adapt to new market structures. Some people have hoped that the mandated move to screen-based trading under the legislative initiatives which followed the 2008 Credit Crisis will provide a solution to misconduct – that human misconduct can be "coded out". A note of caution is required. Many of the repeat clusters evident in traditional markets have already been adapted to technology. Technology does not eradicate human intervention in markets. It transfers it to another type of human – a computer programmer.

In 2011, Michael Coscia manipulated futures markets in energy products, metals, agricultural markets, currencies and indices by engaging in a practice called spoofing. Spoofing is the placing of orders with the intention to cancel them prior to their being filled and thereby ramp or depress prices. Coscia employed a technologist to develop a programme which would place spoofing orders, execute trades at artificial prices and cancel the spoof orders as soon as his winning trades were completed. These sequences were timed to take place in milliseconds. There are similar examples of technological applications which have been designed to manipulate electronic markets – in effect, misconduct has been "coded in".

The FICC Markets Standards Board (FMSB) will publish its work in this area later this year. However, whilst the case history is fascinating in itself, the objective of this exercise is not academic. It is practical. If we can identify the horizon of repeat abusive techniques, then more effective pre-emptive responses to misconduct become possible and we perhaps begin to curb the market-aberrant application of the "ingenuity of man". ✱

■ *Gerry Harvey is Chief Executive Officer of the FMSB with over 30 years of experience in the wholesale financial markets and extensive experience in the regulatory field.*

How do I want to be remembered?

Leading with great values and purpose will unleash the potential within.

The 21st century is an exciting era; one filled with fear and hope.

A lot of people around the world are worried about widespread job losses to automation and artificial intelligence (AI) in the coming years. What will happen to them? How should they change? How should they prepare? The fears are genuine. Between 50%-65% of jobs have been predicted to disappear 20 years from now. For example, Russia's Sberbank is replacing 3,000 employees at the bank's legal department with a robot capable of writing claims. In five years, AI systems will be responsible for 80% of decisions at the bank.

Yet, the open source era has also made ordinary people more empowered than ever before. Technology gives us instant connectivity, which saves time, and allows anyone to bring anything to the world, literally. Right now, we have more time, more knowledge, more friends, and more opportunities for self-employment than at any point in history. Think Uber, Airbnb, and freelancing portals like *upwork.com.* It took Walmart 50 years to reach 10,000 stores; Alibaba took in USD18 billion in one Single's Day.

So, the real question is: What is the 21st century to you? Will you look at it as an era of job extinction, or one with endless possibilities? What legacy do you want to leave behind?

To move into the future, let's take a lesson from the past. Here is the story of Alfred Nobel.

In the mid-19th century, Alfred wasn't yet known as the founder of his Nobel Prize, but as a man who earned his wealth from inventing and manufacturing dynamite, an explosive made of nitroglycerine, which he patented in 1867.

In 1888, Alfred's brother, Ludvig Nobel, passed away. However, word got out that it was Alfred who had died. Numerous articles were written to recount his biography instead of his brother's.

Unsurprisingly, people's perception of Alfred was extremely negative. He was portrayed as a cruel man, the 'merchant of

Between 50%-65% of jobs have been predicted to disappear 20 years from now. For example, Russia's Sberbank is replacing 3,000 employees at the bank's legal department with a robot capable of writing claims.

death' – wrote a French newspaper. One obituary even stated that "Alfred garnered his wealth from inventing a tool that rips away people's lives", and that the world had become a better place with him gone.

The living Nobel, given a unique opportunity to read how he would have been remembered, was devastated. Alfred then resolved to change his legacy to the world.

During one of my coaching sessions, a telecommunications executive said, "I don't really need anything else in my life. I've made it quite far. My kids are all grown up. I only have a couple of years left before retirement. I don't want to do anything more. It's tiring," she said lethargically.

"How would you want people to think of you when you're no longer here?" I asked her.

She took a long pause before replying: "I would want them to remember the good things I've done. How I had made a difference."

We spent the rest of our sessions planning what needed to be done to accomplish that goal. Actions were identified to maximise the probability of later generations remembering her the way she wanted.

I do not often write about my dad. But this introspection brought back memories of him. When I was six years old, my father was appointed to the top position for a government official – Permanent Secretary to the Ministry of Agriculture. He was also the youngest ever at the age of 49.

When teased that he seemed 'rather humdrum' about the promotion – perhaps because he had prior served as Deputy Minister, a perceived superior position—my father replied:

"I do not think, that a man's worth is measured by his position. Being a Minister does not mean more honour and respect than any other occupation. There may have been a time that I, coincidentally, served as a Deputy Minister. But never in my mind have I thought of Permanent Secretary as inferior to Deputy Minister. The only important question is how much people remember our good deeds when we're gone. If you were a Minister but you left people full of curses, where is the honour in that?"

-Dr. Thalerng Thamrongnawasawat
Thairath News, 20 January 1980

But when you lead people with great values and purpose, you will unleash their infinite potential of the hindbrain. You will get their pride, dedication, devotion, and love. This energy is boundless because it bears no reason.

Despite my father having been a high-ranking official for several years, our family was never surrounded by wealth. What I and my siblings do take great pride in, however, are the values and purpose our father had left for us.

My little sister, now a chief marketing officer at a public-listed company in Thailand, once turned down a high-profile customer because "the executive wanted USD5,000 as a 'liaison' fee".

She then gave a reason that made me so proud of her: "I'm his daughter. Dad's children do not do that."

INSIGHT FOR LEADERS

If you aspire to be a great leader, then you need a great purpose. A great purpose does not necessarily mean grand achievements. A great purpose is something that is 'greater than yourself'.

Similarly, you need a clear set of values. A great set of values does not necessarily mean aspiring to save mankind. Great values are simply standards that you hold yourself and others to; that reflect the better future you wish to see in the world.

When you lead people with reason, you get only a fraction of their forebrain energy. If you merely entice your people with monetary rewards, then they will leave you the moment someone else offers more.

But when you lead people with great values and purpose, you will unleash their infinite potential of the hindbrain. You will get their pride, dedication, devotion, and love. This energy is boundless because it bears no reason.

If you are unclear, my advice is to pause and ask yourself, "How do I want to be remembered?"

Alfred Nobel decided to dedicate all his wealth into establishing the Nobel Prize. Annual recipients are scientists who have made 'Outstanding contributions for humanity'. Winners receive research funding of approximately USD1 million – a process that has been ongoing for 116 years.

If we were to walk up to a stranger on the street and ask him who Alfred Nobel was, chances are the answer would be the great philanthropist behind the Nobel Prize. Very few, if any, would remember Alfred as the creator of a lethal weapon.

Nobel changed his will in 1895. He died in 1896.

Some people... came from the light and left into the light.
Others... came from the dark and went back to the dark.
Sadly... many came from the light but chose to leave in the dark.
People who inspire... came from the dark but rose away to the light.
- A Buddhist Proverb

As leadership homework, continuously stretch yourself by asking this question: How do I want to be remembered? ✱

■ *Dr. Thun Thamrongnawasawat is Director of Research & Curriculum at the Iclif Leadership and Governance Centre.*

BY PROF. DR. SAIFUL AZHAR ROSLY

IFSA 2014 AND FUNDING SYSTEM OF ISLAMIC BANKING: FROM DEPOSIT-TAKING BANK TO INVESTMENT-TAKING BANK

A brief on new funding products explored by Islamic banks in Malaysia.

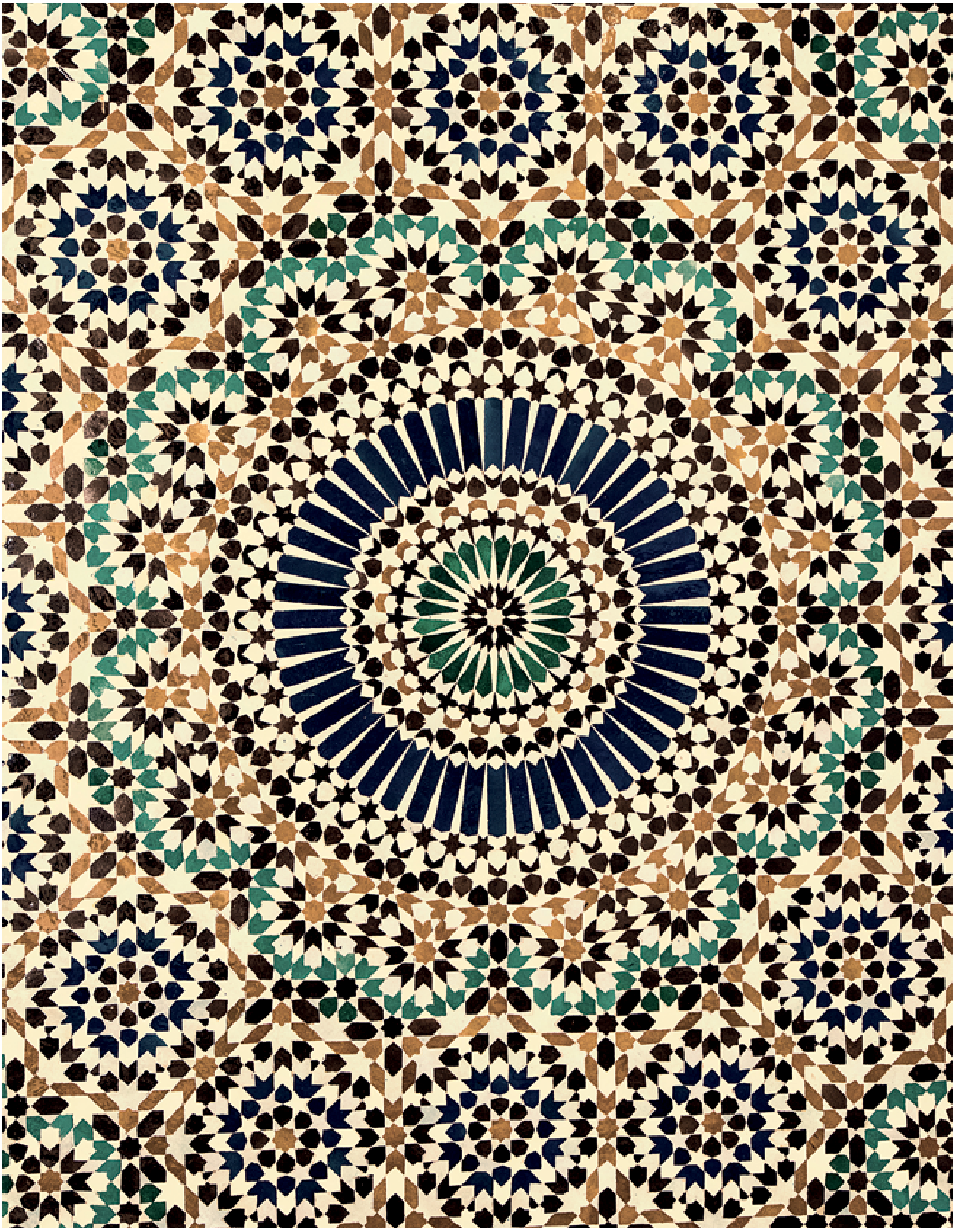
The banking business in general takes deposits to make loans. Islamic banking does the same, but instead of making loans, it enters into a buy-sell contract whereby it sells items on credit terms that the customer intends to buy under the pretext of trading and commercial enterprise *(al-bay)*. The Quran says, "God has permitted trade *(al-bay)* but prohibits interest *(riba)*," hence Islamic banking contracts should be based on trade and commerce model.

While commoditised expenditures on household durable goods, machineries, and equipment can be obtained using *Murabahah* and *Ijarah* financing, liquidity can be readily secured from *tawaruq* facilities. In *tawaruq* financing, Islamic banks dissociate themselves from the sale of goods that consumers intend to use or consume. Instead, the cash proceeds from *tawaruq* are used by consumers to purchase goods from the supplier, which is not the bank. Islamic banks no longer have to take ownership of goods they intend to sell on credit. This helps them avoid taking the ownership risk of the asset that usually attracts high capital charges. The same applies to profit-and-loss-sharing (PLS) financing that normally carries equity risk with corresponding exorbitant capital requirement, from which Islamic banks want to stay away.

ISLAMIC BANKS AS DEPOSIT-TAKING INSTITUTIONS

The taking of ownership risk in Islamic debt financing has been relatively absent since the inception of Islamic banking in the 1970s, partly due to its deposit-taking function. Banks, conventional and Islamic alike, operate strictly within the Basel standard where the danger of over-leveraging is addressed by risk-weighted regulatory capital requirement. By leverage, we mean the use of borrowed funds in contrast to capital funds to make loans.

For example, as a financial intermediary,



Hence, as deposit-taking institutions, Islamic banks are subject to prudential regulation that seek to set limits on risk-taking activities, as failure to do so will endanger the safety of depositors' funds and stability of the financial system. That is, as long as financing is furnished by deposit funds, Islamic banks are required to hold more capital against these financing exposures as they seek to take riskier positions.

an Islamic bank can hold assets up to 10 times its capital base by virtue of it being licensed to take deposits from the public to extend financing. It means that from an RM10 million *Murabahah* facility financed by deposit funds, the exposure is only supported by RM1 million of the bank's capital. If the entire loan goes into default, the bank has only RM1 million to pay off the loss.

In this case, the depositors stand to lose the most, as they have nowhere to make their deposit claims. As a result, prudential regulation plays a critical role in controlling a bank's excessive risk-taking behaviour, which can destroy public wealth and financial stability if left unattended.

Excessive risk-taking, therefore, poses potential danger to the financial system as these loans are not funded by the bank's own money, but by money borrowed from households, government agencies, business enterprises, and corporations. In a way, shareholders do not need to worry much about losing their personal wealth in an event of insolvency, given that banks, conventional and Islamic alike, are legal entities where losses will be limited to the capital investments of shareholders.

Moral hazard among bankers too can lead to excessive credit defaults and trading losses, as they are well aware that the leveraging business can hurt them less compared to depositors. Many also blame the excessive risk-taking nature of PLS or risk-sharing financing, which could place deposit funds in danger. Therefore, extremely high capital charges are imposed on PLS exposures, which serve to check a bank's capital position in relation to its excessive credit risk-taking position. Risk-weights associated with equity exposures range from 250% to 1,500%, which leave no room for PLS financing to take-off in the near future.

Hence, as deposit-taking institutions, Islamic banks are subject to prudential regulation that seek to set limits on risk-taking activities, as failure to do so will endanger the safety of depositors' funds and stability of the financial system. That is, as long as financing is furnished by deposit funds, Islamic banks are required to hold more capital against these financing exposures as they seek to take riskier positions.

At a capital adequacy ratio (CAR) of 8%, a 50 risk-weight (RW) on RM10 million secured *Murabahah* will require the bank to hold RM400,000 in capital, but a similar-sized PLS equity exposure may attract at least a 150% risk-weight with a corresponding RM1.2 million capital charge. PLS and risk-sharing financing can no longer be feasible solutions as long as Islamic banks operate as deposit-taking entities.

INVESTMENT-TAKING FUNCTION OF ISLAMIC BANKS

While *Mudharabah* PLS financing as well as true sale debt financing are not viable options under the deposit regime, Islamic banks in general have been positioning deposit funds with investment labels such as General Investment Accounts and Specific Investment Accounts. A breach of *Shariah* compliance may happen if this matter is left unattended.

Table 1 suggests that returns on *Mudharabah*

Islamic Banks	Net profit (RM'000)	Equity (RM'000)	Impairment charges to depositors and shareholders (RM'000)	ROE (%)	ROMD (%)
BIMB	509,031	3,730,628	59,993	13.6	2.1
BMMB	167,186	1,741,363	-55,290	9.6	2.5
Public Bank	353,780	2,651,599	90,045	13.3	2.5
OCBC Al-Ameen	70,529	788,764	161,329	8.9	2.4
Maybank Islamic	1,122,378	7,228,970	82,622	15.5	3.1

TABLE 1 Islamic Banking: Returns on *Mudharabah* deposits and shareholders' fund
SOURCE Annual Report 2014, various Islamic banks

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TABLE 2 Comparison of Deposit and Investment Accounts

Principal

DEPOSIT ACCOUNT FUND
Guaranteed

INVESTMENT ACCOUNT FUND
Non-guaranteed

Returns

DEPOSIT ACCOUNT FUND
Guaranteed

INVESTMENT ACCOUNT FUND
Non-guaranteed

Credit, market and operational risks

DEPOSIT ACCOUNT FUND
Carried by the bank

INVESTMENT ACCOUNT FUND
Carried by IA investors

Capital charges

DEPOSIT ACCOUNT FUND
Carried by the bank

INVESTMENT ACCOUNT FUND
Banks do not carry capital charges except for operational risk

Role of the bank

DEPOSIT ACCOUNT FUND
Financial intermediary

INVESTMENT ACCOUNT FUND
Agent/wakeel

The investment-fund-taking function should make the business of Islamic banking more productive, thus adding value to the banking industry, as the true label will be evident from both funding and financing side.

deposits (ROMD), have been relatively low than the return on equity (ROE) despite the former being contracted based on an equity principle. The credit impairment expenses were evidently charged on the *Mudharabah* depositors and shareholders but the latter seemed to have enjoyed most of the profits. The large variance between the ROE and ROMD suggest that profits were not justly distributed to the depositors.

Accordingly, in Malaysia, under a new Islamic banking law, the Islamic Financial Services Act 2014 (IFSA 2014), Islamic banks are no longer allowed to use *Mudharabah* investment contracts in mobilising deposit funds. They are required to categorically segregate funds into the corresponding deposit and investment components.

To some extent, IFSA 2014 has now positioned Islamic banks as both deposit- and investment-taking institutions. The investment-fund-taking function should make the business of Islamic banking more productive, thus adding value to the banking industry, as the true label will be evident from both funding and financing side. While the latter is plagued with convergence issues, such as the absence of ownership-risk-taking in debt financing products, remedy should be sought from Investment Accounts. This new funding product should make ownership risk-taking a possibility in Islamic debt financing, thus affirming the legality of banking profit and the ethics of risk-taking.

OWNERSHIP RISK

Business or ownership risk-taking is core in Islamic financial transactions bearing the buy and sell label, as refusal to carry such risk can invite *Shariah* non-compliance risk. In the Quran, the morality of trading and commerce *(al-bay)* hinges greatly on ownership risk-taking of traders and merchants, which early Islamic jurists have amplified through legal maxims *al-ghorm bil ghuni* (profit is accompanied with risk) and *al-kharajbil daman* (with profit comes responsibility).

Ownership risk refers to the potential loss to the selling party from the decline of asset value upon the conclusion of sale. For example, one buys X from a vendor for RM50 per unit to sell it for RM60 retail, making a profit of RM10. But if the retail price drops below the cost to RM40, he will lose RM10. In this way, ownership risk is accompanied by price risk, from which profit and capital

Bank	Risk-weighted Assets RM'000
Credit risk Less: credit risk absorbed by IA	31,300,252 (1,254,451)
Market risk	692,668
Operational Risk	2,930,229
Total	**33,668,698**

TABLE 3 Bank Islam Malaysia Berhad (BIMB) 2016: Pillar 3 Disclosure
SOURCE BIMB 2016

With Islamic banks driving their business using both deposit and investment accounts, fee-based income should increase, evidencing diversification of banking activities. Corporate investments can only take off from the past performance of IAs, therefore, the initial IA investment must come from Islamic banking shareholders themselves.

are never guaranteed.

It is a common risk in all commercial enterprise, which the selling party must carry to deserve the profit derived from sale. When ownership risk in a debt financing sale contract under the pretext of *Murabahah*, *bay muajjal, bai-bithamanjil, bay al-enah* and *tawaruq* is undermined or compromised, they will resemble a loan. As a result, Islamic banks stand the risk of converging with the mainstream banking system and of *Shariah* non-compliance.

This problem has been partly resolved in Malaysia by the cancelation of the inter-conditionality clause (ICC) of a *bay enah* contract, but remains with *tawaruq* and commodity *Murabahah* transactions. Despite evidencing the transfer of ownership from the vendor to the customer, ownership risk in *tawaruq* remains absent from the designated automated transactions where price risk of the transacted commodities can be eluded by simultaneously buying and selling them within minutes.

INVESTMENT ACCOUNT

When the unwillingness of deposit-taking Islamic banks to bear ownership and equity risk is associated with the imposition of high capital charges, the same will not apply to an investment-taking Islamic bank with offerings of Investment Accounts (IA) where ownership and equity risks will be carried by the IA holders, relieving Islamic banks from exorbitantly high capital charges.

IA is a relatively new banking product offered by Islamic banking institutions. It provides the opportunity for the customer to invest in and share the profits from *Shariah*-compliant investment activities. IA caters to a wide range of investor risk-return preferences that reflect the underlying assets performance. Investors have the option of placing funds in IAs that match their risk appetite. Target ventures include those from small- and medium-sized enterprises and other ventures in innovative and new growth areas where Islamic banks can enter whole and retail businesses as well as project based.

Table 2 provides a cursory look at IAs compared with deposit funds. IA funds largely resemble mutual or unit trust funds, but with openings to real sector investments rather than to portfolio investments in the latter. Islamic banks will act as *wakeel* similar to *Takaful* and Islamic unit trust operators whose earnings are mainly sourced from fees than from operating profits.

With Islamic banks driving their business using both deposit and investment accounts, fee-based income should increase, evidencing diversification of banking activities. Corporate investments can only take off from the past performance of IAs, therefore, the initial IA investment must come from Islamic banking shareholders themselves. No commitment can be better than banking capital, hence, the 'skin-in game' is necessary where bank shareholders place their own money at risk in IAs, just like outside investors.

However, the share of IA-to-deposit funds has yet to catch up with the potential blue-ocean dynamism of IA. For Bank Islam Malaysia Berhad **(Table 3)**, the pioneering Islamic bank in Malaysia, it only commands a 4% share of the total risk-weighted assets in 2016 with nothing evident in market risk-taking by IA. ✱

■ *Prof. Dr. Saiful Azhar Rosly is Professor of Islamic Banking at the International Centre for Education in Islamic Finance (INCEIF). He formerly served as an Independent Director for EONCAP Islamic Bank Bhd, a Shariah Committee (SC) member for AgroBank and is currently an SC member for Prudential BSN Takaful Bhd.*

BY JULIA CHONG

Why 'LEI' Should be Part of Asia's Vocabulary

Legal entity identifiers may be the only thing standing between **Asian banks and MiFID II compliance.**

En route to becoming 'MiFID II-friendly', one of the first steps financial institutions (FIs) in Asia-Pacific need to take is obtaining a Legal Entity Identifier (LEI).

Currently, standard-setters around the globe including the Securities and Exchange Commission (SEC), Commodity Futures Trading Commission, Reserve Bank of India and Canadian provincial regulators require entities to use LEIs as the common identifier.

Under the European Market Infrastructure Regulation that came into effect on 1 November 2017, EU trade repositories must reject trade reports that do not have an LEI.

By 3 January 2018, MiFID II's "No LEI, No Trade" rule will make compulsory that all entities across all asset classes – including Asian firms dealing with EU counterparties – obtain LEIs. FIs will also need to put into place maintenance procedures to ensure timely renewal of their LEIs annually or risk a fine.

+ FIs will also need to put into place maintenance procedures to ensure timely renewal of their LEIs annually or risk a fine.

Aside to this, international standard-setting initiatives, such as the Committee on Payments and Market Infrastructures-International Organization of Securities Commissions (CPMI-IOSCO) that works on the harmonisation of key over-the-counter (OTC) derivatives data elements, also advocate use of LEIs.

Why is LEI seen as crucial in stemming systemic risk? Think 2008 Lehman Brothers as FIs scrambled to get a clear picture on their counterparty exposures or as regulators struggled to determine the systemic impact arising from Lehman's failure.

The adoption of LEIs by the US and EU arose out of this scenario – no one could quickly or accurately gauge the level of damage because there was no common international standard to link financial data

with its corresponding entities or instruments, which then hindered timely policy action and industry response to the crisis.

BENEFITS

The information on ownership and corporate hierarchies contained in LEIs fulfil several key objectives in the global financial system:

Improved operational efficiency. With increased adoption, the economies of scale derived from widespread adoption of LEIs will result in decreased costs. Already, the cost of obtaining an LEI is relatively low compared to other modes of monitoring with tangible benefits of easier tracking and reporting for jurisdictions that have implemented it. The London Stock Exchange charges fees on a cost recovery basis and estimated each LEI at £115 ex value-added tax (VAT) and annual maintenance cost at £70 (ex-VAT). The upside however is savings from several work functions: lower regulatory reporting costs; lower data reconciliation, cleaning and aggregation costs; reduction in transaction failures.

- **Increased control and quality analytics.** Enterprise risk management relies on granularity of data. The information on ownership and corporate hierarchies tracked through LEIs are an essential enabler to aggregate risks at a broader level. Modelling and analysis can be done more accurately, and decisions can be made in a timely manner especially when it involves credit risk and strategic manoeuvres for critical accounts. It also helps FIs improve their management of legal and operational risks with more consistent and current data at hand.

- **Support regulatory compliance.** Streamlining reporting to regulators occurs as market participants can report on aspects such as counterparty exposure in a single format, reducing overlap and duplication arising from multiple identifiers that some FIs currently have to juggle. Clearly identifying customers and counterparties will also enhance other regulatory compliance such as 'Know Your Customer' procedures for client onboarding.

PRIMER

LEI is a unique 20-character alphanumeric code that is assigned to identify each financial and non-financial entity in a transaction. Similar to ISIN codes for products or one's passport, each LEI is tagged to a specific legal entity, and unambiguously traces its global movements, transactions and interactions with counterparties. Once assigned, the LEI stays with the entity throughout its existence and, upon 'demise' of the entity, cannot be reused.

Designed as a public good, LEI is assigned free of charge and can be obtained through nominated registration authorities such as SWIFT appointed to act on behalf of the International Organisation for Standards (ISO) in assigning LEIs. Due to the sheer number of LEIs required, the registration, administration and maintenance with the central LEI registrar has now become a service outsourced to third-party providers.

At the driver seat of the LEI implementation is the Global LEI Foundation (GLEIF), a not-for-profit organisation that oversees the descriptor's rollout and use. The Basel-based GLEIF was jointly established in June 2014 by the Financial Stability Board (FSB), Group of 20 (G20) and primarily American and European regulators to create greater transparency in reporting counterparty exposure and transactions.

Today, established through Charter by FSB and G20, the Regulatory Oversight Committee (ROC) is the ultimate authority governing GLEIF, which in turn manages a growing network of

LEI-issuing organisations – known as Local Operating Units (LOUs) – ensuring units meet data quality standards in LEI registration.

TAXONOMY

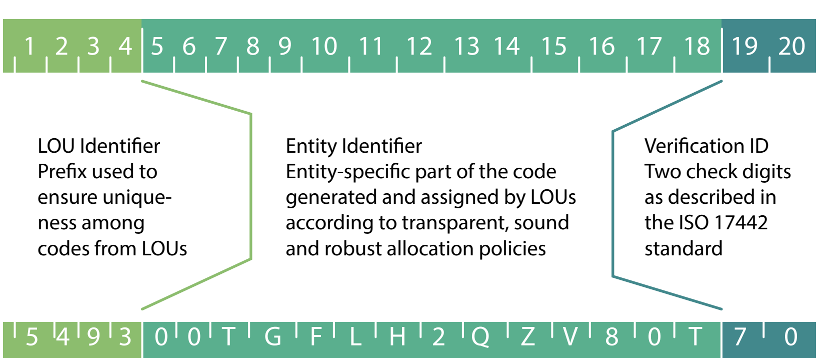
The entity must supply accurate reference data including supporting documents and LOUs must verify this against authoritative local sources such as a national business registrations and annual submissions. Only then can an LEI be issued and logged with GLEIF that maintains the central LEI register.

GLEIF's mandate is to check and balance, ensuring that LEIs registrants adhere to governing principles and quality standards. Each LEI must be recertified on an annual basis subject again to a verification process by the LOU. This implies that companies are obligated to report and maintain accurate data in a timely manner in order to recertify or keep its LEI.

There are specific policies and processes to be adhered in the collation of data. 'Level 1' data refers to business card information (official legal entity name, headquarter address, etc.) whilst 'Level 2' data is on relationships between entities, including direct and ultimate parents, within the Global LEI system.

Data disclosure must meet ISO 17442 standard that governs LEI issuance. This ensures high-quality data is maintained to allow accurate assessment of connected parties and exposures. Firms must lodge all essential data including updates on corporate mergers and acquisitions, liquidation, shareholding changes as well as more mundane information such as change of address and contact details.

In obtaining an LEI, FIs are not restricted to using an LOU in its country of origin – as long as they remain accredited, they can apply for an LEI with any LOU. Nonetheless, there are some LOUs such as France's *Institut National de la et des Etudes Economiques* that specifically restrict entrance to companies governed under the respective jurisdiction, in this case French law.



Example ABB Sécheron S.A., Switzerland

SOURCE GLEIF

WHAT'S IN STORE

Asia has been slow on the LEI uptake. Thompson Reuters reported as at March

ASIA-PACIFIC'S REGULATORY USE OF LEI

Jurisdiction	Rule	Master/Base Regulation	Effective Date	LEI Required or Requested?
Australia	Australian Securities and Investments Commission (ASIC) OTC Derivative Transaction Rules (Reporting) 2013	Corporations Act	October 2013	Requested
	Guidance on ASIC Market Integrity Rules for Competition in Exchange Markets (Australia)		March 2014	Requested
	ASIC Derivative Transaction Rules (Clearing) 2015		2015	Requested
Hong Kong	Hong Kong Monetary Authority	OTC Trade Repository	August 2013	Requested
India	Reserve Bank of India Notification RBI/2016-17/314 FMRD.FMID No.14/11.01.007/2016-17 Introduction of Legal Entity Identifier for OTC derivatives markets	Reserve Bank of India Act 1934	2017	Required
Singapore	Monetary Authority of Singapore OTC Derivatives Trade Reporting - Securities and Futures		April 2014	Required

SOURCE Excerpt from the Global Legal Entity Identifier Foundation (https://www.gleif.org) accessed in October 2017.

2017 that the region had the lowest adoption rate with only 10,000 out of the over 500,000 LEIs issued globally.

That's not to say that there has not been any work on generating local versions of these market identifiers. For instance, in Japan, such identifiers currently exist but are confined to specific vendors, and in Malaysia, local standardised identifiers help alleviate systemic risk and improve transparency. Other emerging markets have created their own identifiers on a much smaller and discrete scale but the benefits are confined to its immediate financial ecosystem.

For LEI to reach its optimum potential, global adoption in all key Asian jurisdictions is necessary.

In Japan, such identifiers currently exist but are confined to specific vendors, and in Malaysia, local standardised identifiers help alleviate systemic risk and improve transparency.

+ In a sign of things to come, the GLEIF has listed the following rules on the adoption of LEIs as proposed for implementation in all jurisdictions at the national or regional level:

FSB Standards and Processes for Global Securities Financing Data Collection and Aggregation.

FSB Report to the G20 on actions taken to assess and address the decline in correspondent banking.

Basel Committee on Banking Supervision, Consultative Document, Guidelines, Revised Annex on correspondent banking.

Committee on Payments and Market Infrastructures, Board of the International Organization of Securities Commissions, Technical Guidance: Harmonisation of the Unique Transaction Identifier.

SHIFT

The LEI Initiative is a collaborative global endeavour between regulatory bodies, private sector participants and supranational agencies. Globally, the move in key jurisdictions point toward increased incorporation of LEIs into aspects of financial reporting and is mandated rather than voluntary LEI implementation.

In the US, the Office of Financial Research (OFR) is working with its government to require the use of LEI in essential data sets such as call reports, financial reports and offering materials. Additionally, the Securities and Exchange Commission and other US bodies have recommended that LEI use be extended to credit rating disclosures and other regular reports ranging from money market funds, futures clearing merchants, swap transactions and home mortgage disclosures.

Increasingly, overseers in Australia, India and Singapore have implemented reporting standards that mandate use of the 20-digit code (see accompanying table).

The accrued benefits are significant. The OFR estimates that the financial services industry could save up to USD10 billion via adoption of the LEI globally.

Successful operation of the global LEI system requires support from the regulatory community, private sector firms, and industry associations. The ultimate beneficiary being all the above as well as the end investor. ✱

BY IVAN TAM

AI GLIMPSE INTO BANKING'S FUTURE

HOW **NEXT-GENERATION MACHINE** LEARNING IS SHAPING FINANCE.

Artificial Intelligence (AI) has embedded itself into multiple aspects of the financial ecosystem. From risk assessment and loan underwriting to robo-advisors and customer service, it presents banking with a myriad of new opportunities as well as challenges.

Digital Banking Report's September 2017 findings state 15% of firms use AI to gain a competitive edge and identify opportunities that manual analytics would have missed. A further 23% expect AI use to increase within the next 18 months.

Yet, few professionals have fully grasped the mechanics and extent of machine learning's impact on the banking landscape.

PREDICTIVE ANALYTICS

Machine learning – a term coined in 1959 by American pioneer in the field Arthur Samuel during his time at IBM – is a subset of AI. Its focus is the construction of algorithms to predict outcomes based on a set of input data.

Such knowledge is not new and has been effectively deployed in a variety of fields for decades – email filtering, optical recognition, detecting data breaches, etc. But the defining factor of what we see today – next-generation machine learning – is that algorithms are built so that the machine self-refines and improves its predictive capacity as it gathers more data, a trait that distinguishes it from its rules-based predecessor which could only perform specific functions hard-coded into its software.

Simply put, next-generation machine learning is becoming more human-like. The technology has already been deployed in different areas of finance with the hopes of transforming these functions to either curb costs or increase revenue and efficiency.

Below are highlights of the innovations that are occurring at the intersection of the AI and FI space, and also the complexities arising from this disruption. They are by no means exhaustive but provide a sample of how it will change banking.

FRAUD PROTECTION

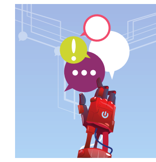
Digitisation, despite spurring automation, also opened the gateways for financial crime to easily scale and exploit the gaps in the digital space. It is far easier for fraud to occur today and financial institutions (FIs) have mobilised machine learning to stem the tide.

One key area is the security of financial transactions. According to Juniper Research's *Online Payment Fraud Whitepaper 2016-2020,* large merchants lost between 1.39% to 1.68% of revenue due to fraudulent transactions despite spending six-figures on average towards fraud mitigation programmes.

The most common method currently employed in most organisations to prevent fraudulent transactions is manual checks by a review team. This involves a team personally looking into the authenticity of transactions flagged as 'high-risk' but it is also costly in terms of manpower, time, customer experience and possibilities of 'false declines' i.e. when legitimate transactions are denied. The result could lead to loss of income for banks as customers switch to their rival due to poor controls on personal data or decide to use another card for their purchase.

To solve this, banking has deployed AI to increase its odds at correctly detecting fraud. Mastercard rolled out its AI-based Decision Intelligence™ technology globally "to help financial institutions increase the accuracy of real-time approvals of genuine transactions and reduce false declines" and RBS WorldPay uses it to prevent card fraud. On both platforms, whenever a transaction is made, it is assigned a score which is run through its internal algorithm populated with existing customer data – e.g. where you generally pump petrol or what's your favourite retail website – to predict spend patterns and judge the authenticity of future payments based on each consumer's spend patterns.

Apart from more accurately raising the red flag on fraudulent transactions, it also clocks pretty decent results in stemming the revenue loss from false declines. Already, the technology has been gauged to have reduced 'false positives' in financial transactions by over 70% and undetected fraud by 25% according to London-based research house Oakhall, and in future, FIs could save at least USD12 billion from machine learning fraud management systems.



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One of the more exemplary deep learning chatbots is Bank of America's digital personal banker 'Erica' who has been programmed to provide clients with real-time intelligent insights such as optimal financial management (she recommends money-saving techniques such as changes in subscription plans) and raising the red flag if there's a potential dip in credit scores.

CHATBOTS

The self-service customer experience has historically been one of the more problematic areas in banking. Moving to incorporate more tech in its service offerings – Internet banking, online trading accounts and others – may have reduced costs for banks but it also brought the bar down in terms of customer service. The most frequent complaint by customers pushed into self-service activities such as website FAQs or email contact forms is that at some point, many cases ultimately still result in users contacting the call centre for the helpdesk or to speak to a consultant.

Enter chatbots. Although they have been around, it's recent surge in finance is due to the popularity of messaging apps and acceptance of remote methods of communication, especially amongst millennials. Chatbots are a cross between a machine's natural language processing (NLP) abilities and algorithm functions. Whilst NLP focuses on the interactions between language and computer processing, the algorithms work in a growing field of machine learning called 'deep learning'.

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The intelligence of the latest 'smart' chatbots are built to learn and evolve very much like the human brain – it mimics the structure and function of the brain by creating artificial neural networks. The result is a highly personalised and surprisingly human-like conversation between customer and the chatbot to solve queries ranging from "How do I check my bank balance?" to "What's the optimal allocation in which I should diversify my assets?".

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Rather than replace humans, the idea behind 'smart' chatbots is that should be deployed to automate basic, time consuming tasks in order for existing employees to be assigned more value-added work such as sales or relationship building.

Juniper Research estimated that first-generation chatbots currently saves USD20 million for global business and predicts that with 'smart' chatbots like 'Erica' that figure will hit USD8 billion by 2022.

But the significant investments into such AI technology is high – not to develop the chatbots (which are relatively cheap) but to integrate it into banks' existing infrastructure such as IT networks, processes as well as reskilling people.

TRADING ALGORITHMS

The ability to crunch millions of data points in a matter of seconds is the cornerstone of algorithmic trading strategies. The backbone of which is knowledge of programming languages such as R and Python – the latest coding language that has replaced the days of C++. Some predict that in the near future, at least some basic skills of R or Python programming will be part of the financial analysts' skill set.

These codes are at the core of platforms that many banks or trading firms already leverage to some extent: automated, pre-programmed instructions that can execute buy or sell calls with lightning speed, far faster than humans. It is commonly known as algorithmic trading or 'algo trading' for short.

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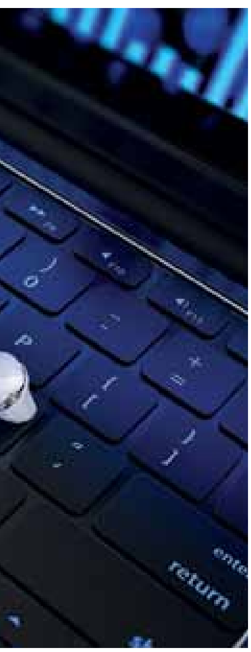
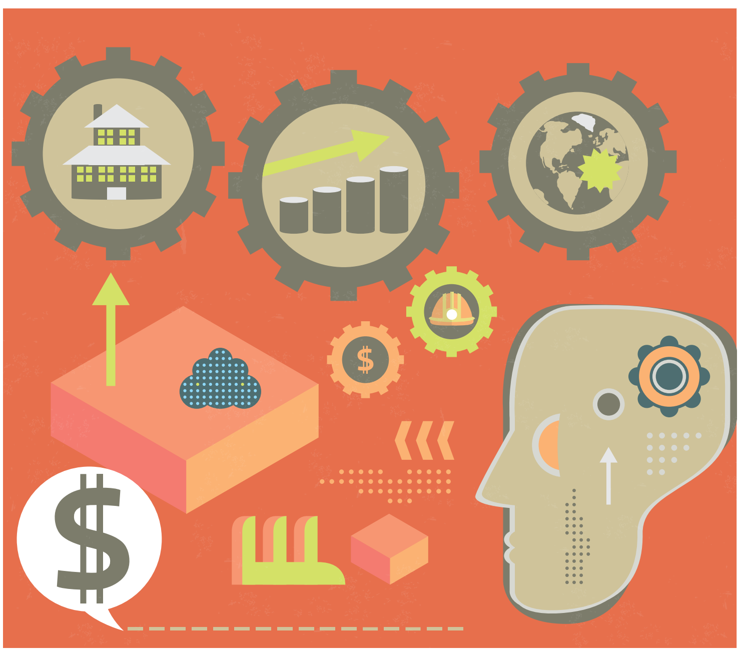




Leading equities, futures, FX banks such as Citi, Credit Suisse, Deutsche, RBS have long incorporated it into their service.

Thomson Reuters' Karen Phillips, Senior Director and Head of Relationship Management for Transactions in the Americas, said in July 2017 on panel at an FX conference that with regulations such as MiFID II coming online in 2018, the increase in capital costs at banks will mean that agency trading will require best execution practices. This means that algo orders won't just become mainstream, it will play an increasingly prominent role in lowering trading costs.

Regulators such as the US' Financial Industry Regulatory Authority and Japan's Financial Services Authority however are clamping down and enforcing supervision and controls on algo trading. This is in response to several Big Data disasters such as Knight Capital Group that lost USD440 million in 30 minutes due to a "bug" that had infected its trading software.

It drives home the point that risk controls have not kept up with AI development in finance as such minor glitches and vulnerabilities have immediate consequences in an integrated financial world.

BIAS ELIMINATION

The newest area of machine learning being applied in corporate is more qualitative – the detection and elimination of prejudice in strategic decision-making. Its application has been trialled in specific instances where a judgement call is required and could be a check-and-balance measure in areas such as credit analysis.

For instance, whether the bank should continue to give credit to Company A or exit entirely does rely to some degree on the account manager's judgement call. AI could be used as a counter-balance to check the soundness of recommendations made.

Already, SAP, the technology giant, is implementing bias filters which it plans to use in eradicating 'unconscious bias' in human resource functions such as hiring, salary scales and performance evaluation. It furnished opinions on whether an employee deserves a raise based on his/her performance, or if the company truly embraces diversity in its hiring as an equal-opportunity employer with a high degree of accuracy when compared against human decisions.

INESCAPABLE REALITY

Machine learning applications in FIs are in its infancy. Yet, it presents a compelling picture of technology complementing human decision-making processes.

The bigger banks are treading into untested AI waters in the hopes of curbing costs or, better yet, increasing efficiency and revenue.

Despite the risks and controversies, what's certain is that AI is seen as an inescapable reality of banking's future. ✱

■ *Ivan Tam is an IT analyst in Kuala Lumpur.*

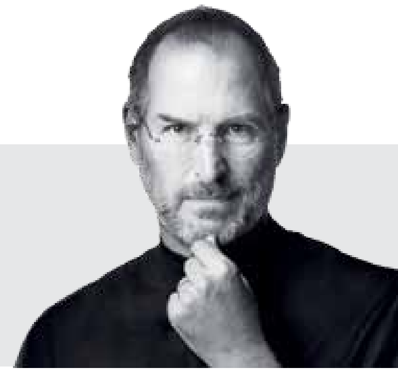
Advertorial

BY DONALD R. VAN DEVENTER, SURESH SANKARAN & CHEE HIAN TAN

A UNITED APPROACH TO CREDIT RISK-ADJUSTED RISK MANAGEMENT

IFRS9, CECL & CVA

RESEARCH INDICATE FINANCIAL INSTITUTIONS **REQUIRE A MORE ACCURATE APPROACH** TO TRULY CAPTURE CREDIT RISK.



"It doesn't make sense to hire smart people and then tell them what to do. We hire smart people so they can tell us what to do."

Steve Jobs, from Steve Jobs: His Own Words and Wisdom

$$K_{\text{spread}} = \sqrt{\left(\rho \sum_{c} \left(S_c - \sum_{h \in c} r_{hc} S_h^{\text{SN}}\right) - \sum_{i} S_i^{\text{ind}}\right)^2 + (1-\rho^2) \sum_{c} \left(S_c - \sum_{h \in c} r_{hc} S_h^{\text{SN}}\right)^2 + \sum_{c} \sum_{h \in c} (1 - r_{hc}^2)(S_h^{\text{SN}})^2}$$

Basel Committee on Banking Supervision (BCBS), Consultative Document 'Review of the Credit Adjusted Valuation Risk Framework', July 2015.

We open with a well-known but often ignored piece of advice from the legendary Steve Jobs.

The second quotation, courtesy of the BCBS, shows what happens in banking regulation and credit risk management when Steve Jobs' advice is ignored. On this note, we explain how the modern framework for credit risk management was established by Robert A. Jarrow, Stuart Turnbull, and Kaushik Amin in three key articles during the 1992 through 1995 period. If this now 25-year framework is intelligently applied, the proper valuation formulas for credit-adjusted valuation are both simpler and more accurate than the ad hoc expression for "K_{spread}" shown above.

We use this framework to illustrate the well-established peer-reviewed approach to credit risk that represents best practice in financial economics as of this writing. We contrast this against the ever-changing ad hoc formulae for credit valuation adjustment (CVA) emerging from Basel.

CREDIT RISK-ADJUSTED VALUATION: THE BASICS

In this section, we summarise the key results of some classic works in financial theory by Heath, Jarrow and Morton (1992), Amin and Jarrow (1992), Jarrow and Turnbull (1995), Jarrow (2001), and Chava and Jarrow (2004). While many other famous financial economists have contributed greatly to credit risk research, we focus on these articles in the interest of brevity.

Common sense and solid academic research confirm these essential elements of credit risk-adjusted valuation:

+ **The risk-free valuation curve** is driven by many random factors. It is not best practice to assume rates are constant or to assume one factor is enough to capture variations in the risk-free curve. Heath, Jarrow and Morton (1992) is the definitive multi-factor work in this regard.
+ **The marginal cost of funds** to the owner of the defaultable security (we use this term broadly) is irrelevant. The price of the defaultable security depends on the interaction of many market participants who most likely agree on only one yield curve: the risk-free curve. Bankers and bank regulators, used to the funds transfer pricing concept in bank interest rate risk management, share the blame for assuming that the bank's cost of funds drives the pricing on the debt of a risky borrower. If the bank were a monopolist, that may be true, but that's not the case. Nowhere in a respected financial journal is the funding yield curve of the owner of a defaultable security used in valuation. Jarrow and Turnbull (1995) provide the original valuation framework for valuing risky debt in a multi-factor random interest rate environment.
+ **Many macroeconomic factors** vary randomly and securities based upon these macro factors are often traded in the market place. Amin and Jarrow (1992) explain how these traded macro-factor-related securities are priced.
+ **The default probability of the debt issuer** varies randomly over time as a function of the risk-free yield curve, macro factors, and idiosyncratic incidents that are unique to the issuer. Jarrow (2001) expands on Jarrow and Turnbull (1995) in this regard.
+ **The recovery rate,** conditional on default, varies randomly also as a function of a similar, overlapping list of macro factors. This causes the often-observed correlation between default probabilities and loss given default, defined as one minus the recovery rate expressed as a percentage of a bond's par value.
+ **The interaction** of all these factors impact the price of the defaultable security in a straightforward way, as explained in Jarrow (2013).

CREDIT SPREADS: PUTTING THE CART BEFORE THE HORSE

In a recent paper, van Deventer and Sankaran (2016) explained the model risk in using credit spreads to derive bond prices because of the large number of false assumptions underlying the credit spread assumption. The proper procedure is to use the approach we demonstrate below to value the credit risky security, and then, given the price, the credit spread is known with certainty. van Deventer and Sankaran used bond prices from Lehman Brothers on 15 September 2008 to illustrate the problems with the calculation assumptions used to derive spreads:

+ **The corporate bond will pay its full**

principal amount (this argument is false: the bond is defaulting and will pay its recovery value). In the Lehman case, the average bond price is 33.80, with a relatively small standard deviation of 1.60 over the 22 bond issues. If we say that the recovery amount is roughly 33.80, the assumption that the bond will pay 100 is grossly wrong and overstated.

- **The full principal amount will be paid at maturity** (false: the recovery amount will be paid upon resolution of bankruptcy proceedings in court. The longest maturity bond from Lehman is 2027, but most of the recovery payments to Lehman bondholders have already been made).
- **All interest coupons will be paid** (false: only those interest payments prior to the bankruptcy filing on 15 September 2008 will be paid).
- **Bonds of different maturities and coupons have different cash flows** (false: they have identical cash flows upon default; interest payments are zero and the principal that will be paid is the recovery amount; and the payment date is the date (or series of dates) that recovery payments are made after the bankruptcy is resolved in court).
- **Credit spreads are constant for all periods prior to maturity of bond k** (false: they vary by maturity for firms that are not near bankruptcy).
- **Credit spreads for bond k are different from bond j if they have different maturities, but these constant spreads are inconsistent from time zero to years to maturity** = min(j,k). To give a specific example, the credit spread formula implies that the credit spread is 16.96% for the 2027 bond but 45.23% for the bond due in January 2012. In short, for the period from September 2008 to January 2012, the spread formula implies that the coupons for the 2012

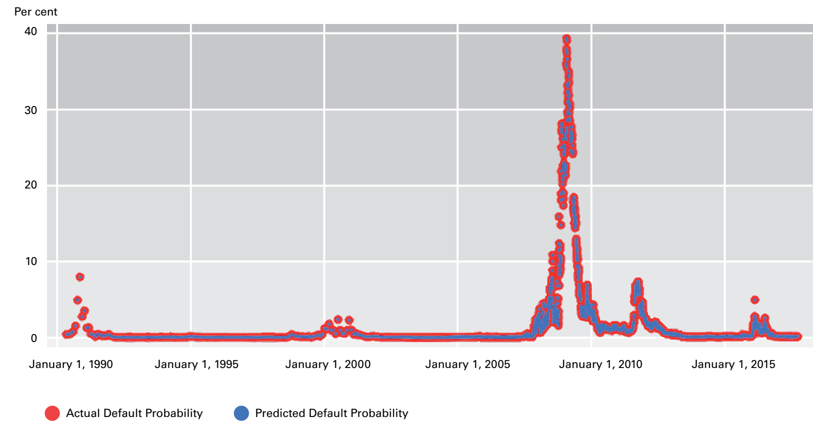


Figure 1: Predicted versus Actual Bank of America Three Month Default Probability Generalised Linear Methods with Logistic Link Function & HAC Standard Errors Annualised Per cent Basis, KDP-Jarrow Chava Version 6.0
Source: Kamakura Corporation, TRACE, MarketAxess, US Department of the Treasury

Table 1

Scenario Code	Scenario Number	Value of B, the Money Fund	Gross Payment Owned by BAC	Recover Rate	Net Amount Received from BAC	Default Probability	Probability of No Default	Scenario Probability	Default Adjusted Probability of Occurrence	Probability-Weighted NPV of Scheduled Payment	Probability-Weighted NPV of Actual Default Adjusted Payment
1ND	1	1.015	50		50	12.00%	88.00%	20.00%	17.60%	8.670	8.670
1D	1	1.015	50	45.00%	22.5	12.00%	88.00%	20.00%	2.40%	1.182	0.532
2ND	2	1.021	16		16	4.00%	96.00%	20.00%	19.20%	3.009	3.009
2D	2	1.021	16	35.00%	5.6	4.00%	96.00%	20.00%	0.80%	0.125	0.044
3ND	3	1.035	0		0	2.00%	98.00%	20.00%	19.60%	0.000	0.000
3D	3	1.035	0		0	2.00%	98.00%	20.00%	0.40%	0.000	0.000
4ND	4	1.042	0		0	1.00%	99.00%	20.00%	19.80%	0.000	0.000
4D	4	1.042	0		0	1.00%	99.00%	20.00%	0.20%	0.000	0.000
5ND	5	1.049	0		0	0.50%	99.50%	20.00%	19.90%	0.000	0.000
5D	5	1.049	0		0	0.50%	99.50%	20.00%	0.10%	0.000	0.000
		Total							**100.00%**	**12.986**	**12.255**

12.255 is the risk-neutral value when myu is zero and there are no liquidity adjustments. This is also the IFRS9 value.
12.986 is the risk-neutral value when myu is zero and default risk is zero.
0.732 is the credit valuation adjustment.

***Note:** Bank of America (BAC)*

bond have a spread that is almost 30 percentage points higher than the 16.96% spread that applies to coupons covering the same time period on the bond due in 2027. This inconsistency is nonsensical.

+ **The risk-free yield is constant for all periods until the risk-free bond's maturity** (false: this is a well-known problem with the yield to maturity calculation). Even for the risk-free curve, the yield to maturity for bonds of different maturities implies different discount rates during the overlapping period when both bonds are outstanding.

A WORKED EXAMPLE

Using standard econometrics and statistical procedures, the random factors that drive the risk-free yield curve and macroeconomic factors are determined, and their volatility is established. Kamakura Risk Information Services is among the vendors providing this service. Best practice is to allow these factor volatilities to vary depending on the history of the driving factors. For example, higher interest rates usually lead to higher interest rate volatility, subject to a cap for reasons suggested by Heath, Jarrow and Morton (1992). The parameters are set so that the entire risk-free yield curve is correctly priced. Moreover, all traded securities that depend on macroeconomic factors will also be correctly priced.

We consider the case of a derivative security where Bank of America is the defaultable counterparty. We assume that the payments owed by Bank of America on the derivative security vary randomly according to still another overlapping set of macro factors. This causes correlation with Bank of America default probabilities, recovery rates, and the discount rates used for valuation.

To illustrate the part of the calculation which would be new to many readers, we fit a function which links future Bank of America's three month default probabilities as a function of macroeconomic shocks to the risk-free curve, the Standard & Poors (S&P) 500, Brent oil prices, the Case-Shiller 20 City Home Price index, gross domestic product (GDP) growth and the unemployment rate. The actual annualised three-month default probabilities are shown as red dots, and the predicted default probabilities are shown as blue dots **(Figure 1).**

Four points on the risk-free U.S. Treasury yield curve were statistically significant: the idiosyncratic movement of three month forward rates with maturities in six months, 10 years, 20 years, and 30 years. The statistically significant macroeconomic factors were idiosyncratic shocks to the return on the S&P 500 index, GDP growth, and the unemployment rate. The regression technique was generalised linear models (maximum likelihood) using a logit link function. There were 1,722 overlapping observations of the Bank of America unannualised three month default probability at 91-day intervals. To correct standard errors for the overlapping periods and differences in data periodicity, we used the HAC (heteroscedasticity and autocorrelation consistent) standard errors based on the Newey-West technique with 91-day lags. The sample consisted of daily observations from 1990 through 29 September 2017.

The adjusted r-squared of a linear regression linking predicted and actual three month default probabilities had an r-squared of 93.45%. Additional details are

Our firm has offered the Kamakura Risk Manager system since 1993. The system performs a full simulation of interest rates, macro factors, default probabilities and recovery rates. Up to 1 billion scenarios and 1 million risk factors can be simulated forward for 999 user-defined calendar date ranges.

available from the author.

While the example above is too simple to fully exploit the insights of macro-factor drivers of default probabilities, a full enterprise-wide credit valuation adjustment simulation would use hundreds of thousands of scenarios and include each individual credit-risky transaction. This is a common simulation by users of Kamakura Risk Manager Version 8.1. Version 10.0 will be made available to clients soon.

In actual practice, parameters of the models used would be fitted both to history and to current market prices such that the full risk-free yield curve and traded macro factors would be priced perfectly in a large-scale Monte Carlo simulation.

A simple table showing the payoffs according to five major scenarios, all of which are subject to a default/no default sub-scenario, is given as **Table 1.**

The scenarios are labeled 1ND (first scenario, no default), 1D (first scenario, default) and so on. The gross payment owned by Bank of America on the derivative, the recovery rate, and the default probability of Bank of America are all dependent on the simulated risk-free yield curve and relevant macro factors in each of the five scenarios. The probability of each major scenario, using typical Monte Carlo simulation procedures, is equal for all five scenarios at 20%. The probability is modified by multiplying the (random) probabilities of default/no default in each macro scenario. The probability of cash flow in scenario 1ND is 20% x 88%, or 17.60%. The probability of cash flow in scenario 1D is 20% x 12%, 2.40%. The total of the probabilities of scenarios 1ND and 1D must be 20%, of course. The total of the probabilities for all of the 10 sub-scenarios must be 100%.

The credit-adjusted amount received from Bank of America, of course, depends on whether the bank defaults. In scenario 1ND, the full USD50 scheduled amount is received. In scenario 1D, only the random recovery rate (45% in this scenario) times the scheduled amount (50) is received i.e. USD22.50.

In the last two columns, we discount the scheduled payment by dividing the simulated future value of USD1 invested in the risk-free short-term interest rate until the payment date. In both scenarios 1ND and 1D, this money fund value is 1.015. In the second column from the right-hand side, we discount the scheduled payment and ignore defaults. We weight the discounted present values by their probability and add them together to get a 12.986 value for the derivative security, assuming no credit risk. The right-hand column discounts the amounts net of the impact of default, for a credit-adjusted value of 12.255. The difference between the two values, 0.732, is the credit valuation adjustment, done correctly.

PRACTICAL ENTERPRISE SCALE IMPLEMENTATION

Before turning to large-scale implementation, we owe it to readers with a background in theoretical finance to explain that we prefer to make the assumption that the risk-neutral probabilities of default (used in the table) and the empirical probabilities of default (estimated using historical data) are equal. We refer readers to a classic paper by Jarrow, Lando and Yu (2005) for the theoretical justification.

For implementation on a full balance-sheet-wide basis, one would use a modern enterprise-wide risk management system combined with state of the art "reduced form" default probabilities. Our firm has offered the Kamakura Risk Manager system since 1993. The system performs a full simulation of interest rates, macro factors, default probabilities and recovery rates. Up to 1 billion scenarios and 1 million risk factors can be simulated forward for 999 user-defined calendar date ranges.

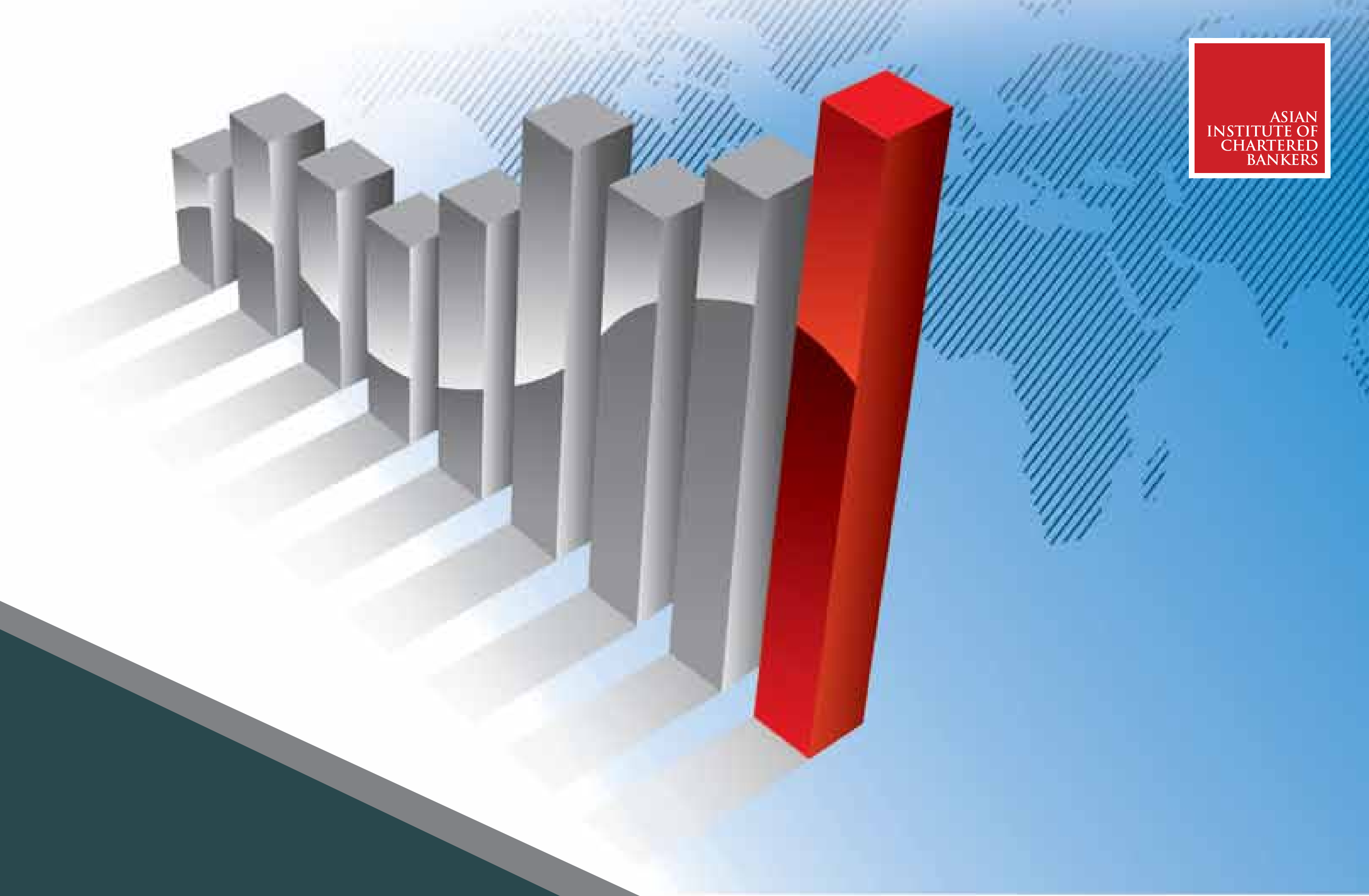
In preparation for this article, we used default probabilities from Kamakura Risk Information Services. The most recent public firm model covers 39,000 public firms in 68 countries. The US Bank model covers 5,786 banks insured by the FDIC. Kamakura Risk Information Services also includes default probabilities for 183 sovereigns and millions of non-public firms. The credit valuation adjustment for every relevant transaction and the related capital requirements from the credit risk being absorbed would be measured using a single integrated credit-adjusted value-at-risk simulation.

Conclusion

Regulators and accountants have often violated Steve Jobs' advice when putting together banking regulations and accounting pronouncements. The proper procedures are much more straightforward that the initial quote from the Bank for International Settlements (BIS), and they are much easier to implement on a massive scale than the ad hoc BIS procedures.

It is important to remember that both accounting standards and banking regulations set **minimum** standards, not **maximum** standards designed to restrict the maximum accuracy that a firm can achieve. ✱

■ *Donald R. van Deventer, Suresh Sankaran, and Chee Hian Tan are with Kamakura Corporation Honolulu, Singapore and Singapore, respectively.*



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