SWIFT Institute at Sibos 2016 Geneva

A summary of our research so far

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CONTENTS

Welcome to Geneva.
Welcome to Sibos.
Welcome to SWIFT Institute.

Knowledge is the cornerstone of any business and any business decision. Here at the SWIFT Institute we aim to provide that knowledge through our sponsored research.

This book contains summaries of 22 SWIFT Institute sponsored research projects, ranging from RMB internationalisation to blockchain. We also provide a brief overview of all our sponsored research projects currently underway and when they are due for completion. Sign up for updates on our website (www.swiftinstitute.org) so that you automatically receive updates on all new research published, as well as events beyond Sibos where we provide a forum for academia and industry participants to mix.

To help you navigate your week in Geneva we have colour coded the research papers according to the streams taking place throughout Sibos. Of course many of the research papers overlap several streams.

While you're here at Sibos you will also have the opportunity to meet and hear from some of the academics featured in this book. Throughout the week we will be hosting a number of SWIFT Institute Talks on the SWIFT stand. We are bridging the gap between academia and the financial industry by bringing leading academics from some of the world's best universities (and those working in industry) to lecture on their areas of expertise.

The full schedule for the SWIFT Institute at Sibos is on page 56. Of course it's not all about work, work, work. We like to have a bit of fun as well. On Monday afternoon we will be hosting our Sibos game show, A Question of Finance. See two teams, each with a mix of academics and financial industry professionals, battle against each other to see who is smarter. Immediately following A Question of Finance, there are cocktails on the SWIFT stand – all are welcome!

I trust you'll enjoy reading these summaries, and hope you seek out the full research papers on our website. Feel free to share them.

Finally, I would like to thank SFI (Swiss Finance Institute) who have helped to shape our programme at Sibos Geneva, and FAA (Finance Accreditation Agency, Malaysia) who have kindly sponsored this book.

I look forward to meeting you this week at the SWIFT Stand for the lecture series.

"I trust you'll enjoy reading these summaries, and hope you seek out the full research papers on our website. Feel free to share them."

Peter Ware
Director, SWIFT Institute

Summary of SWIFT Institute Working Paper No. 2012-007

A Dynamic Stochastic Network Model of the Unsecured Interbank Lending Market

The interbank lending market is an important part of the wholesale funding market in which banks extend loans to each other. Such loans are negotiated bilaterally between banks. The interbank market is crucial for two reasons. First, it is essential for the banks' day-to-day liquidity management. Second, the interbank lending market marks the first step of the monetary transmission mechanism which allows central banks to adjust interest rates in the economy. As such, central banks typically focus on steering interest rates in the interbank lending market as a means of altering credit conditions in the real sectors.

Dr. Francisco Blasques, Department of Econometrics & Department of Finance, Vrije Universiteit (VU University) - Netherlands

Falk Bräuning, Department of Econometrics, Vrije Universiteit (VU University) - Netherlands

Iman Van Lelyveld, Senior Policy Advisor, De Nederlandsche Bank

Read the full paper at
swiftinstitute.org/research

Concerns about credit risk

The drop in transaction volumes in the interbank lending market may have been a contributing factor to the financial crisis of 2007/08. In particular, worries about counterparty credit risk of banks have adversely affected credit availability in the interbank lending market and conditions in the unsecured interbank segment where loans are uncollateralised, leading to increased interbank lending spreads and a drop in lending volume. The fear of financial contagion amplified these effects.

The research developed by Blasques, Bräuning and Van Lelyveld with support of the SWIFT Institute contributes to the understanding of the role that credit risk uncertainty plays in the interbank lending market. In particular, their research attempts to describe how banks may pursue monitoring activities in order to increase the information they have about their partners and ultimately reduce the risk and uncertainty associated with lending in the interbank market. As such, the interbank market is modelled as a network where banks select counterparties to approach for borrowing, negotiate trading volumes and interest rates bilaterally and acquire information to mitigate credit risk uncertainty (peer monitoring). Interbank lending between two banks is only feasible if the lender's perceived credit risk about a borrower is sufficiently low. The model is estimated from real data by matching characteristics of the Dutch overnight unsecured interbank lending network.

Repeated lending between banks recommended

The findings of this research are relevant for central bankers and financial regulators, and subsequently the banks themselves. The research suggests that policies that reduce credit risk uncertainty might play an important role in fostering interbank lending and in re-establishing an active interbank market. Specifically they find that repeated lending between banks may significantly reduce asymmetric information and improve credit conditions due to lower credit risk uncertainty. Reduction in credit risk uncertainty may thus be achieved by widening the interest rate corridor of the central bank (discount window) to increase the spread between depositing and borrowing money from the central bank. This will reduce the attractiveness of outside options and the increased use of interbank lending will lead to more informed choices, leading to lower rates.

"The research suggests that policies that reduce credit risk uncertainty might play an important role in fostering interbank lending and in re-establishing an active interbank market.

Keeping Blockchains Decentralised - The Miner's Dilemma

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Ittay Eyal, Research Associate, Computer Science and Associate Director, Initiative For Cryptocurrencies and Contracts (IC3), Cornell University - USA

Years of cryptocurrency research have culminated in 2008 with the creation of Bitcoin. It is a protocol that allows thousands of servers, spread around the globe, with no central coordination, to implement a digital currency. Despite the adversarial settings, Bitcoin has demonstrated its reliability and resilience against attacks, and was subsequently followed by many systems that use its innovative protocol. The prowess of Bitcoin's underlying protocol, called blockchain, has also attracted financial industry interest. Blockchain-related startups were funded by over $1B, and the world's major banks and financial institutions are exploring uses of blockchains to improve existing processes and facilitate novel ones.

Behind the scenes, the security of blockchain systems is based on the operation of miners servers that actively participate in the protocol and share the control of the system in proportion to the computational power they offer. These servers often form coalitions called mining pools. Mining pools are an essential part of almost all blockchain-based ecosystems. They enable many small miners to operate at a reasonable business risk. However, they also pose a risk to the currency, as successful open pools have been able to grow dangerously big in the past. When a mining pool becomes too large, it comes to possess control of the system beyond its fair share, undermining the basic premise of decentralisation. Until now, there have been few forces to counteract this phenomenon. Gavin Andresen, chief scientist of the Bitcoin Foundation, has repeatedly urged miners to use smaller pools, and researchers, including ourselves, have suggested technical fixes to reduce pool size. But alas, community pressure has only had limited success, and technical solutions are still under development and far from production.

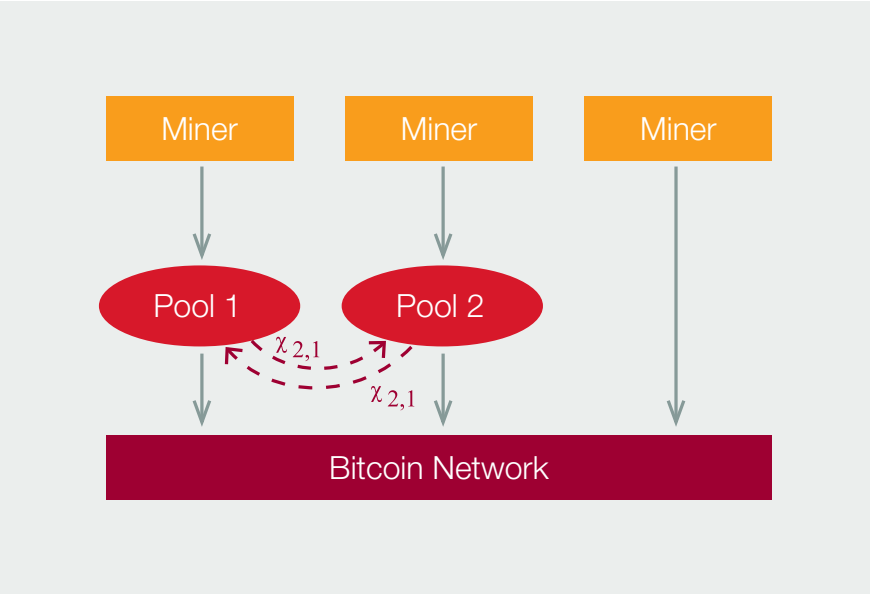

Figure 1: At equilibrium, any two pools would infiltrate each other, leading to a tragedy of the commons where both suffer reduced revenue.

The miner's dilemma

Our work shows that all this might not be necessary. In our analysis, which was presented in the 36th IEEE Symposium on Security and Privacy in 2015, we show that open pools face what we call the miner's dilemma - a version of the prisoner's dilemma where pools can choose whether to attack or leave each other alone. We find that any open pool can increase its own profits by attacking other open pools. However, if both attack each other, both earn less (Figure 1). It is well-known that a pool can attack another open pool by pretending to work on its behalf, and thereby taking a cut out of its proceeds, but never contributing by discovering blocks; this is the classic block withholding attack. Until recently, it was believed that block withholding cannot increase the attacker's profits. We show that in a variation of the attack we call pool block withholding, with careful tuning, the attack is directly profitable. Taking a common distribution of Bitcoin pool sizes, we observe that an attacker can increase its revenue by several percent. Since block withholding attacks are not prevalent, at least as far as we know, we can surmise that pools make the right choice and agree to refrain from attacking each other. However, our analysis shows that this is an unstable balance. It is worthwhile for a pool to refrain from attacking only as a part of an overall truce agreement in which it is not attacked. If a single pool starts attacking its peers, it will force them to retaliate.

Dismantling large mining pools

Once this happens, the profitability of public pools will deteriorate, leading miners to choose other pooling options, for example closed pools of miners that trust one another. Such trust circles are naturally going to be much smaller than open public pools. The dismantling of overly large pools will bring cryptocurrencies to a safer footing than what we have today, where a handful of large pools dominate mining. The dismantling of overly large pools is one of the most important and difficult tasks facing the cryptocurrency communities. Our analysis shows that short-term incentives can cause this dismantling to occur spontaneously, making blockchain infrastructures more distributed, and so more robust and secure.

Cross-Border Low Value Payments and Regional Integration: Enablers and Disablers

Dr. Leo Lipis, Founder and CEO, Lipis Advisors GmbH - Germany

Colin Adams, Senior Consultant, Lipis Advisors GmbH - Germany

As cross-border trade continues to grow, the barriers between national payment systems are increasingly seen as obstacles to economic growth. Businesses and consumers continue to demand more speed and transparency in payments for both domestic and cross-border payments, and regional payments integration can be seen as an important step in this process. While much has been written about the development and key features of individual regional payment systems and agreements, there has been little research on the enablers, disablers, and success factors across a wide range of regional payments projects.

While no two regional projects are completely alike, there are a number of common factors that lead to the success or failure of a regional payments scheme. This paper explores nine different payments systems to determine how each defines success and what factors led to the success or failure of a regional payments integration project. The paper also includes a rubric that is used to rank the comparative success of each system.

Enablers of success

Five major enablers of a successful regional payments project are highlighted:

- the linkage of payments integration to a political goal
- having a common currency or common settlement currency
- having a centralised governance structure
- the existence of a common data standard
- ensuring that the motivations of the different stakeholders are aligned

While the form of tight payments integration that defines a successful regional project remains rare, there are a number of regions that are in various stages of pursuing this goal and an increasing amount of countries are looking to begin integration projects. Decreasing the barriers between national payment systems is a long and complex process, but there is a trend toward supra-national infrastructures, schemes, and links that are affecting economic development and cooperation around the world.

Ranking of success

When comparing the nine systems examined in the paper across the five enablers, it is possible to create a comparative ranking of overall success. While this may tend to favour systems pursuing tighter integration that are farther along in the process of regional cooperation, it provides a useful overview of the most successful regional payments integration projects from around the world. Each system was evaluated on a scale of 0-4 (each point equalling a quarter of a pie). A score of four points (represented by a completely filled-in pie) means that a system has fulfilled the criteria of that category completely, three points means that the system mostly fulfils the criteria, two points represents partial achievement, one point represents minimal implementation, and zero points means that a system has not met or fulfilled the criteria of that category.

Benefits to the financial industry

Policy makers will be interested in the lessons learned from various regions, which could aid other geographies looking to integrate national payment systems. Regulators will benefit from learning about regulatory frameworks in both successful and unsuccessful regional projects and how regulators have interacted with other stakeholders in the payments value chain. And banks will gain insights into the role that commercial banks have played in the development of regional infrastructures and schemes around the world. In addition to learning about the various forms and key features of regional integration projects, readers will be able to better understand how and why a regional payments integration project succeeds or fails. With regional infrastructures, schemes, and agreements proliferating around the world, it is important to understand not only how success is defined, but how it can be achieved.

Region	Linkage to political goal	Common currency / settlement	Centralised governance structure	Common data standard	Stakeholders motivations aligned
WAEMU	●	●	●	●	●
SEPA	●	●	●	●	◕
SADC	◕	◕	●	●	◕
COMESA	◕	◑	◕	●	◔
IPFA	○	○	◕	●	●
NPA	◔	○	◕	◕	◕
SML	◑	◑	◔	◔	◑
WAMZ	◕	◔	◔	◔	◑
ASEAN	◑	○	◑	◔	◑

Source: Leo Lipis and Colin Adams

Possible areas of further research

Further research on regional payments integration could focus on exploring how a group of countries can decide on the best form of payments integration for their region. Not all countries will decide to pursue the tight forms of integration found in SEPA and WAEMU or the loose form of integration found in the IPFA. Determining the best form of integration, coupled with the success factors illuminated in this paper, could be extremely helpful for regions looking to integrate national payment systems.

Conclusion

As trade and economic cooperation become more global, it is natural that payment flows will follow. National borders are still alive and well, particularly in the payments space. But in many regions, countries are coming together to integrate their payment systems to aid economic development, increase trade, and bolster financial inclusion. In these cases, legacy correspondent banking networks are too expensive and inefficient to achieve these goals. By having a clear view of the enablers and disablers of regional payments integration, defining and setting benchmarks for success, and adopting common standards and technical guidelines, countries can come together and integrate their payment systems in a variety of ways that can improve economic strength and cooperation for all participants.

Financing the SME Value Chains

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Dr. Mahender Singh, Rector, MISI (Malaysia Institute for Supply Chain Innovation) - Malaysia

Dr. Manish Shukla, Lecturer in Operations Management, Durham University Business School - UK

Asia's economic miracle is often associated with large, multi-national companies. While these organisations have been important drivers of the region's growth, small and medium enterprises (SMEs) accounting for more than 98% of the enterprises have played a key role. These SMEs contribute around 40% to their country's GDP in the ASEAN region. In developed nations such as the USA, UK, France and Singapore, SMEs contribute more than half of their country's GDP. Addressing SMEs' needs for finance, it is assessed that formal financial lending organisations represent a weak link in the financial supply chain for SMEs in the region. The problem also hinders the physical supply chain, in that SME's are key drivers of business growth in the region.This paper proposes a framework for financial lending to allow formal lending organisations to compete with the alternate sources of finance SMEs seek.

SME finance in Asia

This research work is built upon case studies from Malaysia and India, and surveys conducted on the supply and demand of SME finance in Malaysia. A lack of collateral and limited access to venture and growth capital are some of the obstacles that SME owners face when seeking finance for their businesses. Cash flow shortages caused by long or delayed payment cycles exacerbate the problem. On the supply side, a number of issues including high transactions costs, inadequate information about borrowers and weak governance, deter large banks from developing SME lending portfolios. In the absence of bank lending options many SMEs turn to other sources of finance such as unregistered money lenders that charge high interest rates. It is realised that the local money lenders are accessible and understand the SME business model better. They are also able to keep a tight rein on costs and have developed ways to make sure that investment funds are used by borrowers for profit-making purposes.

The case studies in the research provide insights for example on how the dairy sectors SMEs borrow money to buy animals, and the lender makes the payments directly to the seller to ensure that the funds are used correctly. In addition, SMEs can arrange for their customers to pay the lender directly so the loan is serviced as agreed. Banks generally lack this type of expertise and local knowledge. In addition, they often perceive SME customers as too risky, lacking in transparency, and poorly organised.

Yet the demand for financing from the SME business sector in Asia is huge. This work identifies nine areas of demand for capital, including funds to pay for fixed assets and raw materials, to pay for seasonal periods of low demand, and to ramp up operations ahead of product launches. In addition to money lenders, SMEs typically use eight types of financing options including family and friends, micro finance institutions and owner's equity. There are also various government schemes to help SMEs find the financing they need, but the research finds that penetration is a key challenge to these interventions - these programs only reach a relatively small fraction of the total population of businesses.

Impact on growth of SMEs in Asia

The lack of affordable financing options stymies the growth of SMEs in Asia. This work suggests that banks in the region need to redesign their lending portfolios so that they are better able to evaluate and manage an SME's needs for finance. To help clarify the risks, this paper includes a grid showing how the different sources of SME financing are weighed in terms of the so-called 5Cs: capacity, capital, character, collateral and condition. It is recommended that banks should adopt more innovative ways to analyse SME loans, and gain a deeper understanding of how these enterprises fund their supply chains.

This does not necessarily require a complete overhaul of current practices; financial institutions can tap into the SME market by learning to work within current financing systems. To this end, MISI describes 11 key devices that can be leveraged to catalyse the lending process. For example, Joint Liability Groups comprise farmers with compatible businesses who come together to borrow from financial institutions. Group members can borrow individually or collectively by offering mutual guarantees for each other. Technological advances such as the growth of internet banking and electronic funds transfers can also be harnessed to facilitate SME lending. New standards such as the Bank Payment Obligation (BPO) rolled out by SWIFT and the International Chamber of Commerce (ICC) are helping to unlock IT-related advances in banking.

With mass customisation and fragmentation of manufacturing, creating a viable market for SME financing benefits both the financial institutions and the enterprises involved. Regional and global supply chains also benefit in that there is an increasing need for sustainable and financially viable SMEs in Asia. This work thus addresses the factors responsible for widening the supply–demand gap for SME finance by studying the flow of finance through SME supply chains.

The Internationalisation of the RMB: New Starts, Jumps and Tipping Points

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Peter G. Szilagyi, Central European University, Associate Professor Finance, University of Cambridge - UK

Currency internationalisation provides significant economic benefits to a country's residents. However, what makes a currency international and how should one measure internationalisation? The simple answer to the first question is to consider its role in cross-border transactions, both trade and capital account, and as a reserve currency. The economic size of a home country, the flexibility of its exchange rate, and the stability of its economic and political institutions are also important determinates in the scale and scope of currency usage. We will also show that wide-usage is also characteristic of an internationalised currency. In other words, in order for a currency to be international it must be used by everyone and accepted everywhere to transact cross-border business.

The answer to the second question is more complex in that researchers have been limited to traditional sources of macroeconomic statistics, typically the quarterly international banking, trade and currency statistics, collected by international organisations such as the International Monetary Fund (IMF) and the Bank for International Settlements (BIS).

In this paper we approach the measurement of currency internationalisation by considering the single most important component of internationalisation: its role in international trade and capital account settlement. More specifically, we use monthly aggregated data provided by the Society for Worldwide Interbank Financial Telecommunication (SWIFT) to investigate the degree of internationalisation of the currency of the People's Republic of China (henceforth simply China) termed the renminbi (RMB).

We are able to utilise a host of RMB financial variables: usage in foreign exchange, international fixed income and money markets, as well as for trade settlement, previously unavailable to earlier researchers. Importantly, the currency usage in international trade and finance suggested by the SWIFT variables is consistent with benchmark surveys by institutions such as the BIS, while the SWIFT data has the advantage of being available at a higher frequency and with greater cross-border detail.

Internationalisation of the RMB

Much attention has been directed towards the economic rise of China, whose economy has shown stellar growth in the recent past and momentum that analysts agree will likely propel China to become the world's largest economy sometime after 2020. But what role will its currency play in this new world order and how widespread is RMB usage now? We also provide a more detailed statistical assessment that better enables the tracking of the degree of internationalisation of the RMB.

One key question addressed in this study is the appropriate way to measure the degree of currency internationalisation of a currency? For example, should the RMB's degree of internationalisation simply be measured relative to the holdings of RMB by central banks, or its use in trade and portfolio transactions? Clearly all these factors are important. While our analysis considers RMB denominated transactions across these single areas, a key contribution of this work is that we tackle the measurement problem differently to other researchers. Our approach borrows from the literature on financial market integration and international asset pricing to consider the degree of internationalisation in terms of the sensitivity of the covariance structure of a set of RMB financial variables to transactions in all currency markets.

Our analysis shows that the correlations between all SWIFT messages are generally low and are not statistically significant, although there are some exceptions, such as the relationship between bank transfers and trade, which is highly correlated (about 52%). Similar relationships hold for transactions in RMB, although the previously mentioned exception has a higher correlation (of 0.73%), the likely consequence of recent regulatory reforms that expanded market access by all participants. We rely on the relatively low correlation levels between monthly changes in the SWIFT messages investigated and the fact that monthly changes in log values are essentially random, with a mean close to zero, to undertake statistical analysis of a set of SWIFT messages in the context of portfolio theory. This approach also enables us to track the sensitivity of single RMB components to international and domestic developments despite the restrictions that exist with the limited times-series history of our data.

This approach differs from an internationalisation index based on the adding of underlying trade, banking or currency ratios, and provides an alternate perspective to various measures already developed by various practitioner organisations that tend to focus on single measures such as trade settlement or currency use as a vehicle for trading. Subject to data availability this measure could be applied historically to enable an assessment of the impact of policy decisions and reform aimed at enhancing currency use in global markets.

Tipping point for RMB?

Our approach benefits from the higher frequency SWIFT data and so provides an insight into whether there is a "tipping point" for RMB internationalisation. For example, does the usage of a currency for pricing commodities and trade increase monotonically over time, or does a certain level of usage (the tipping point) cause the currency to become more widely used? We show that when comparing the rate of change in the value of various SWIFT messages worldwide to those denominated in RMB, the relationship is positive, which is consistent with the wider usage of the RMB worldwide, although the recent pace of usage is now more consistent with worldwide macroeconomic developments.

Overall, our results show that the RMB has definitely internationalised in recent years, with both single and aggregate measures changing in response to recent deregulatory measures. Anecdotal evidence suggests that a tipping point has not yet been reached. If anything our results highlight the effects of declining momentum. It is important to note that other emerging currencies, such as the Indian rupee and the Brazilian real are also gaining importance internationally and are increasingly used for trade settlement especially within their local regions.

Financial centres for RMB

This study also provides insights into the existing role of international financial centres. Not surprising is our finding that RMB transactions are mostly undertaken where one counterparty is located in the financial centres of first Hong Kong, then Macau and Singapore and to some extent Taipei, where cultural and social links place them at an advantage to those counterparties undertaken in Europe. However, transactions in RMB where both counterparties are non-residents (as currently occurs in the USD Eurobond markets) are increasingly undertaken in the financial centres of London and New York, especially for foreign exchange trading and international money market transactions. Recall that London and New York are the world's primary and secondary centres for foreign exchange trading. Our findings confirm that the value of London-based RMB foreign exchange trading now exceeds transactions undertaken in Hong Kong and Singapore, which is consistent with London's pre-eminent role as the world's centre for derivatives and foreign exchange trading.

For now the results from this analysis show that the momentum of RMB internationalisation has stabilised, suggesting that China's path to RMB internationalisation will remain slow. This conclusion is consistent with many other studies, and we agree with others that argue reform initiatives must be maintained to ensure that China is able to fully capitalise upon the opportunities that are now unfolding as the international economic and political landscape shifts more towards its favour.

Modelling the Costs of Trade Finance During the Financial Crisis of 2008-2009: An Application of Dynamic Hierarchical Linear Model

In this research into the costs of trade finance during the financial crisis of 2008-2009, we attempt to shed light on the following questions:

- How can we develop a model that captures the evolution of trade finance for countries that face changing environments with very short series of data?
- How can we account for the changing effects of macro-level variables on the cost of trade finance?

We address these questions by proposing a Bayesian model that is both hierarchical and dynamic.

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Shantanu Mullick, Doctoral Candidate – Marketing, ESSEC Business School - France

Nicolas Glady, Professor – Marketing, Accenture Strategic Business Analytics Chair Holder, Director - Center for Digital Business, ESSEC Business School - France

The hierarchical Bayesian formulation permits us to pool data across different countries while providing country-level parameter estimates. Thus, although we have only a few observations for each country, we are able to combine information from other countries to obtain reliable estimates for the impact of at least some of the macroeconomic indicators. Next, to account for the evolution of trade finance costs of countries, we specify the parameters in the hierarchical model to be dynamic, that is, time-varying.

The dynamic hierarchical Bayesian model enjoys a critical advantage: it can easily be scaled up. First, we can add another level in the model hierarchy. This would permit us to study the problem at a more granular level. For example, we can analyse the time-varying effect of firm-level drivers on trade finance costs. Further, we can add more macroeconomic variables that are likely to impact the trade finance costs of a country (at present, we study the effect of four macro-economic indicators). Our model can also be applied to other syndicated loan costs and not just trade finance. As a demonstration, we show the results of applying this model to syndicated loan rates.

Countries with a higher reliance on trade, face higher costs

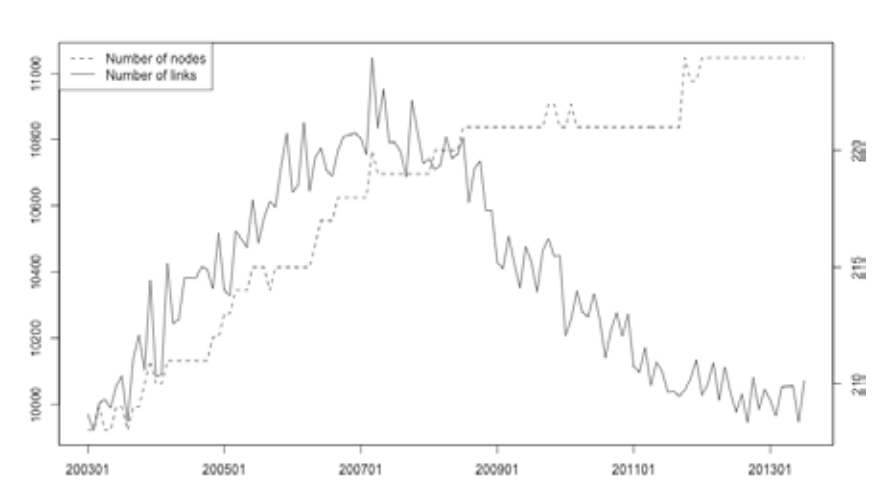
Our model estimates provide several interesting insights into the role of some of the macroeconomic variables in affecting the cost of trade finance. First, we find that for firms from countries with high GDP growth, the cost of trade finance reduces as the financial crisis approaches. Second, we find that firms from countries that have higher inflation faced higher costs of trade finance. Both these findings are consistent with the “flight to quality” theory advanced in financial literature. Third, we have the counterintuitive finding that firms from countries with higher market capitalisation (relative to GDP) face increasing trade finance costs during the crisis. Finally, we also find that countries with a higher reliance on trade face higher costs of trade finance.

The Global Network of Payment Flows

Dr. Kimmo Soramäki, Chief Executive Officer, Financial Network Analytics - UK

Samantha Cook, Senior Researcher, Financial Network Analytics - UK

The paper "The Global Network of Payment Flows" provides a descriptive analysis of the payment networks created by flows of SWIFT MT 103 messages. MT 103 (Single Customer Credit Transfer) is the most commonly-sent SWIFT message type and therefore may be a useful measure of global economic activity. In the MT 103 payment networks, nodes represent countries, directed links indicate at least one message sent from one country to another, and link weights store the number of messages sent between countries. The data form a time series of networks, with a distinct network for each month between January, 2003 and July, 2013. We begin by considering the number of countries, number of links, and total number of messages sent in each network. We find that although both the number of countries and number of messages increased fairly steadily during the period of study, the number of links in the networks increased steadily until early 2007 and then began to decrease, with the number of links at the end of the series only marginally higher than at the beginning. We hypothesise that the decrease in number of links may be related to increased banking regulations in the wake of the financial crisis.



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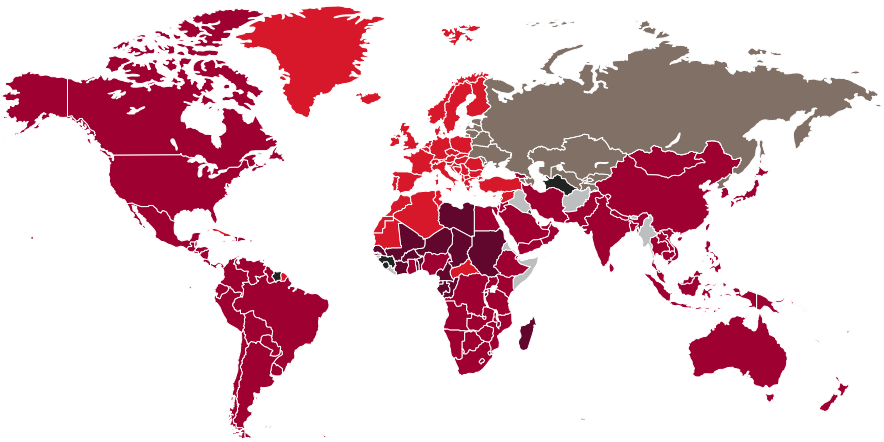


Effects of the financial crisis

We found that the increasing trend in total number of messages sent levelled off slightly during the financial crisis, eventually recovering to increase at approximately the same rate as before the crisis. Our analysis suggests that message counts are on average 5.5% lower post-crisis than they would have been had the pre-crisis trend continued unabated throughout the entire period. We also found a strong community structure in the networks, with countries in the same community more likely to exchange messages than countries in different communities. The community structure was quite stable over time, with the four largest communities roughly corresponding to Europe; the former Soviet Union; North and Central Africa; and the Americas, Asia, Oceania, the Middle East and Southern Africa. The map on figure 2 colours countries by their community classification from the most recent network.

UK links payment clusters

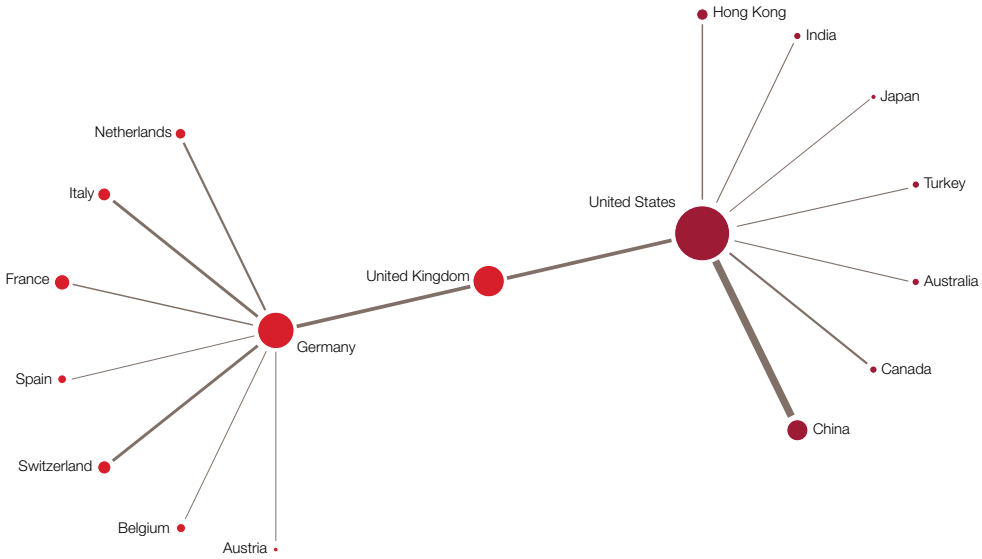
Focusing on the most recent network, we found that messages exchanged among 17 countries accounted for approximately half of the total message volume. On the subnetwork defined by these 17 countries, we calculated the maximum-spanning tree (based on the number of messages exchanged between countries), shown below, which retains only the most important links. The tree contains two clusters, one of European countries linked to Germany and another of American and Asian countries linked to the United States. These two clusters are joined by the United Kingdom, which links to both Germany and the United States, and thus acts as a bridge between the two clusters.

Our investigation highlights many directions for future research, and we hope our paper inspires more research that uses SWIFT message data for new insights into how global payment flows evolve and how they reflect or predict various aspects of the real economy.

Figure 1: Number of Nodes and links in payment networks

Figure 2: Community classification, July 2013

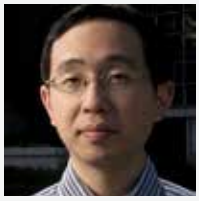
Figure 3: Maximum-spanning tree of the subnetwork containing 50% of message volume, July 2013. Countries are colored by community, as in figure 2.



Virtual Currencies: Media of Exchange or Speculative Assets?

This study uses a theoretical model and an empirical analysis to study the dynamic relationship between virtual currencies (VC) and fiat currencies (FC). The theoretical model demonstrates that the price impact of potential users and speculators in virtual currencies adversely affects their property as a medium of exchange and renders a crowding out of existing fiat currencies such as the US dollar unlikely. An empirical analysis of prices and user accounts (wallets) of Bitcoin supports the theoretical result and finds that Bitcoin is mainly used as a speculative investment rather than a medium of exchange. The analysis also shows that Bitcoin returns are uncorrelated with traditional asset classes such as stocks, bonds and commodities both in normal times and in periods of financial turmoil.

Dr. Dirk Baur, Associate Professor of Finance, Kuehne Logistics University - Germany



Dr. Adrian Lee, Postdoctoral Research Fellow, UTS Business School, Finance Discipline, University of Technology - Germany

Dr. KiHoon Hong, Postdoctoral Research Fellow, Hongik University Seoul

Is virtual currency a viable alternative to fiat currency?

The research outlines a theoretical model of the dynamic relationship of virtual currencies with fiat currencies. It describes a virtual currency competing with fiat currency and presents the main outcomes of a simulation of the model. The simulated results of the theoretical model demonstrate that:

- a relatively stable price of VC attracts potential users and tends to increase the price of the VC also attracting speculators
- any positive price trend initiated by potential users may be exacerbated by speculators but the exit of potential users due to the increased price and volatility will eventually stop the positive price trend
- an increasing price of VC implies price deflation and counterpoises the use of the currency as a medium of exchange.

Presented in the paper is empirical analysis of one of the most prominent virtual currencies, Bitcoin. It uses Bitcoin returns and user accounts (wallets) to identify the statistical properties of Bitcoin and the usage of Bitcoins. Our findings indicate that:

- the Bitcoin return distribution is not similar to other traditional asset returns and Bitcoin returns are not correlated with the returns of other assets (classes)
- there exist significant profit opportunities for Bitcoin momentum traders
- Bitcoin is both uncorrelated with FX volatility and the S&P500 on average and in periods of extreme volatility/ losses.

Bitcoin - a speculative asset

The analyses of user type and wallet balances support the findings and show that Bitcoin is primarily used as a speculative asset than an alternative currency and money. Finally, the research paper summarises the main findings of the paper and concludes that the design and the size of Bitcoin and other virtual currencies do not pose an immediate risk to existing fiat currencies or to monetary, financial or economic stability.

“The analyses of user type and wallet balances support the findings and show that Bitcoin is primarily used as a speculative asset than an alternative currency and money.

Finance Accreditation Agency

Driving Quality Excellence in the Financial Services Industry

For complementary access to the FAA Learning Standards, please visit www.faa.org.my or email info@faa.org.my

About FAA

The Finance Accreditation Agency (FAA) is responsible for the consistency and quality assurance of professional learning and development in the financial services industry. As an advocate for the highest quality in internationally benchmarked standards for learning programmes, FAA aims to create highly skilled and internationally mobile professionals for the global financial services industry.

FAA is an independent quality assurance and accreditation body supported by Bank Negara Malaysia (Central Bank of Malaysia) and Securities Commission Malaysia and executed by a committee of technical experts, industry professionals and leading academics from the international financial services industry.

Purpose

To empower organisations and individuals in the financial services industry with consistent and high-quality learning and development through the use of proprietary tools and learning standards.

What We Offer

Through the accreditation of financial learning programmes across the globe, we are developing a consistent learning and development experience for finance professionals that elevates the industry by creating sustainable practices that create globally accepted learning standards.

Organisations empowered with knowledge based on our internationally benchmarked learning standards will be able to make use of their talent across borders and jurisdictions, making it more practical for organisations to function in a dynamic, global market.

Our accreditation process is simple and intuitive for organisations, whilst the analysis conducted by our accreditation body is rigorous but fair. The in-depth analysis of each programme ensures that they are current, practical and consistent.

Our accreditation body, made up of an international team of technical experts, industry professionals and leading academics, enables us to maintain and recommend the highest quality in standards. To maintain a global outlook and qualifications that translate across borders, we have made sure that our accreditation body comprises members from major financial centres of the world.

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The Finance Accreditation Agency (FAA) is an independent quality assurance and accreditation agency established to look specifically into the quality of learning and development in the financial services industry.

The Finance Accreditation Agency

The Finance Accreditation Agency (FAA) is an independent quality assurance and accreditation agency established to look specifically into the quality of learning and development in the financial services industry. Founded in 2012 under the stewardship of Bank Negara Malaysia (the Malaysian Central Bank) and the Securities Commission Malaysia, FAA offers quality assurance and accreditation services to enhance the quality of learning and development in the financial services industry. FAA supports financial institutions with human capital development through the provision of learning standards for the financial services industry, the accreditation of learning programmes, trainer certification and the assessment of prior and current knowledge and skills of finance professionals.

FAA's technical committee and panel of assessors comprise industry experts and leading academics from the major financial centres. Headquartered in Kuala Lumpur, FAA is in the process of expanding its global footprint to widen and facilitate its services to other regions.

FAA Learning Standards

The FAA Learning Standards are a suite of reference materials for learning programme design, development and delivery. The FAA Learning Standards cover six sectors: Banking, Insurance, Capital Market, Islamic Banking, Takaful and Islamic Capital Market.

Programme Accreditation

FAA Programme Accreditation allows professional training providers to submit learning programmes for independent assessment of their design, development and delivery. Our panel of international assessors are made up of leading academics and technical experts who provide invaluable feedback to ensure learning initiatives meet learning outcomes and are of high standards.

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FAA's Certified Training Professional course is a 5-day certification that equips participants with the latest skills, knowledge and methodologies in design, development and delivery of learning programmes for finance professionals.

FAA Recognition of Learning

A process to assess and recognise prior and current knowledge and skills acquired by individuals in the financial services industry (FSI) to ascertain their competency levels, FAA Recognition of Learning helps in human resource planning, analysis and development.

FAA has also produced a Research Report to collate concrete industry feedback on talent development in the FSI, particularly Islamic Finance. The report addresses key issues regarding human capital development which are crucial to the sustainability of the industry. It is our aim that policymakers and finance professionals will derive useful insights from the findings to support the agenda of creating the talent pool to advance the FSI. To this end, FAA would like to thank SWIFT Institute for this collaboration in sharing our report in its publication and hopes that research such as this continues to contribute towards a more resilient and robust industry.

Summary of SWIFT Institute Working Paper No. 2012-005

BANKING CULTURE SECURITIES COMPLIANCE

The Prospects for a Common Language in Wholesale Financial Services

In this paper, Milne and Chisholm examine the idea of a common financial language (CFL) from both conceptual and practical perspectives. This subject has attracted a great deal attention from both policy makers and practitioners. One example is the widely cited 2013 speech of Bank of England chief economist Andy Haldane, arguing that financial services would benefit from similar standardisation to that which has taken place from the use of bar-coding in global supply chains and from HTML and other protocols in the Internet and world-wide web. Another is the efforts of the Enterprise Data Management Council (EDMC) to develop a 'Financial Instruments Business Ontology' (an ontology is a complete statement of the meaning of technical terms and the relationships between them) that could be used as a foundation for automated and efficient processing of all financial transactions.

Alistair Milne, Professor of Financial Economics, Loughborough University School of Business and Economics - UK

Malcolm Chisholm, AskGet.com Inc. - UK

Read the full paper at
swiftinstitute.org/research

The concept of a common financial language

Milne and Chisholm begin with a critical analysis of the concept of a common language. This question, understanding the nature of language and how meaning is shared and communicated, has been a major challenge for philosophers through the ages. Many argue with Aristotle that language is an essentially a mechanical construct based on classifications of objects and the relationships between them. This is the view implicitly adopted by FIBO. Many others, including for example Plato and Wittgenstein, challenge this view suggesting that the use of language is dynamic (speakers and writers searching for true underlying meaning i.e. Plato's forms) and contextual (Wittgensteins 'language games' where meaning is socially derived). From the perspective of practical finance it is essential to be aware how language varies for different functions within firms, across industry segments and sub-markets, from one jurisdiction to another and over time.

Milne and Chisholm find that there can only be a single CFL to the extent there is a single underlying and unchanging financial reality; but since in reality finance is not unchanging this is more of an ultimate goal, not an immediate practical proposition. Potential efficiency and risk-management benefits from developing greater CFLs are large especially in data management; but in practice CFLs may be confined to a limited number of shared concepts and approaches; with fuller agreement on definitions and relationships for use by particular 'communities of interest' within firms and in specific operational processes, where practitioners engage together in shared process and communications. The best that can be hoped for is an evolution over time to greater commonality amongst these languages. A CFL will be a process of gradual evolution and adoption, not a single linguistic revolution.

Practical challenges

This perspective that there will be no rapid adoption of a single common financial language is reinforced by Milne and Chisholm's examination of the practical challenges of employing a common financial language to extract and process data from relational databases, for example for a loan portfolio. Internal design priorities for the organisation of databases have led to widespread violation of the usual hierarchical classifications assumed in 'ontological' constructs such as FIBO, making it very difficult to translate the data contained into these databases into a single common financial language (see Figure 1 in the paper). This difficulty is made even greater by the widespread departures from general principles of database design -- almost every database has its own unique structure i.e. its own internal language relationships. Some commonality of language can be achieved by using so called 'semantic adaptors', but this is not a true single CFL since a different adaptor is needed for every database (see Figure 2 in the paper).

The difficulties of achieving a CFL are illustrated by the substantial but ultimately failed effort in the 1980s and early 1990s to establish Corporate Data Models that would unify all the business information held by a particular company. Even today establishing a single data model for an entire industry (which is what a single CFL would amount to) seems an impossible task. It is though possible that new emerging and more flexible approaches, for example in the storing of 'big data' will alleviate these problems, and make it possible to move closer to a common financial language, but again this will be a process of gradual evolution not a one-time revolution.

Case studies

Milne and Chisholm conclude with a brief summary of three 'case studies' of common financial language: the FIX protocol, ISO 20022 the meta standard for creation of financial messages, and the recently established Global Legal Entity Identifier (GLEI) system. In each case there has been considerable progress towards a more common financial language, with standardisation yielding substantial gains in terms of improved operational efficiency. But achieving this degree of standardisation in messaging and data is no easy task, it is one thing to create common language, the much bigger challenge that necessarily takes time, effort and resource is ensuring that the common language is widely adopted. Real progress is being made but it is clear that a common financial language is a journey, a process that will continue for many years, and we are still far from the final destination.

Summary of SWIFT Institute Working Paper No. 2013-001

Theory of Optimum Financial Areas: Retooling the Debate on the Governance of Global Finance

Financial market disintegration is the defining feature of the European economic crisis. European financial disintegration started during the 2007 liquidity crunch that resulted in the run on Northern Rock; it gained momentum with the near failure of Bear Sterns, the collapse of Lehman Brothers, and the onset of the Greek sovereign debt crisis; and it finally culminated in the summer of 2012 when strains on banks and sovereign debt markets in Spain and Italy threatened to undermine the euro as a monetary union. Dramatic action by the European Central Bank (ECB) succeeded in reducing tensions, but European financial markets remain less integrated today than they were before the tensions started in 2007.
The impact of this financial market disintegration on European economic performance is considerable and enduring.

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Geoffrey Underhill, Professor of International Governance, University of Amsterdam and SAIS Europe - The Netherlands

Read the full paper at
swiftinstitute.org/research

Criteria for market resilience

The purpose of this research is to ask how a crisis like the one recently experienced in Europe could be avoided. The analysis focuses on the institutional requirements for stable financial market integration - where 'stable' means not easily reversed. Drawing lessons from Europe and from the experience of financial market integration within the United Kingdom, the United States and Canada, we highlight six criteria that policymakers should strive to meet in order to maximise the resilience of integrated financial markets should they come under stress. These criteria include elements that are both technical or infrastructural and macro-prudential in nature. Specifically, we argue that an integrated financial area should have:

i. a common risk-free asset (currency and debt instruments) to use as collateral for liquidity access and clearing as well as a refuge for capital 'fleeing to quality' in times of distress
ii. a central system of sovereign debt management
iii. centralised counterparties such as exchanges, clearing agents, and depositories
iv. a common framework for prudential oversight
v. emergency liquidity provision that includes lender-of-last-resort facilities for the financial system and the sovereign
vi. common procedures and orderly resolution mechanisms for financial institutions and public entities

This list of institutional arrangements is not exhaustive but it does represent the greatest points of overlap between the national cases that we examine. It also constitutes an ambitious agenda for European policymakers – including elements already present in the European banking union and likely to appear in the capital markets union being promoted by the new European Commission.

Each of the institutions we highlight contributes to the stability of financial market integration. None of these institutions is sufficient and all are controversial. Hence the goal is to provide an aspirational set of criteria (a theory of 'optimal' financial areas) and then to explain what are the consequences of choosing to ignore or reject specific recommendations. In this way, we hope to make the debate about healing European financial market disintegration more transparent and to underscore the implications of any decisions that are taken.

Focusing the debate

The advantage of this approach for the financial industry is that it highlights the continuity of concern that runs from market infrastructure through macro-prudential oversight. In other words, it places the practical requirements of the financial sector at the centre of the analysis, rather than focusing on more abstract considerations related to the 'optimality' of the euro as a monetary union. There are at least three reasons for insisting on this change in the focus for debate:

- The forces behind the crisis are financial and not monetary; they originated in the United States and propagated across all parts of Europe.
- The countries that have been most affected are not only in the euro area; they include smaller countries like Iceland and the Baltic States, and middle sized countries like Hungary and larger countries like the United Kingdom. Having a national currency may have helped in responding to the crisis but it offered little or no insulation from financial market disintegration.
- The challenge facing Europe cannot be resolved through sole reliance on monetary instruments. European policymakers need to rebuild confidence in European financial markets and that can only be achieved through sound institutional arrangements.

Benefits to the financial industry

What is true for Europe is true elsewhere as well. A theory of optimal financial areas could be applied to other parts of the globe where national policy makers seek to integrate financial markets either within or across national boundaries. This project offers the opportunity to help those policymakers engage in a transparent debate about the institutional preconditions for stable financial market integration. It offers them a checklist of best practice and a cautionary note about the costs of non-compliance. Such a debate would be useful in the ASEAN region. It could also help policymakers in Africa, Latin America and China. Most important it focuses attention on how the financial industry should be brought into the conversation in order to share best practice and to strengthen institutional design.

Summary of SWIFT Institute Working Paper No. 2013-005

Macroprudential Oversight, Risk Communication and Visualisation

Peter Sarlin, Associate Professor at Hanken School of Economics, Director at RiskLab Finland - Finland

The policy objective of safeguarding financial stability, which is addressed through macroprudential oversight of the financial system, is currently being accepted and implemented within governmental authorities and supervisors. Beyond the soar in availability and precision of data, the transition from firm-centric to system-wide supervision imposes obvious data needs when analysing a large number of entities and their constituents as a whole. As central tasks ought to be timely and accurate measurement of systemic risks, big data and analytical models and tools become a necessity. While analytics might aid in automated modelling, one approach to dealing with complex data and modelling problems is to improve end users' understanding of them in order to tap into their expertise. This points towards means that support disciplined and structured judgmental analysis based upon policymakers' experience and domain intelligence. Further, to date the mandates of macroprudential supervisors have been stressing or even limited to communication, issuing warnings and giving recommendations, which boils down to an emphasis on broad and effective communication of timely information related to systemic risks.

Macroprudential analysis

Systemic risk has commonly been distinguished into three categories: (i) build-up of widespread imbalances, (ii) exogenous aggregate shocks, and (iii) spill over and contagion. With the aim of mitigating system-wide risks, macroprudential oversight is commonly comprised into a process, where key tasks include (i) risk identification, (ii) risk assessment, and (iii) policy assessment, implementation and follow-up. As a soft policy intervention, risk communication concerns the overall task of spreading broadly and effectively timely information related to systemic risks, as well as other vulnerabilities concerning the financial system and its macro-financial environment. Fortunately, policymakers and regulators have access to a broad toolbox of analytical models to measure and analyse system-wide threats to financial stability. The tasks of these tools can be mapped to the above listed three forms of systemic risk: (i) early-warning models and indicators, (ii) macro stress-test models, and (iii) contagion and spill over models. While the first aids in risk identification, the second and third approaches provide means for risk assessment. Yet, this points out a mismatch between the current objectives and needs and the available tools: while a key task is the communication of risks, the toolbox of analytical models lacks a focus on approaches that support human understanding.

Visual analytics

The term visualisation has a wide meaning and relates to a number of interdisciplinary topics, in particular information visualisation and visual analytics. The rationale behind the use of visual representations and their usefulness relates to traits of the human visual system. Visualisation can be seen as a type of cognitive support or amplification, which leads to a focus on strengths and weaknesses of human perception. This highlights the importance of principles for designing visuals that meet the demands of the human visual system. Next, the utilised techniques for visualisation can be divided into two types: graphical representations of data and means for interaction. While the former can be summarised in various categories of visualisation techniques, such as per output and data, the latter refer to how the user can interact with or manipulate the displayed data, such as zooming or panning, which often has its basis in one or more graphical displays for enabling more flexibility to explore data. This invokes two questions: would tapping into visualisation support risk communication in macroprudential oversight, and how?

Visualisation in macroprudential oversight

This paper discusses the role of visualisation in macroprudential oversight at large, especially for the purpose of risk communication. Risk communication comprises two tasks. Internal communication concerns spreading information about systemic risks within but at various levels of the organisation, such as among divisions, groups or analysts, whereas external communication refers to the task of disseminating information about systemic risks to the general public. In this paper, we mainly focus on the background and theory of information visualisation and visual analytics, as well as techniques provided within these disciplines, as potential means for risk communication. The topic of visualisation is in this paper discussed from three viewpoints: (i) we define the task of visualisation in risk communication, (ii) present a so-called macroprudential data cube and discuss its structure, and (iii) review visualisation techniques applied to systemic risk. This provides an overview of which tasks should be supported by visualisation and the underlying data to be visualised. Eventually, the discussion boils down to two essential, but to date rare, features for supporting the analysis of big financial data and the communication of risks: analytical visualisations and interactive interfaces.

VisRisk platform

For visualising the macroprudential data cube through analytical and interactive visualisation, we provide the VisRisk platform with three modules: plots, maps and networks. The platform can be accessed here: http://vis.risklab.fi/. Plots focuses on interactive interfaces for representing large amounts of data. While maps provides analytical means for representing the three standard dimensions of a data cube in simple formats, networks aims at visualisation of the fourth data cube dimension of interlinkages. While VisRisk enables and is open to the visualisation of any data from a macroprudential data cube, the platform is in this paper illustrated with five web-based interactive visualisations of systemic risk indicators and models, of which three make use of analytical visualisation. First, we make use of analytical techniques for data and dimension reduction to explore high-dimensional systemic risk indicators and time-varying networks of linkages. Second, this paper adds interactivity to not only dashboards of standard risk indicators and early-warning models, but also to the analytical applications. The ultimate aim of VisRisk, and this paper at large, is to provide a basis for the use of visualisation techniques, especially those including analytical and interactive features, in macroprudential oversight in general and risk communication in particular.

AML Risks in Third-Party Payment Providers

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In the last decade, the financial landscape has changed considerably under the influence of new technologies and communication methods. Two major new developments stand out: third party payment providers and virtual currencies. Third party payment providers (TPP) allow consumers to, for instance, make online payments by establishing a "link between the payer and the online merchant via the payer's online banking module". Virtual currencies are mainly used in payment systems that do not rely on traditional actors such as banks and payment service providers. The most notable example is cryptocurrencies – such as bitcoin. The goals of this research were:

- to analyse which TPP's are covered by the second Payment Services Directive (PSD2) and the fourth Anti-Money Laundering Directive (AMLD4), the consequences thereof, as well as to what extent such coverage goes
- to analyse the potential for the regulation of cryptocurrency in terms of combatting money laundering and terrorist financing.

Third-party payment providers

The PSD2 includes a few new actors: account information service providers (AISPs), and payment initiation service providers (PISPs). Moreover, a number of new provisions relate specifically to the security of payment transactions, such as the requirement to use strong authentication. Regarding the TPPs, both AISPs and PISPs will need to request authorisation to provide their services. They will also need to comply with information and transparency requirements. Due to the nature of their tasks, AISPs and PISPs cannot hold payers' funds. However, a number of provisions in the text led to some concerns regarding how certain security and liability issues will be arranged. Therefore, certain key areas remain problematic and unresolved. In particular, the current provisions on authentication, liability allocations and the transition period cause legitimate grounds for concern.

The AMLD4 incorporates a more consolidated risk-based approach for more evidenced-based decision making. The scope is put on credit and financial institutions as well as trust organisations, estate agents, gambling services and other persons trading in goods of payments amounting to EUR 10,000. Payment service providers are not expressly mentioned under this scope. However, the scope of article 3 must be understood as also encompassing payment services. Considering that the PSD2 introduces the regulation of TPPs and defines them as payment service providers, it is evident that they will also be regarded as obliged entities and subject to the provisions of the AMLD4. Here, it could be questioned whether TPPs should be subjected to the full scope of the AMLD4 or to a more limited scope, as is the case under the PSD2.

In the US, regulation of TPPs must be assessed on a state-by-state basis. In Florida, for instance, they can be considered as money transmitters, thus putting them under that regulation, as well as the federal Bank Secrecy Act. In Asia, the number of TPPs has grown significantly over the past years. In China, these actors are regulated by the People's Bank of China, and are subjected to a number of requirements similar to those found in the EU. Also Taiwan has regulated TPPs.

Virtual currencies

Currently, there exist no convincing arguments to consider virtual currencies as regulated under the EU's PSD or the Second E-money Directive. The PSD2 would bring no change here. A similar argument can be made for the recently adopted AMLD4, where virtual currencies have been omitted from its scope despite earlier signs that this development may be included.

What to make then of the regulation of virtual currencies in the EU? One avenue is the Second E-money Directive. A revision of this directive could significantly overhaul the legal framework on e-money, which is largely based on multipurpose prepaid cards – which are no longer used today – and network money – which is essentially a payment service as regulated under the Payment Services Directive. A reconsideration of e-money could therefore open up the scope to virtual currencies. In the meantime, the Court of Justice of the European Union has settled the question whether virtual currency exchange services provide a taxable transaction. Early 2016, the European Commission announced its intention to amend the AMLD4 in order to strengthen the fight against terrorist financing. These amendments are expected to also include bringing virtual currencies under the scope of the AMLD4.

In the US, virtual currency service providers can – at the federal level and also in several states – be considered as money transmitters, thus requiring them to register as money services business. Moreover, one state – New York – has adopted a legal framework aimed specifically at virtual currencies. Here, virtual currency service providers need to register and comply with a number of requirements relating to capital, information and reporting. Moreover, specific provisions regarding security and anti-money laundering have been included. Interestingly, this framework demonstrates significant correspondence to the EU's legal framework on payment services.

Within Asia, the response to virtual currencies has been less welcoming. Several countries have undertaken explicit attempts at putting virtual currencies outside the scope of their regulation, rather than inside. These include China, India and Malaysia. Recently, Japan has adopted a new legal framework that regulates virtual currencies, recognising virtual currencies as "asset-like values".

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Trends of Global Quality Assurance in Learning: Seizing the Opportunity

Dr. Amat Taap Manshor, Chief Executive Officer, Finance Accreditation Agency - Malaysia

As quality learning becomes increasingly important in the higher education sector and the industry, the Quality Assurance (QA) landscape is set to see several significant shifts.

The Finance Accreditation Agency (FAA), in particular, is constantly looking to explore how it can assure the highest standards in learning in the Financial Services Industry (FSI). In this regards, we have identified two main learning 'trends' currently high on international agenda which present opportunities for further development. They are competency-based learning, and recognition of prior learning.

Read the full paper at
www.faa.org.my

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Competency-based learning

Competency-based learning refers to benchmarking of skills required for employment.
In his paper entitled 'Competency-based learning models: A necessary future', Richard A. Vorhees made an interesting remark that "The pathways to learning no longer lead automatically to traditional institutions of higher education. Instead, they lead most directly to learning opportunities in which competencies are defined explicitly and delivery options are multiple. This new paradigm will ultimately redefine the roles of faculty, institutions and accreditors."

The move towards studying this competency-based initiative was further boosted with the establishment of the National Skills Standards Board of the United States, under the Educate America Act of 1994.5 Countries such as Australia, Malaysia, New Zealand and the UK have also carried out progressive initiatives in competency-based learning, allowing for learners who have met the required standards to gain recognition for their achievements.

The nature of competencies allows for learners to enhance their skills in a fluid, less structured manner, and in tandem with the direction of today's workplace learning styles. For example, a study on the World Bank Group showed that tacit knowledge is a key source of learning for organisations, with 94% of its employees learning on the job through accumulated experience, and 87% learning via conversations.

The benefits of competency-based learning include the ability to gain qualifications much faster and in a more flexible fashion, as well as credible benchmarking of skills by QA agencies. Governments and the private sector have been eager to reap the benefits from competency-based learning, placing high expectations on learning outcomes and the employability of graduates to boost national employment and productivity.

Realising the importance of being able to keep up with this development, FAA's accreditation mechanism is geared towards assuring competency- and outcome-based learning This can be seen from the FAA Quality Framework in which industry-wide competency framework forms the underlying structure of all the available types and forms of accreditation. On top of that, we have developed competency standards for trainers via our Certified Training Professional (CTP) programme to ensure that the source of learning is credible, combining theoretical principles with practice, hence meets the required international learning standards, and FSI requirements.

Recognition of prior learning

The acquisition of knowledge and skills occurs in formal, non-formal and informal settings. These can include the workplace, training events, and social activities. Knowledge and skills obtained through non-formal and informal learning are often important, but are yet to be appropriately recognised.

Recognition of Prior Learning (RPL) has been defined as "The process by which individuals are awarded credits toward qualifications based on their prior learning and (sometimes) experience (also called experiential learning). The credit is awarded upon clear evidence that the respective learning has resulted in the student having achieved the appropriate learning outcomes." How do we define and recognise 'experiential learning' inherent in the industry practitioners is what matters most.

The RPL could serve as an accurate system of assessing the skills and knowledge of the workforce due to the complex nature of the skills required within the industry, which is not just tethered to technical knowledge, but on non-tangible skills as well. FAA views RPL from the perspective of mapping and identification of individual (FSI employees) competencies which leads to individual accreditation. It is a method of assessment by which individuals can gain recognition for knowledge and skills they already possess. This formal validation of learning allows individuals to plan their learning pathways through the recognition of their current and previous learning achievements, leading to the identification of their future personal and professional learning needs.

In summary, the emphasis on competency-based learning, whilst recognising prior learning, allows for a robust approach in ensuring the highest possible standards in training and education in the FSI. In this age of continual development and advancement, it is even more critical that FSI professionals are equipped with the necessary skills and competencies that can empower them to thrive in an increasingly competitive job market. This in turn informs the higher education sector on the new definition of graduate – one who is competent and possess the spirit of lifelong learning, a definition that still remains a challenge to many. A more robust QA system such as the one practiced by FAA can ensure this. FAA will continuously monitor the international trends so to remain current and relevant, both in terms of its QA practices and meeting the needs of the industry in general and FSI in particular.

Multinational Banking and Conflicts Among US-EU AML/CTF Compliance & Privacy Law: Operational & Political Views in Context

In Information Statecraft, states employ legal and technological methods to acquire data to map the illicit economy and networks of political violence. Financial data exists in a duality – it is both commercial and a source of actionable intelligence for governments. As a result, Anti-Money Laundering (AML) and Counter-Terrorism Finance (CTF) presents a conundrum for states and market actors alike because financial data is governed by two sometimes opposing regimes: AML and CTF laws that seek to protect the financial system from fraud, crime, and political violence; and data protection and privacy laws that seek to protect an individual's identity and choices from government and private abuse.

The research presents a comparative analysis of US federal and EU-level AML/CTF and data protection laws, which illuminated issues within 19 compliance areas that will challenge multinationals as they integrate privacy into AML/CTF operations in the next two years.

Dr. Michelle Frasher, Research Fellow, 2014 Fulbright-Schuman Scholar - USA

Speaking at Sibos
See agenda on page 58

Key findings

The EU's 4th Anti-Money Laundering Directive (4AMLD) requires enterprise-wide data protection within AML/CTF operations across a multinational financial institution (MFI), while US law does not, which created regulatory risks at every point in the study. In the US, data is typically the property of the entity that possesses it, while the EU's rule-based privacy regime which bestows data ownership upon the individual as a human right, can conflict with AML/CTF regulations. The severity and exposure to AML/CTF and data protection risk for a given firm will shift according to geographical, technological, and business lines.

The US and EU subscribe to Financial Action Task Force (FATF) recommendations, but there are notable differences in implementation. Both take a risk-based approach (RBA) that permits MFIs to establish compliance programs that adapt to the market and geographical variations within their businesses. However, EU privacy law is meant to be applied with limited exceptions, which can conflict with RBA methods that involve collecting and analysing volumes of personal data to determine risk. RBA also encourages shifting regulatory standards that make it difficult to measure the effectiveness of compliance programs, contribute to uneven applications of the law, and acrimony in business-regulatory relationships.

Both US and EU law mandates MFI cooperation with national authorities, but EU firms with operations in the US may be at greater risk for data requests from US authorities, which may run afoul of EU privacy expectations as data is shared across the group. MFIs must consider the location of their servers to determine their risk exposures to foreign authority access as well as data breaches. Furthermore, US PATRIOT 314(a)'s mandatory data searches for subjects "reasonably suspected" of money laundering or terrorist financing challenges European data collection, retention, deletion, purpose limitation, or access requirements. Even so, it should be noted that EU Member States and national security intelligence agencies are not covered by EU data protection law.

Customer due diligence (CDD) is universally required, but identity verification guidelines are inconsistent. Enhanced due diligence (EDD) for Politically Exposed Persons (PEPs) entails collecting information on office holders that may involve sensitive data, including sexual partners or criminal records, which is expressly protected under EU law. This is usually reserved for handling by authorities, and collection and retention runs the risk of "function creep" to other usages that may violate EU law. Similarly, determining and verifying beneficial ownership (BO) of corporations and trusts can be difficult and costly. US companies are not required to verify or update ownership percentages, which may leave them vulnerable to regulatory action. EU firms will deposit BO data into Member State managed registries that may help data quality and shield firms from regulatory risk, but vague provisions to allow for "legitimate" public access to these registries is a cause for concern.

US and EU law recognises that enterprise-wide sharing of suspicious activities reports (SARs) and underlying data enables MFIs to deliver more actionable information to authorities, but US restrictions on sharing SARs with foreign branches inhibit a group's ability to implement consistent compliance programs across offices and markets, and forces companies to install costly technical and operational firewalls. Firms in the EU are free to share SARs and underlying data across their group in FATF compliant states, or they establish EU standards in non-compliant FATF jurisdictions. MFIs are ultimately liable for all AML/CTF and data privacy requirements across the group, and in their data vendor relationships. However, even with the General Data Protection Regulation's (GDPR) efforts to create a cohesive privacy regime across Europe, MFIs still face uneven data protection laws among the Member States, where 4AMLD allows them to restrict privacy rights "whole or in part" and set their own criteria for technical and organisational safeguards for data privacy in AML/CTF.

Finally, the AML/CTF practice of profiling and monitoring client relationships using semi-automated and automated methods deserves special attention. The EU GDPR gives data subjects the right to object to profiling, to know how decisions are made, to understand the legal outcomes of computer-aided decision-making, and the right to challenge these decisions in AML/CTF compliance, but within Member State defined parameters, which will further diversify the regulatory atmosphere. Profiling is also driven by the uncertain regulatory standards caused by RBA, which can lead to excessive de-risking where MFIs may remove services from certain populations or markets to guard against regulatory scrutiny.

Conclusions

The EU is setting the terms of data protection in AML/CTF compliance, and there are few people with the knowledge and skillsets to communicate across these disciplines. As the EU Member States establish technological and organisational safeguards for AML/CTF data protection within the next two years, officials should engage in cooperative and collaborative dialogues with financial services to create workable solutions. The GDPR invites the industry to contribute to the successful implementation of these regulations through the creation of codes of conduct. In the meantime, firms should prepare themselves by creating integrated AML/CTF, information technology (IT) and privacy teams, or encourage employees to seek cross-functional training to break down information and education stovepipes inherent in MFI organisational structures.

Summary of SWIFT Institute Working Paper No. 2014-009

The Role of Big Data in Governance: A Regulatory and Legal Perspective on Analytics in Global Financial Services

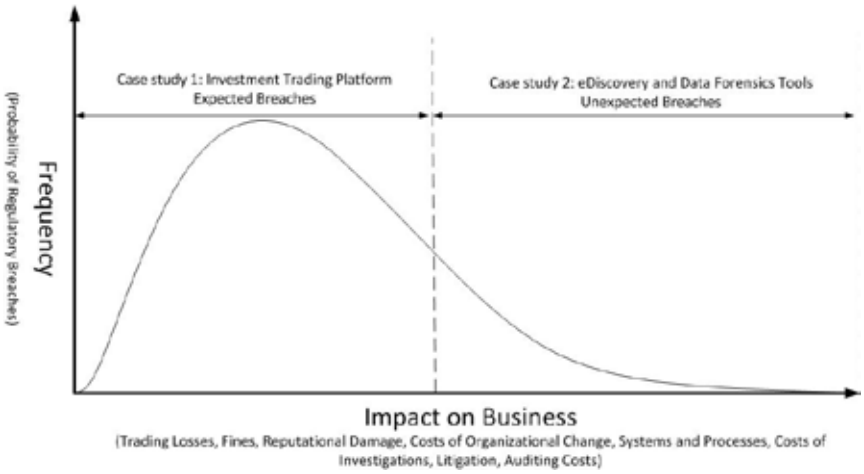
Dr. Danny Gozman, Associate Lecturer, Henley Business School, University of Reading - UK

Wendy Currie, Professor of Information Systems, Audencia Nantes School of Management - France

Dr. Jonathan J M Seddon, Professor of Information Systems, Audencia Nantes School of Management - France

Within post-financial crisis global markets we have seen the extensive adoption of technology, the globalisation and consolidation of industries, as well as increasingly unpredictable and dynamic business environments. One feature of this environment is an increasing focus on rules and regulations designed to protect a firm's employees, customers and shareholders, as well as the economic wellbeing of the state in which the organisation resides. Another is the growth of analytics and data pertinent to the enforcement of such rules and laws. The complexity and heterogeneity of financial data is increasing where trading which is now a 24/7 activity.

While much has been written about the impact of regulations on financial models and legal process, little research has been conducted which makes transparent the role of technology and specifically analytics in meeting regulatory obligations and conducting investigations where malpractice is suspected. We conceptualise compliance analytics as calculative functions for meeting regulatory obligations which utilise algorithms and draw upon data sets with volume, variety, velocity and veracity. In doing so, the study focuses on the micro/data levels to understand how these tools are influencing operational risks and practice.



Regulatory breaches and risk management

In order to frame our two cases studies we build on Jobst's representation of operational risk to illustrate the relationship between our two otherwise very distinct case studies, see the figure. The two case studies collectively illustrate how analytics are implicated in investigating and managing expected (case study 1) and unexpected (case study 2) regulatory breaches at both ends of the operational risk spectrum.

Case study 1: Charles River Development

The first case study (Charles River Development) addresses regulatory breaches which occur on a mundane basis and are predictable to the extent that technologies have been developed to specifically manage these breaches which occur in organisations engaged in similar business practices around the world on a daily basis. We focus on an Investment Trading Platform (ITP) which manages day-to-day compliance of trading practices. Such systems deal with vast amounts of data in the form of market pricing, benchmarks, compliance rules and risk calculations, all of which are constantly shifting and changing. Such systems must also maintain an audit trail of all transactions occurring within this data swirl.

Case study 2: Millnet

The second case study (Millnet) addresses low probability breaches which occur much more rarely and are often distinguished by huge fines and substantial changes and refinements to regulatory frameworks. These events may be characterised by regulatory authorities instigating complex investigations, perhaps operating across multiple jurisdictions and countries, often across various organisations, each with global operations. Consequently, financial firms' subjected to regulatory investigations and litigation are increasingly required to perform their own internal investigations into the vast amounts of structured and unstructured data held within their organisation.

Implications for the finance industry

Practitioners and policy makers will be interested to learn about how there is an increasing coupling between regulation and analytics, and how compliance analytics are not merely describing or reporting on regulated activities but also shape them. Our analysis shows how the complexity and heterogeneity of underlying data and related analytics provides a further layer of technical complexity for both practitioners and regulators and so adds further opacity to understanding controls, behaviours and misdeeds.

We find that future compliance pressures and risks could be somewhat mitigated through proactive categorisation and management of data by financial organisations. Yet often information and data governance within financial organisations is felt not to be a current priority. Currently, operations' budgets are often consumed with meeting new compliance practices and so there may exist little residual appetite or resource for implementing proactive measures. We explore the advantages for financial firms in adopting strong information governance policies and practices. Such approaches allow organisations to react more easily to new regulatory obligations (e.g. data privacy) and investigations. Early determination of whether a firm is likely to be subject to fines and further litigation also allows organisations to segregate funds appropriately and put strategies in place to mitigate reputational damage.

Conclusions and future research

Our study shows how the commercialisation of big data analytics, which is a cross industry phenomena, is also pervasive within the financial services industry and is increasingly underpinning compliance practices. Many of the thorny issues surrounding big data are at the micro-practice level which is less often studied than macro-levels (industry-wide) or meso-levels (across and within companies). We believe that future research which considers big data in the context of financial services may consider multi-level studies which link policy and strategic issues with more granular practices. By harnessing the power of analytics to better understand organisational operations firms may reap additional benefits beyond compliance. We would, however, caution managers and researchers that while compliance analytics aim to create a holistic perspective, the 'devil remains in the detail' to ensure high quality data to underpin decision making.

A Quantum Leap Over High Hurdles to Financial Inclusion: The Mobile Banking Revolution in Kenya

The primary purpose of promoting financial inclusion is to ensure equal opportunity to utilise services that are essential in managing household and enterprise finances, regardless of one's income level or size of business. Financial inclusion initiatives seek to mitigate financial marginalisation through innovations in financial product design, delivery, and regulation, thus promoting more equitable and sustainable growth through economic empowerment of the financially excluded.

Financial inclusion in Kenya is more than double sub-Saharan Africa and triple low-income countries, and the transformation has been rapid: from 2006 to 2015, adults using formal financial services tripled, rising from 26.7 to 75.3 percent; and adults totally excluded from formal financial services dropped by more than half, falling from 41.3 to 17.4 percent.

Jay K. Rosengard, Director, Financial Sector Program, Harvard Kennedy School, Harvard University - USA

Speaking at Sibos
See agenda on page 58

Success of mobile money in Kenya

Many of Kenya's financial inclusion achievements are attributed to its success in promoting mobile banking, part of a larger global transformation in the use of mobile phones for financial services. In 2014, 58.4 percent of all adults had a mobile account (five times more than sub-Saharan Africa and six times more than low-income countries), and approximately 90 percent of all senders and recipients of domestic remittances used a mobile phone (triple both sub-Saharan Africa and low-income countries).

The primary driver of change propelling Kenya to its global leadership position in the provision of financial services via mobile phones has been the extraordinary success since 2007 of Safaricom's M-PESA, a mobile phone-based money transfer, payment, and banking service. As of June 2015, Safaricom had over 25 million subscribers (67 percent of Kenya's total market), including more than 22 million M-PESA subscribers being served by over 90,000 M-PESA agents. And the growth rates are still robust: in 2014, M-PESA subscribers increased by 23 percent. M-PESA transactions are dominated by domestic money transfers, but also include paying merchants via Lipa Na M-PESA, using a combined savings-and-loan product called M-Shwari, and most recently, managing accounts at commercial banks.

The confluence of several factors helps to explain M-PESA's success. These include Kenya's political and economic context, demographics, telecommunications sector structure, lack of affordable consumer options, and enabling regulatory policies. Equally important have been Safaricom's internal astute management and marketing of M-PESA.

Telecom-led vs bank-led innovation

But M-PESA is now facing serious competition from Equity Bank, Kenya's third largest bank. Equity Bank has 9.7 million customers, the largest customer base in Africa, and it has more than half of the bank accounts in Kenya. Equity Bank's mobile banking platform is Equitel, and Equitel's core product is Airtel Money, which competes directly with M-PESA. Airtel Money is available to all Equity Bank account holders for: mobile phone airtime top-up; payment of utility bills and purchase of goods and services from merchants; and Equity Bank account access and management. Now two different models for mobile financial services are competing vigorously in Kenya: Safaricom, an example of telecom-led mobile banking (new products via existing delivery channels) and Equity Bank, an example of bank-led mobile banking (existing products via new delivery channels).

There are three key challenges in Kenya to further promotion of financial inclusion via development of mobile financial services (MFS):

- facilitation of increased competition both among commercial banks and between bank and non-bank MFS providers
- transformation of non-digital microfinance institutions
- enactment of greater consumer protection for MFS customers

Since no two countries are exactly the same, it would be ill-advised to suggest that Kenya's strategy for increasing financial inclusion simply can be transplanted to another country. However, where Kenya's success factors might be present in a country, albeit perhaps in a different form, many of Kenya's lessons can be adapted. Where conditions are significantly different, the challenge becomes how best to nurture home-grown innovative solutions to address specific local constraints. M-PESA's success in Tanzania and failure in South Africa are vivid demonstrations of these replication principles.

Summary of SWIFT Institute Working Paper No. 2012-003

Can Mobile Money be Used to Promote Savings: Evidence From Northern Ghana

This research seeks to understand whether and how mobile money can promote financial inclusion of the world's poor, particularly those living in rural areas. In particular, the purpose of this research is to address some of the potential barriers to mobile money adoption and usage in Ghana, with a goal towards providing insights into whether mobile money services could be used to:

- provide cash transfers to extremely vulnerable populations
- facilitate savings within rural areas, either by allowing individual members of savings groups to save, facilitating savings among different savings or promoting savings objectives
- allow households to receive remittances from migrants.

Jenny Aker, Associate Professor of Development Economics, The Fletcher School, Tufts University - USA

Kim Wilson, Lecturer, International Business and Human Security, The Fletcher School, Tufts University - USA

Barriers for mobile money

To better understand the barriers, our research followed two stages. The first stage involved a scoping visit to meet with key stakeholders (mobile phone operators, governmental officials, consumers and international organisations) to better understand the extent and type of mobile money services available and the potential barriers to adoption. The second stage involved the piloting of different interventions that were designed to help understand whether and how mobile money could be used to improve rural households' access to financial services, particularly money transfers and savings.

The pilot research was conducted in northern Ghana. While classified as a middle-income country, 30 percent of the population live on less than USD $1 per day, with 54 percent living on less than USD $2 per day (World Bank 2012). Approximately 29 percent of the population has access to a formal financial institution. Yet there is a long history of informal savings in Ghana, either via susu collectors or through rotating village savings clubs, and mobile phone usage is substantial in Ghana, although mobile money is a relatively recent phenomenon.

Overall, we found that simple interventions were associated with a marked increase in mobile money registration and usage in the short-term. All targeted households signed up for the service, and approximately 25 percent of the sample used mobile money 2-3 months after its introduction. These initial adopters primarily used the service to receive remittances and save. Yet whether the rate of usage will persist, increase or transform to include savings is hard to determine. In addition, there are several factors — such as delays in activating the service, the cost of the service and trust — that could affect usage in the longer term.

Costs of mobile money

The mobile money registration was not without costs, as individuals had to attend an informational meeting, provide an identification card and wait for the activation of the SIM card (which took several hours). In some cases, the mobile money agent had to take the individuals' identification card, which meant that the individual was without his or her voter registration card or health insurance card for several weeks, a potential risk. This suggests that providing access to the SIM cards and a mobile money agent located closer to rural areas could overcome one barrier to initial mobile money adoption.

While these results are promising, they are severely constrained in their generalisability, primarily due to the small sample size. Overall, however, the results suggest that there may be interest in and demand for such services, but that supply and demand-side factors must be carefully considered by both the private and public sector.

"The purpose of this research is to address some of the potential barriers to mobile money adoption and usage in Ghana.

Analysis of Domestic/ Cross-Border Clearing & Settlement System in Asia Countries

Carol Hsu, Professor, Tongji University - Shanghai

Dr. Sia Siew Kien, Associate Professor, Division of Information Technology and Operations Management, Nangyang Business School, Nangyang Technological University - Singapore

The Association of Southeast Asian Nations (ASEAN) - Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam - are collectively ranked as the world's seventh-largest economy, with a combined gross domestic product (GDP) of US$2.4 trillion in 2013. A number of financial initiatives have been put forward to further encourage and stimulate more intra-ASEAN and international investment flow. ASEAN Exchanges is one of these initiatives with the aim of lowering the funding cost for listed companies, improving trading cost and efficiency for investors, increasing investment flows by reducing cross-border hurdles, and harness synergies in promoting ASEAN as one asset class to regional and global investors. Currently, ASEAN Exchanges works in the form of collaboration among seven stock exchanges including Bursa Malaysia (BM), Hanoi Stock Exchange (HNX), HoChiMinh Stock Exchange (HOSE), Indonesia Stock Exchange (IDX), Philippine Stock Exchange (PSE), The Stock Exchange of Thailand (SET), and Singapore Exchange (SGX). In this research project, the objective is to investigate the challenges surrounding the development of ASEAN Exchanges.

Challenges identified

Through the theoretical lens of institutional distance, we conducted our empirical fieldwork through a number of interviews with the senior executives from different stock exchanges, and other relevant stakeholders between July 2014 and July 2015. The premise is that the greater the institutional distance within these ASEAN countries, the more likely the implementation of ASEAN Exchanges will adopt a loose integration approach. Our research findings indicate that while ASEAN has been established as a regional block since 1967, there remains significant disparity in the regulatory, normative, and cognitive institutions in the financial markets among the ASEAN countries. At regulatory level, there exist differences in foreign investment restriction, tax regimes, and the number and structure of financial regulatory bodies. At normative level, variance in operating rules, trading practices, business calendar, technical standards, and market structure presents further challenges in cross-border transaction. At cognitive level, there are differences among the countries in the sophistication of investors' profiles and investors' recognition of ASEAN companies.

Future collaborative approach

In light of these institutional challenges, members of ASEAN Exchanges have taken a highly fluid and flexible collaborative approach that seems to have made ASEAN Exchanges work. Our data analysis summarises three strategies undertaken:

- Regular Engagement, but "Loose" Organising Structure
- Collective but "Non-Imposing" Governance
- Gradual and Incremental Operating Model

With this approach, progress has been made. Some institutional disparities have been successfully eliminated (e.g. in building up system capabilities and in relaxing or harmonising some legal rules). Other institutional disparities are in the process of being addressed but need more time to see the results (e.g. the development of ASEAN indices). Overall, we believe there is still some way to go to achieve the full vision of ASEAN Exchanges. Attention should not just be focused on bridging the regulative and normative institutional disparities, but more importantly, also at the cognitive level to foster investor education and to promote the recognition of ASEAN companies. Time, flexibility, and continuous nurturing of shared commitment seem to be the key factors in sustaining the development of ASEAN Exchanges going forward.

"Our research findings indicate that while ASEAN has been established as a regional block since 1967, there remains significant disparity in the regulatory, normative, and cognitive institutions in the financial markets among the ASEAN countries.

Impact of Blockchain on Securities Transactions

Prof. Michael Mainelli, CEO, Z/Yen
- UK

Speaking at Sibos
See agenda on page 57

Alistair Milne, Professor of Financial Economics, Loughborough University School of Business and Economics
- UK

This paper reports the outcome of a series of interviews and focus groups, eliciting and documenting views of market professionals on the potential impact of 'blockchain' (or in our preferred terminology 'mutual distributed ledgers') on the post-trade clearing and settlement of securities trades. The objective was to elicit and document views on three research hypotheses about the potential impact of mutual distributed ledger technology (aka 'blockchain') on post-trade processing global securities markets. These hypotheses are:

- on the appropriate access to mutual distributed ledger
- on whether change would be piecemeal or 'big bang'
- on the extent to which applying mutual distributed ledger in securities settlement would require major changes in business processes.

Many have argued that the employment of mutual distributed ledgers can substantially reduce the high costs of post-trade processing. There are no definitive figures, but these costs are in excess of $40bn per year on securities clearing and settlement alone, much of which arises in data reconciliation and in manual intervention in operational processes. After taking into account the costs of other processes – KYC, AML, corporate actions and trade allocations – it appears that mutual distributed ledger technologies could save global securities markets many tens of billions of dollars per year.

However, though our research finds that while the use of blockchain to validate operational data in mutual distributed ledgers can yield substantial reductions in both cost and risk, the concept of data sharing itself is far from new. Current interest in mutual distributed ledgers has established significant momentum, but there is a danger of building unrealistic expectations of the extent to which the technology on its own will address the underlying need for co-ordination of business processes both within and between firms. Achieving all the potential benefits from mutual distributed ledgers will require board level buy-in to a substantial commitment of time and resource, and active regulatory support for process reform, with relatively little short term payoff.

Testing the hypotheses

We investigated three research 'hypotheses' (carefully worded statements designed to elicit as much information as possible from our interviews and focus group meetings). The first was on whether access to distributed ledgers used in global financial markets need to be 'permissioned' with only a limited number of approved network participants (the alternative being the use of 'unpermissioned' ledgers such as the Bitcoin blockchain in which anyone is allowed to participate). While, unsurprisingly, this first hypothesis was confirmed and agreed, the answer was rather more nuanced than we initially expected. The key insight for us is the availability of 'configuration files' for cryptographic control of access and updating rights to ledger participants. One of the advantages – arguably the principal advantage – of mutual distributed ledgers and the cryptographic methods they employ is that they provide a precisely defined but flexible control over access to shared data.

The views of practitioners yielded less clear cut responses to our remaining two hypotheses. The two main issues raised in these hypotheses were: first, whether the adoption of mutual distributed ledgers needed to be developed initially in specific situations, for example establishing a 'proof of concept' (PoC) by applying the new technology in contexts where there is currently no centralised security depository for recording ownership; and second, that the widespread adoption of mutual distributed ledgers, and full exploitation of their potential for cost reduction, will require a substantial reengineering of the arrangements for clearing and settlement.

Our principal finding on these other two hypotheses is that if the substantial potential gains of using mutual distributed ledgers in settlement are to be fully realised, then it will be necessary to have a "A coordinated and widespread change in operational processes across all the major public markets" (Hypothesis 2) and this will in turn "Require a substantial reengineering of these arrangements" (Hypothesis 3).

Our interviews and focus groups proved less than supportive of the idea that progress in the adoption of mutual distributed ledgers in post-trade securities processing can be pursued simply by developing proof of concepts through demonstrating application in some specific practical contexts, or where for example there is not yet any centralised recording of ownership. It is not clear that there are any easy wins. Wherever mutual distributed ledger is applied it has to be accompanied by substantial changes in operational arrangements, both for the completion of trades and for associated tasks such as collecting, warehousing and analysing of data for management reporting. The challenge of using mutual distributed ledger in securities settlement is not just demonstrating technical feasibility, but also a co-ordinated reengineering of business processes across multiple firms.

Conclusions

The investigation of these hypotheses and accompanying analysis in the paper point to some further conclusions. Two of these have already been mentioned in our introduction. Some benefits of mutual distributed ledgers can be achieved using relatively simpler approaches, e.g. reducing the substantial costs of reconciliation between the two sides to a trade by recording data at the time of trade execution in a shared bilateral ledger. There is also a problem of 'excess inertia', the challenge of co-ordinating change and the resistance from those market participants whose business models means that achieving the full potential of the technology will require a concerted and co-ordinated industry wide effort. It will not come about simply by leaving the choice of technology 'to the market'.

Some further more specific conclusions can also be drawn from our analysis:

- Many argue for the adoption of mutual distributed ledgers in order to bring about near real-time settlement (T+15 minutes instead of the current T+2 days for equities trades). This is fundamentally confused. Existing centralised settlement on central securities depositories already support virtually instantaneous settlement once all the preparations such as positioning of securities and cash are completed. Near real-time settlement can be achieved simply by requiring all these steps to be taken prior to trade and does not require moving settlement onto mutual distributed ledgers.
- Our analysis views mutual distributed ledgers as a form of database and highlights the business requirement for 'meta' analysis (such as in management reporting, audit and risk management) using information from a number of databases. This in turn means that adoption of mutual distributed ledgers will require the updating of a range of different business processes and data sources in a coherent way. This is a further reason for believing that the scale of change to see effective and widespread adoption is large.
- 'Smart contracts', i.e. embedded code, can support much greater process automation (though in our opinion this will only be fully realised over the long-term). As already mentioned, modern cryptography supports flexible control over rights to access and update data (rights which can be easily altered by amending configuration files). Both of these technologies support greater commonality of business process and the exploitation of economies of scale through the separation and outsourcing or sharing of processes between firms, changes that can be anticipated even if the securities ownership and transactions are not all recorded on mutual distributed ledgers.

Finally, honouring the full promise of mutual distributed ledgers will not come automatically, easily or cheaply. Agreeing the required investment will require engagement and commitment at board level across both the buy side and sell side of the industry and for regulators to play an active rather than passive role, for example requiring the adoption of shared data arrangements for regulatory reporting or putting central bank reserves used for final settlement of cash payments onto a mutual distributed ledger. The return will then come from substantial improvements in operational efficiency that can be enjoyed for many years to come.

Near Real-Time Retail Payment and Settlement Systems Mechanism Design

Rob Kauffman, Associate Dean, Professor of Information Systems, Singapore Management University

Zhiling Guo, Associate Professor of Information Systems, Singapore Management University

Mei Lin, Assistant Professor of Information Systems, Singapore Management University

Dan Ma, Assistant Professor of Information Systems, Singapore Management University

In the digital economy, everything wants to be faster - faster product delivery, faster sales capabilities, and faster access for consumption. In the middle of it all though, faster payments practices need to be given more attention. This is because they enable the exchange of funds at nearly the same time that economic transactions occur, more effectively supporting the related consumer, business and social objectives. Making payments “faster” - especially faster clearing and faster settlement of funds - has not been easy due to various business process and technological reasons, as well as operational risk and liquidity management concerns.

A challenge in the past two decades has been to establish an appropriate set of incentives that will make banks want to adopt faster payments practices sooner, while recognising the commonalities and differences in incentives among them. They will only come together when the banking community in a country is able to establish the “right” incentives in a faster payments mechanism.

Defining faster payments problem

We explored the design of payment transaction processing mechanisms for faster clearing and settlement based on the different issues from the banks' point of view. The central issue is whether the mechanism offers balanced risks and rewards for participating banks. This led us to pursue the development of a workable hybrid priority queuing mechanism, the key problem in our research. The proposed mechanism must consider different kinds of banks, payment transactions, authority to clear and settle, and even different kinds of transactions.

The research process

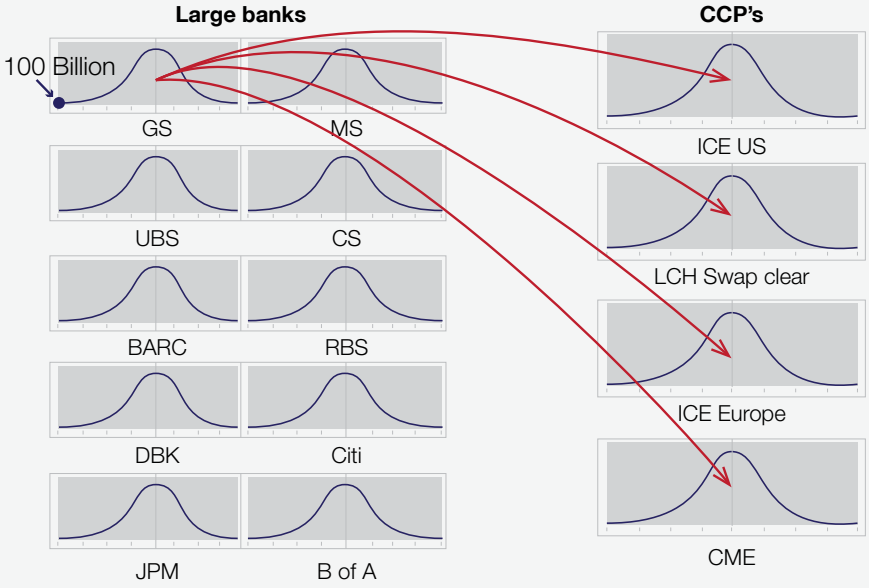
- **Step 1: Understand the global environment of clearing and settlement mechanism design.** Many observers have characterised the problem as being costly technology infrastructure, the need to leapfrog to next-generation technologies to replace current systems, and the possibly of liquidity shortfalls at different stakeholder banks. We provide details on the global status of the different national systems.
- **Step 2: Extract the critical dimensions for a model on mechanism design performance.** We explored how different kinds of faster payments solutions are more or less conducive to their adoption based on the business value that they produce, and the issues that arise around them. We identified a number of critical variables to include in an evaluative model.
- **Step 3: Construct a model for how mechanism design choice influences business value.** Assessing business value focuses on how well an IT-based mechanism is able to support the payments process, minimise its costs and risks, and create value for all of the stakeholders involved. Our proposed model addresses this by supporting analysis for the value of a hybrid priority queuing mechanism, when it is possible for banks or a centralised mechanism operation to make choices of how to balance the risks and rewards.
- **Step 4: Carry out and report on the use of experimental simulation analytics to explore a set of 'conjectures' about the performance of the mechanism.** This step involved numerical analyses and optimisation for a set of "conjectures," involving experimental conditions based on the key variables in the model. Use of conjectures is intended to package the key insights from the simulation work that we have done, so they are relevant.
- **Step 5: Evaluate what has been learned to draw policy-related conclusions.** Our key findings are as follows:
  - Central payment management systems with priority queuing have the general effect of diminishing costs for funding overdrafts in the system due to transient liquidity shortfalls, and the effect is stronger when bank reserves are low and the cost to fund liquidity shortfalls is high.
  - The performance of an internal queue and a central queue are similar when the costs of funds are low, but a central queue is preferred when the costs of funds are high.
  - Payment network concentration has a positive impact on the priority queuing mechanism performance.
  - As the settlement frequency increases in the priority queuing mechanism, both the settlement speed and the total amount of settlements increase, but more settlement pressure shifts to banks, leading to higher total cost of funds.

"Making payments "faster" has not been easy due to various business process and technological reasons, as well as operational risk and liquidity management concerns.

Updated Summary: New Regulations and Collateral Requirements—Implications for OTC Derivatives

At their Pittsburgh Summit in April 2009, the G-20 agreed to move over-the-counter (OTC) derivative market to central counterparties (CCPs). This provided a mandate for regulatory bodies such as the BIS, the FSB and national authorities (e.g., Dodd Frank Act in the USA or, EMIR in Europe) to provide rules for such transition. The paper provides a snapshot of the changing collateral space and how this will impact the regulatory push to move over-the-counter (OTC) derivatives to CCPs. Also, with continued quantitative easing (QE) by some central banks, price signals from the collateral market indicate a shortage of good collateral. This paper focuses on the collateral demand in the OTC derivatives market as they move to central counterparties (CCPs) and suggests alternatives on how to reduce risk in this market.

Manmohan Singh, Senior Economist, IMF
(International Monetary Fund) - USA



	Gross market value													
	H2 2008	H1 2009	H2 2009	H1 2010	H2 2010	H1 2011	H2 2011	H1 2012	H2 2012	H1 2013	H2 2013	H1 2014	H2 2014
GRAND TOTAL	35,281	25,314	21,542	24,673	21,296	19,518	27,285	25,392	24,740	20,245	18,825	17,438	20,880
A. Foreign exchange contracts	4,084	2,470	2,070	2,524	2,482	2,136	2,555	2,217	2,304	2,427	2,284	1,724	2,944
B. Interest rate contracts	20,087	15,478	14,020	17,533	14,746	13,244	20,001	19,113	18,833	15,238	14,200	13,461	15,608
C. Equity-linked contracts	1,112	879	708	706	648	708	679	645	605	692	700	678	615
D. Commodity contracts	555	682	545	457	526	471	487	390	358	384	264	269	317
E. Credit default swaps	5,116	2,987	1,801	1,666	1,351	1,345	1,586	1,187	848	725	653	635	593
F. Unallocated	3,927	2,817	2,398	1,768	1,543	1,414	1,977	1,840	1,792	779	724	671	803
GROSS CREDIT EXPOSURE*	5,005	3,744	3,521	3,578	3,480	2,971	3,512	3,668	3,626	3,784	3,033	2,826	3,354

* Gross market values have been calculated as the sum of the total gross positive market value of contracts and the absolute value of the gross negative market value of contracts with non-reporting counterparties. Gross credit exposures after taking into account legally enforceable bilateral netting agreements.

Read the full paper at
swiftinstitute.org/research

The new landscape

It is useful to compare the new landscape relative to where this market was in the aftermath of Lehman's failure: from primarily a bilateral model that was handled by the 10-15 large global banks directly with their clients, to the clearing world presently dominated by 4-6 global CCPs that are independent of each other, i.e., do not link to each other (Figure 1). Thus contracts that presently "net" at a bank (i.e., margin can be offset across products) will not "net" in the CCP world as the global CCPs are generally specialised in one product (e.g., interest rate swap only, or credit default swap only, or futures only, etc.). The CCP world will look very different—fragmented for sure, but hopefully more collateralised.

However, regulators have exempted several users of OTC derivatives, including sovereigns, quasi-sovereigns, multilateral institutions, and end-users such as airlines etc. Thus, over six years after the Pittsburgh summit, the sizable under-collateralisation in this market continues to not be fully addressed. The proposed regulations skirt the fundamental risk within the OTC derivatives market that resides in a bank—i.e., liabilities of the bank stemming from their derivative book. This is the cost to taxpayers from a large bank's failure due to its derivative positions. The proposed regulations still do not directly address this risk since only standard OTC derivative contracts will clear at CCPs. In hindsight, if every user of OTC derivatives posted their share of collateral (i.e. initial and variation margin), there would be no derivative liabilities on banks' books and thus no need for CCPs.

Financial centres such as New York, London, Chicago, Hong Kong and Singapore will initially attract clearing business (and good collateral), as they already host the large global CCPs. Smaller countries that are unlikely to develop deep and liquid derivative markets should weigh the pros/cons before establishing their own CCP infrastructures (e.g., Canada opted not to have a CCP for OTC derivatives). Emerging markets with potential for sizable use of derivatives, but reluctant to export this market to global financial centres, may take a cue from Brazil's approach to clearing where local CCPs are being inter-linked and will offer across product netting.

It is not (yet) clear if systemically important financial institutions (SIFIs) can be unwound; thus there needs to be justification for creating new SIFIs like CCPs. The proposed regulations disregard the existing netting bundles prevalent in this market which then leads to sizable collateral requirements—although many academic papers use simulations to show otherwise. Furthermore, some key exempted users (like the sovereigns) will keep afloat the sovereign/bank nexus that sow the seeds of moral hazard for a taxpayer bailout of CCPs. Some recent initiatives on the CCP recovery/resolution front may offset the likely burden on taxpayers if a CCP gets in trouble. Furthermore, the political will to fully embrace some of these recovery tools such as "variation margin gains haircut" is limited despite sound economics and research at some central banks that suggest taxpayer bail-out can be minimised. A global consensus on several key issues is still missing and after the Brexit vote, the issue of CCP equivalence (or reciprocity) is even more important. Some of the latest research, including from the Fed/academia also conclude that it is not clear that OTC derivative reforms incentivise a move from bilateral contracts to CCPs (Ghamami and Glasserman)—the paper is parallel to the discussion in this summary (i.e., loss of netting when moving to CCPs, inadequate default funds, etc.).

Collateral damage

With some central banks silo-ing good collateral and custodian-held collateral not available in bulk, the only likely players in the financial system to bridge the demand and supply would be the 10-15 banks active in the global derivatives market. In general, central banks, sovereign wealth funds, and long-term asset managers desire good collateral that is low volatility, but not necessarily highly liquid. These entities should be net providers of liquidity in the financial system. On the other side are banks/hedge funds/mutual funds that need to constantly reshuffle liquid/good collateral within their portfolios. Thus the ensuing collateral transformation - via the 10-15 large banks - may bridge collateral shortages but will also increase interconnectedness of the financial system (and CCPs were supposed to break the interconnectedness). Recently, in the aftermath of quantitative easing (QE), the U.S. Fed has acknowledged collateral shortage by starting a reverse repo program to alleviate collateral constraints under the rubric of a "monetary policy tool". Reserve Bank of Australia has also acknowledged collateral constraints stemming from new regulations including collateral issues that straddle the OTC derivatives market. However, QE continues in other places such as the Eurozone and Japan and contributes towards scarcity of good collateral (and thus lower collateral reuse rate).

Conclusion

In summary, the proposed route of removing OTC derivatives from banks' books creates new SIFIs, reduces the economics of netting derivative contracts, siloes collateral, and increases the interconnectedness of the financial system. Looking forward, regulators will do well if they focus on minimising taxpayer losses in their jurisdictions when their CCPs get in trouble; else we would have come a full circle in removing derivative risk from a bank, but bailing-out the risk under another name.

Figure 1: Large Banks Active in OTC Derivatives and Relevant CCP's

Figure 2: Under-Collateralisation in the OTC Derivatives Market

The Scope of International Mutual Fund Outsourcing: Fees, Performance and Risks

Armin Schwienbacher, Professor Accounting and Finance, SKEMA Business School, L'Université Lille - France

Douglas Cumming, Professor of Finance and Entrepreneurship; Ontario Research Chair in Economics and Public Policy, Schulich School of Business, York University - Canada

Feng Zhan, Assistant Professor of Finance, Boler School of Business, John Carroll University - USA

What are the consequences of a mutual fund outsourcing different types of services to advisors, custodians, administrators, and transfer agents? This paper shows that mutual fund service outsourcing benefits investors – in terms of evidence of lower subscription fees, as well as some evidence pertaining to fund performance.

In a competitive market, firms face the choice of embedding a transaction's functions inside the firm or outsourcing some of these functions to external service providers. This is especially true in the mutual fund industry, and particularly when mutual fund managers are facing constraints on resources and opportunities (or capabilities) to undertake diversified portfolios globally. Managers in mutual fund companies are involved in a variety of functions: managing the fund on a daily basis, maintaining information related to the fund, providing investment and portfolio management advice, and calculating net asset value (NAV). Empirically, the authors observe that many of these functions have been outsourced to external service providers. An important question for both the practitioners and academics alike is whether or not outsourcing affects portfolio selection and thus has an impact on the fund's operating risk and performance.

Risks in outsourcing

Based on principal-agent theory, outsourced funds could have either a higher or lower risk-return relationship. On the one hand, external services may oversee investment decisions more thoroughly, as there are no conflicts of interest with management, leading to more oversight with less risky portfolios. On the other hand, external services may oversee fund management less effectively compared with internal services, leading to less efficient monitoring and more risky portfolios. For example, the UK Financial Conduct Authority (FCA, 2013) has expressed such concerns regarding the "oversight risk" in the fund management industry. Eventually, this may impact the level of fees as more players get involved along the chain of operations, especially if outsourcing generates performance inefficiencies.

Outsourcing is common

For the first time, the paper 'The Scope of International Mutual Fund Outsourcing: Fees, Performance and Risk' has examined the full scope of services that are outsourced, to administrators, transfer agents, custodians, advisors, trustees, and auditors, based on the LIPPER dataset. Based on over 13,000 mutual funds domiciled in Europe, this study shows outsourcing is very common; 12% of funds use external advisors, 41% use external administrators, 45% use external transfer agents, and 58% use external custodians, and all funds outsource to external trustees and auditors. These percentages are even higher for funds of independent management firms as compared to funds of bank-affiliated groups. In addition, this paper shows that outsourcing is less common among funds managed through banks, UCITS funds and institutional funds. For example, the results suggest that bank groups decrease the probability of outsourcing by 27-30%. More importantly, this paper shows that funds relying on outsourcing have different fee structures. Funds with outsourcing are more likely to have 11%-14% lower subscription fees relative to the overall average fees in the data.

Furthermore, this study finds mixed evidence on the performance implications associated with outsourcing. Outsourcing advisory services are associated with higher risk-adjusted performance (Sharpe ratios), while outsourcing of administrator, transfer agent, and custodian services are unrelated to risk. The association between outsourcing of advisory services and performance is more pronounced for funds belonging to a bank-managed group. The authors find that these results are somewhat sensitive to accounting for proxies of fund managers' private information, as detailed in the paper.

Given the increased complexity in regulation, the implied cost of regulatory compliance and the economics of scale in the provision of services for mutual funds, one may expect the trend towards service outsourcing to increase further in the future. The results of the study indicate that most of the impact of this outsourcing is likely to be on fees, and less on operating risk and performance of funds. Instead, the latter is affected by outsourcing of advisory services. The study concludes that on average, fund managers efficiently react to outsourcing opportunities. The authors hope the analyses will help guide the decision to outsource and keep track of best practices in mutual fund outsourcing.

"This study shows outsourcing is very common; 12% of funds use external advisors, 41% use external administrators, 45% use external transfer agents, and 58% use external custodians, and all funds outsource to external trustees and auditors.

Updated Summary: Will the Alibaba Model of Securitisation Succeed in China? Who Will Take the Lead in Shaping China's Securitisation Market Model?

Ann Rutledge, Adjunct Assistant Professor of Finance, Hong Kong University of Science and Technology - Hong Kong, China

In January 2016 at Davos, the Vice Chairman of China's Securities Regulatory Commission (CSRC) Fang Xinghai was quoted as saying, "China's markets are volatile. Get used to it."

The growth story of China's asset-backed securities (ABS) shows domestic investors have done just that—got used to the volatility. Ever since China's 2013 Third Plenum market reform agenda gave a big initial boost to its development, China's ABS market has developed rapidly but not necessarily sustainably.

Coincident with the term of my grant from the SWIFT Institute (2014-2015) the most pressing question about China's ABS market seemed to be which market institutions would be early adopters – and which would put their commercial imprimatur on the market structures and standards? The answer then was not clear, as leaders are change agents, and change requires disruption. However, from early contact with market participants I sensed a will to comply with government policy but no will to be disruptive. In mid-2014, global confidence in China's macro-economy and financial reform progress was still high.

From early spring through to December 2015, foreign observers' confidence in the China model was shaken by spates of extraordinary levels of volatility in China's equity markets and concurrent currency jitters. I delayed the publication of my paper in order to reflect on the structural meaning of these shifts and their significance for ABS.

Since the paper's publication in September 2015 and presentation at Sibos in October 2015, pressures on China's capital market development have continued unabated. Concerns about debt overhang and asset impairment have mounted. How has the ABS market fared, specifically? In this brief update, I offer four key observations:

i. China's P2P (marketplace lending) market has to some extent collapsed, and this is good for ABS.
ii. China's ABS market growth has continued to exceed expectations.
iii. China's ABS market character is evolving with the economy.
iv. To boost ABS market integrity and sustainability, China needs a more mature risk architecture.

The juxtaposition of ABS with P2P may seem odd from a mature market perspective. One is for sophisticated institutions, while the other is for financially disadvantaged individuals and microenterprises. Both are alternatives to the banking model, however, and their secondary market disclosure frameworks are woefully inadequate relative to the amount and speed of money flowing through them. EZubao's failure in December 2015 and those of Zhongjin Capital, Kuailu Financial and even U.S. Lending Club in 2015, have cast a dark shadow on the sector. All things being equal, ABS should benefit from some of the capital previously directed towards P2P. It is also possible that these failures will create momentum to bring ABS disclosure requirements up to the standard of other markets globally.

Meanwhile China's ABS market growth is still accelerating. The period July – December 2015 accounts for 49% of total issuance in the market's history. Issuance from January – May 2016 alone is 14% of total originations, and it has risen an extraordinary 25% over originations in the full first six months of 2015:

Table: Wind Information Systems, June 2, 2016

	Half Year	# of Deals Semi-Annual	# of Deals Annual	Issuance (RMB BN)	Annual Issuance (RMB BN)	% Historical Market
2005	Jan-June	0		¥ -		
2005	July-Dec	4	4	¥ 17.27	¥ 17.27	1%
2006	Jan-June	5		¥ 18.97		
2006	July-Dec	5	10	¥ 9.03	¥ 28.00	2%
2007	Jan-June	0		¥ -		
2007	July-Dec	4	4	¥ 17.81	¥ 17.81	1%
2008	Jan-June	4		¥ 16.54		
2008	July-Dec	4	8	¥ 13.67	¥ 30.20	2%
2009	Jan-June	0		¥ -		
2009	July-Dec	0	0	¥ -	¥ -	0%
2010	Jan-June	0		¥ -		
2010	July-Dec	0	0	¥ -	¥ -	0%
2011	Jan-June	0		¥ -		
2011	July-Dec	1	1	¥ 1.28	¥ 1.28	0%
2012	Jan-June	1		¥ 1.33		
2012	July-Dec	6	7	¥ 21.11	¥ 22.44	2%
2013	Jan-June	3		¥ 7.38		
2013	July-Dec	11	14	¥ 15.79	¥ 23.17	2%
2014	Jan-June	28		¥ 98.13		
2014	July-Dec	67	95	¥ 224.73	¥ 322.86	26%
2015	Jan-June	84		¥ 164.08		
2015	July-Dec	235	319	¥ 447.84	¥ 611.92	49%
2016	Jan-May	125	125	¥ 169.06	¥ 169.06	14%
	TOTAL	587	587	¥ 1,244.01	¥ 1,244.01	100%

Other trends evident in the data were the following:

- The Credit Assets Securitisation Scheme (CASS) market proportion of total originations slowed to 40%. They were just over 25% of total originations in 2016.
  - Consumer ABS backed by bread-and-butter consumer collateral (credit cards, auto loans, personal loans, RMBS) in the CASS market are off this year after a rapid run-up in 2014-2015.
  - CLOs in the CASS market decreased dramatically. They are 27.4% of total originations but only 11% of originations in 2016.
- ABSP transactions (CSRC-regulated) have begun to overtake the CASS (CBRC-regulated) market and now represent 60% of deals, cumulatively. For 2016 to-date, the percentage is nearly 75%.
  - Origination for grassroots financial collateral, like microloans and infrastructure bonds, is off. Microloans decreased 4%. Infrastructure bonds decreased 3% relative to cumulative originations.
  - Property-related securitisation (REITs and urban development ABS) is also down.
- Risk transfer deals continue to grow, but the picture is changing.
  - ABS "bridge lending" with stock margin collateralised deals, BOT buyback loans and entrusted loans, has decreased or not increased. This may be due to their event-driven nature, and possibly also to early principal amortisation due to losses.
  - Meanwhile, ABSP market originations of lease securitisations, trust receipts and nonspecific receivables ABS, which are associated with higher levels of risk, rose 12%, 4% and 3%, respectively.

What next for China asset-backed securities?

In the research paper, I describe how the engine of ABS market growth shifts from a funding arbitrage stage where the cost of capital is reduced based on data-evidenced quality, to a pricing arbitrage stage where the cost of capital is lowered by inter-market arbitrage. That shift appears to be underway now in China. In 2016, the ABS market was used more for recapitalisation and funding arbitrage, less for financing consumption as per 2014 and 2015.

In the U.S. market model, there is also a third, data/model arbitrage stage where the point of transacting is to trade against less sophisticated counterparties. The economic value produced in this stage is zero to negative. China's lagging ABS market risk architecture raises the spectre of an end-game like that of the global financial crisis. Who will take the lead to make sure this does not happen? Stay tuned.

China's markets are volatile. Get used to it.

Fang Xinghai
The Vice Chairman of China's Securities Regulatory Commission (CSRC)

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Banking

2013-006	Suzanne Morsfield, Susan Yount, Steve Yang	A Critical and Empirical Analysis of Currently Use Financial Data and Collection Standards	Q3 2016
2013-002	Vincent Lee	A Predictive Cyber Security Cost Model for Financial Services	Q2 2017
2015-003	Jane K Winn	Regulatory Focus on Competition and Innovation in Payment Services.	Q3 2016

Compliance

2013-003	Stuart Weinstein	Transatlantic Extraterritoriality and the Regulation of Derivatives: Conflict and Challenge for the Financial Services Industry What Practical Solutions Can Be Found?	Q1 2017

Culture

2013-004	Renée Adams Tom Kirchmaier	Women in Finance: A Global Perspective	Q4 2016
2015-002	Milind Saythe Bruce Arnold Paula Chadderton	Competition and Innovation in Payments Services	Q1 2017

Securities

2015-004	Hermann Rapp	CREST	Q4 2016
2015-006	Vytatuas Karalevicius	Impact on the Blockchain on Securities Transactions	Q4 2016

Sibos 2016 Agenda

"Better than a thousand days of diligent study is one day with a great teacher." So says a Japanese proverb. The SWIFT Institute will bring not one, but many great teachers to Sibos Geneva.

Throughout the week you will have the opportunity to attend a series of SWIFT Institute Talks given by a variety of academics on a range of topics impacting the global financial industry. Each lecture will last 30 minutes, including time for Q&A. And you will have the opportunity to meet the academics after their lectures. All lectures will take place on the SWIFT stand on the Exhibition Floor.

Also on the SWIFT stand on Monday afternoon, look out for the Sibos quiz show – A Question of Finance, which will take place at 4:30pm. The quiz show will see mixed teams of academics and financial industry professionals compete on their financial as well as general knowledge. And finally, immediately the quiz, you are welcome to join us for cocktails on the SWIFT stand. All are welcome!

"Better than a thousand days of diligent study is one day with a great teacher.

A Japanese proverb.

MONDAY 26 SEPTEMBER

9.00am - 10.00am
Education Session: Blockchain 101 - An Introduction To Distributed Ledgers Without The Cryptocurrencies
Workshop A

SPEAKER

Michael Mainelli, CEO, Z/Yen Group

10.30am - 11.00am
SWIFT Institute Talk: Cyber-Attacks: Artificial Intelligence Predictions
SWIFT stand

SPEAKER

Kalyan Veeramachaneni, Principal Research Scientist, MIT Institute for Data, Systems and Society

3.30pm - 4.00pm
SWIFT Institute Talk: FinTech: Reshaping Banking with Co-opetition and Disruption
SWIFT stand

SPEAKER

Bruce Weber, Dean and Professor of Business Administration, Lerner College of Business & Economics, University of Delaware

4.30pm - onwards
A Question of Finance: The SWIFT Institute Game Show, followed by cocktails
SWIFT stand

HOST
Julia Streets, Director, Streets Consulting Ltd

PANELLISTS INCLUDE
Michael Mainelli, CEO, Z/Yen Group
Bruce Weber, Dean and Professor of Business Administration, Lerner College of Business & Economics, University of Delaware

TUESDAY 27 SEPTEMBER

10.15am - 11.00am
SWIFT Institute Talk: Open APIs in Banking
SWIFT stand

SPEAKER

Markos Zachariadis, Assistant Professor of Information Systems Management & Innovation, Warwick Business School, University of Warwick

Pinar Ozcan, Associate Professor of Strategic Management, Warwick Business School, University of Warwick

3.30pm - 4.00pm
SWIFT Institute Talk: Divergence In Finance - Big Bang Blockchains Or Boring Lowly Ledgers?
SWIFT stand

SPEAKER

Michael Mainelli, CEO, Z/Yen Group

4.15pm - 4.45pm
SWIFT Institute Talk: Big Data
SWIFT stand

SPEAKER

Karl Schmedders, Professor of Quantitative Business Administration, University of Zurich

WEDNESDAY 28 SEPTEMBER

9.30am - 10.00am
SWIFT Institute Talk: New Dynamics of the FinTech Talent Pipeline
SWIFT stand

SPEAKER

Bruce Weber, Dean and Professor of Business Administration, Lerner College of Business & Economics, University of Delaware

10.15am - 10.45am
SWIFT Institute Talk: Business Leaders
SWIFT stand

SPEAKER

John Trundle, CEO, Euroclear UK & Ireland

2.00pm - 2.30pm
SWIFT Institute University Challenge 2017
SWIFT stand

SPEAKER

Fiza Hussain, MSc Information Systems Management & Innovation, Warwick Business School, University of Warwick

Sneha Sunkara, Student, MSc Information Systems Management & Innovation, Warwick Business School, University of Warwick

2.45pm - 3.15pm
SWIFT Institute Talk: Mobile Banking Revolution: M-PESA's Impact on Africa and Beyond
SWIFT stand

SPEAKER

Jay Rosengard, Director, Financial Sector Program, Harvard Kennedy School, Harvard University

THURSDAY 29 SEPTEMBER

10.15am - 10.45am
SWIFT Institute Talk: AML Differences - Europe and North America
SWIFT stand

SPEAKER

Prof. Michelle Frasher Ph. D.,Visiting Research Scholar, EU Center, University of Illinois at Urbana-Champaign

About SWIFT Institute

Knowledge is the cornerstone of any business and any business decision. The SWIFT Institute aims to provide that knowledge through sponsored research projects. An independent hub for cutting-edge research, the SWIFT Institute unites academic study with the practice of global finance to bolster the spread of big new ideas. Through the funding and publishing of a broad range of cutting-edge research, we encourage collaboration between thought leaders in finance and academia. The 30- and counting grants awarded for independent research demonstrate the Institute's commitment to engaging the industry with relevant, constructive debate. The SWIFT Institute makes incisive research possible and ensures that the findings are effectively disseminated across the globe.

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- Extend understanding of current practice and future needs in global financial services, with a particular focus on transaction banking.
- Foster independent research by giving grants, access to research data and publication opportunities for approved projects.
- Act as a catalyst for bringing the SWIFT community and academics together to explore ideas, share knowledge and extend mutual understanding.

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