SWIFT Institute
at Sibos 2015

A summary of our research so far

Sibos 2015 Singapore • 12 - 15 October

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Introduction

Welcome to Singapore. Welcome to Sibos. Welcome to the 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 17 of our sponsored research projects, ranging from RMB internationalisation to real-time payments. We also provide an overview of all the research projects we have sponsored and when they are due for completion. Sign up 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 Singapore 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 have the opportunity to meet and hear from some of the academics featured in this book. Throughout the week the SWIFT Institute will be hosting a lecture series 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 47. Of course it's not all about work, work, work. We like to have a bit of fun as well. On Tuesday afternoon we will be hosting the first ever Sibos game show, A Question of Finance. See two teams, each with a mix of academics and financial industry professionals, battle it out against each other to see who is smarter. Immediately following A Question of Finance is the SWIFT's Institute's cocktail reception, held in partnership with SWIFT's Business Intelligence team. Both events take place in the SWIFT Auditorium. 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. And if you have ideas for topics impacting our industry that would benefit from academic research, please feel free to contact me.

I look forward to meeting you this week at the SWIFT Stand for the lecture series, and on Tuesday afternoon at the SWIFT Auditorium.

Peter Ware
Director, The SWIFT Institute

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

Summary of SWIFT Institute Working Paper No. 2012-001

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Introduction

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 part of the 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 referred to as 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 what 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 in its favour.

Read the full paper at
swiftinstitute.org/research-and-grants

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.

Financing the SME Supply Chain in Asia

Summary of SWIFT Institute Working Paper No. 2012-002

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Introduction

Asia's economic miracle is often associated with large, multi-national companies. While these organizations have been important drivers of the region's growth, small and medium enterprises (SMEs) accounting for more than 98% of 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 organizations represent a weak link in the financial supply chain for SMEs in the region. The problem also hinders the physical supply chain in that SMEs are key drivers of business growth in the region. This paper proposes a framework for financial lending to allow formal lending organizations 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 realized 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 provide insights for example on how the dairy sector, 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 organized. Yet the demand for financing from the SME business sector in Asia is huge. This research 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 that penetration is a key challenge to these interventions. These programs only reach a relatively small fraction of the total population of businesses.
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.

Growth of SMEs in Asia

The lack of affordable financing options stymies the growth of SMEs in Asia. The paper suggests that banks in the region need to redesign their lending portfolios so that they are better able to evaluate and manage the SMEs' 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 customization 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.

Can Mobile Money Be Used to Promote Savings: Evidence from Northern Ghana

Summary of SWIFT Institute Working Paper No. 2012-003

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Introduction

This research seeks to understand whether and how mobile money (m-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 m-money adoption and usage in Ghana, with a goal towards providing insights into whether m-money services could be used to:

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

Barriers for m-money

To better understand the barriers, this 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 m-money services available and the potential barriers to adoption. The second stage involved the implementation of an "action-oriented research" program. The purpose of the action-oriented research was to understand rural households' demand for formal and informal financial services (including money transfer and savings services), their access to and usage of m-money and whether and how this technology could be used to improve households' access to financial services.

The location of this research was in northern Ghana, which was chosen for four primary reasons. First, despite a relatively stable economy and a number of formal financial institutions, there is still limited access to formal credit and savings institutions, particularly in rural areas. Second, there is a long history of informal savings in Ghana, either via susu collectors or through rotating village savings clubs. Third, while mobile phone coverage is substantial in Ghana, m-money is a relatively recent phenomenon, although there are numerous m-money providers. And finally, households engage in a substantial amount of migration to diversify income sources and smooth risk.

Ghana is currently classified as a middle-income country, with a per capita income of USD $1,430 per year. Between 2000 and 2007, 30 percent of the population lived on less than USD $1 per day and 54 percent lived on less than USD $2 per day (World Bank 2012). Approximately 29 percent of the population has access to a formal financial institution, defined as a bank, microfinance institution or cooperative. This research has shown that simple interventions that sought to alleviate the barriers to m-money adoption and usage in northern Ghana were associated with increases in the registration and use of m-money among those living in rural villages. In its initial stages, usage was primarily for receiving money transfers from migrants, but after 2.5 months, approximately 26 percent of all individuals were using mobile money for both receiving remittances and savings. While the empirical findings and generalizability of these results is limited, they suggest that m-money might reduce the transaction costs associated with receiving money transfers, as well as allow households to save, a key strategy for rural households to smooth consumption in response to shocks.

Costs of m-money

Several factors can potentially explain the universal m-money registration among these populations. First, the m-money SIM cards were offered for free (a value of US$.50) and an m-money agent visited each village to register interested individuals, which would not be available in most rural areas in Ghana. Second, the recipients had prior experience with the partners who introduced and monitored the project (CRS and the Catholic Diocese), which means that individuals could have trusted the agent (and hence the service) more. Because of these experiences, participants were also familiar with the concept of savings and therefore more predisposed to save and use financial services.

Nonetheless, m-money registration was not without costs, as individuals had to attend a sensitization meeting (between 1-2 hours), provide an identification card to the m-money agent and wait for the activation of the SIM card (which took several hours). In addition, in some cases, the m-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. This suggests that providing access to the SIM cards and an m-money agent located closer to rural areas could overcome one barrier to initial m-money adoption. Although it seems that access to the m-money agent was the most important for these populations, more research is necessary to be sure.

Beyond registration, ten percent of the population used the service in the month after the activation process was complete, with 26 percent using the service 2.5 months' later. Usage was highest in villages that had a mobile phone raffle + skit (as compared with a skit or mobile phone raffle), but usage was still relatively high in those villages. Users were using the service for receiving transfers (80 percent) or savings (76 percent), and usage was highest among those who had access to a mobile phone, either via the raffle or before the program started. Nevertheless, we cannot exclude the possibility that these observed differences in usage were due to other factors, rather than the interventions themselves.

This rate of usage was higher than expected given the short time frame. Yet whether the rate of usage will persist, increase or transform to include savings is hard to determine, and requires

additional rounds of data collection, in a larger sample of villages. 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. This research suggests that there is demand among rural populations for m-money, primarily for transfer services. While this wasn't the original intention of this study, transfers can serve as an important coping strategy, especially for the rural poor.

While limited in scope, this research offers some insights into the barriers to m-money adoption and usage, and can provide some recommendations for mobile phone operators (who may be interested in expanding adoption and usage) and the public sector (who may be interested in using the product for social protection transfers or promoting its usage to share risk).

Read the full paper at
swiftinstitute.org/research-and-grants

Securities

Market Infrastructures Forum

New Regulations and Collateral Requirements— Implications for OTC Derivatives

Summary of SWIFT Institute Working Paper No. 2012-004

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Introduction

At their Pittsburgh Summit in April 2009, the G-20 agreed to move over-the-counter (OTC) derivative market to the oversight of 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. This 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.

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 specialized 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 collateralized.

However, regulators have exempted several users of OTC derivatives, including sovereigns, quasi-sovereigns, multilateral institutions, and end-users such as airlines. Thus, six years after the Pittsburgh summit, the sizable under-collateralization in this market continues to not be fully addressed (Figure 2).

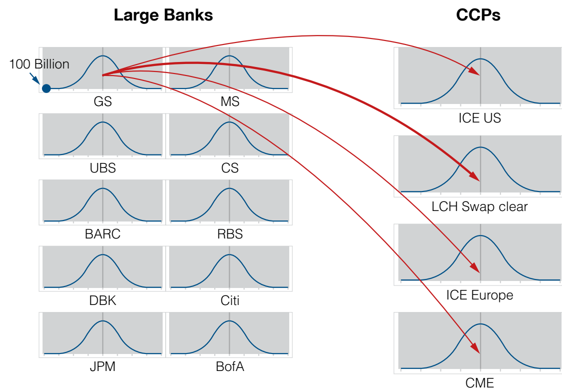

Figure 1: Large Banks Active in OTC Derivatives and Relevant CCPs - an illustration

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 derivatives 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 cross-product netting.

Risks from CCPs

The proposed regulations skirt the fundamental risk within the OTC derivatives market that resides in a bank, i.e., the 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.

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 is largely absent despite sound economics and research at some central banks that suggest taxpayer bail-outs can be minimized. A global consensus on several key issues is still missing.

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	4,048	2,470	2,070	2,524	2,482	2,336	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	707	706	648	708	679	645	605	692	700	678	615
D. Commodity contracts	955	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	1,788	1,543	1,414	1,977	1,840	1,792	779	724	671	803
GROSS CREDIT EXPOSURE*	5,005	3,774	3,521	3,578	3,480	2,971	3,912	3,668	3,626	3,784	3,033	2,826	3,358

* 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 exposure is after taking into account legally enforceable bilateral netting agreements.

Figure 2: Under-Collateralization in the OTC Derivatives Market

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 which contributes towards scarcity of good collateral in the market (and thus lower collateral reuse).

Conclusion

In summary, the proposed route of removing OTC derivatives from banks' books creates new SIFIs, reduces the economics of netting derivative contracts on banks' books, siloes collateral, and increases the interconnectedness of the financial system. Looking forward, regulators will do well if they focus on minimizing 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.

Read the full paper at
swiftinstitute.org/research-and-grants

The Prospects for a Common Language in Wholesale Financial Services

Summary of SWIFT Institute Working Paper No. 2012-005

- Alistair Milne • Professor of Financial Economics and Head of the Centre for Post Crisis Finance • Loughborough University School of Business
- Malcolm Chisholm • President • AskGet.com Inc.

Introduction

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 standardization 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.

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 organization 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. 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.

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 standardization yielding substantial gains in terms of improved operational efficiency. But achieving this degree of standardization 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.

Standards Forum

Payments

Securities

Read the full paper at
swiftinstitute.org/research-and-grants

The Global Network of Payment Flows

Summary of SWIFT Institute Working Paper No. 2012-006

- Samantha Cook PhD
  Chief Scientist • Financial Network Analytics Ltd.
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Introduction

The paper "The Global Network of Payment Flows" provides a descriptive analysis of the payment networks created by flows of SWIFT MT103 messages. MT103 (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 MT103 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 hypothesize that the decrease in number of links may be related to increased banking regulations in the wake of the financial crisis.

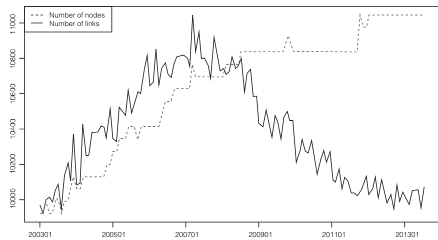


Figure 1: Number of nodes and links in payment networks

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, Oceanea, the Middle East and Southern Africa. The map below colours countries by their community classification from the most recent network.

Figure 2: Community classification, July 2013

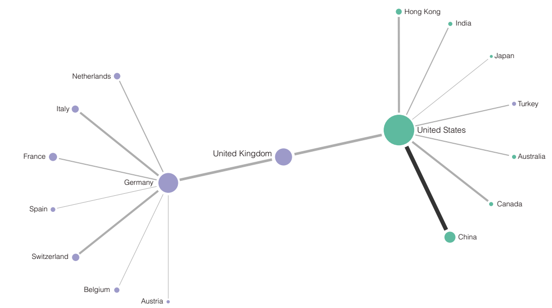
Payments

Market Infrastructures Forum

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.

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



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.

Read the full paper at
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A Dynamic Stochastic Network Model of the Unsecured Interbank Lending Market

Summary of SWIFT Institute Working Paper No. 2012-007

- Dr. Francisco Blasques
  VU University Amsterdam and Tinbergen Institute
- Falk Bräuning
  VU University Amsterdam and Tinbergen Institute
- Iman Van Lelyveld
  Senior Policy Advisor • De Nederlandsche Bank

Introduction

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.

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 uncollateralized leading to increased interbank lending spreads and a drop in lending volume. The fear of financial contagion amplified these effects.

The role of credit risk uncertainty

The research 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.

Re-establishing an active interbank market

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.

Read the full paper at
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Theory of Optimum Financial Areas: Retooling the Debate on the Governance of Global Finance

Summary of SWIFT Institute Working Paper No. 2013-001

Speaking at Sibos
See agenda on page 47

- Erik Jones
  Professor • The John Hopkins University SAIS and Nuffield College
- Geoffrey Underhill
  Professor • University of Amsterdam and SAIS Europe

Introduction

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.

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 maximize 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. centralized 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.

Read the full paper at
swiftinstitute.org/research-and-grants

Standards Forum

Compliance Forum

Macroprudential oversight, risk communication and visualization

Summary of SWIFT Institute Working Paper No. 2013-005

- Peter Sarlin
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Introduction

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 analyzing 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 modeling, one approach to dealing with complex data and modeling 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) spillover 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 analyze 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 spillover 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 visualization has a wide meaning and relates to a number of interdisciplinary topics, in particular information visualization and visual analytics. The rationale behind the use of visual representations and their usefulness relates to traits of the human visual system. Visualization 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 utilized techniques for visualization can be divided into two types: graphical representations of data and means for interaction. While the former can be summarized in various categories of visualization 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 visualization support risk communication in macroprudential oversight, and how?

Visualization in macroprudential oversight

This paper discusses the role of visualization 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 organization, 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 visualization and visual analytics, as well as techniques provided within these disciplines, as potential means for risk communication. The topic of visualization is in this paper discussed from three viewpoints: (i) we define the task of visualization in risk communication, (ii) present a so-called macroprudential data cube and discuss its structure, and (iii) review visualization techniques applied to systemic risk. This provides an overview of which tasks should be supported by visualization and the underlying data to be visualized. 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 visualizations and interactive interfaces.

Read the full paper at
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Analysis of Domestic / Cross-Border Clearing & Settlement Systems in Asia Countries

Summary of SWIFT Institute Working Paper No. 2014-001

Speaking at Sibos
See agenda on page 47

- Carol Hsu • Professor in the Department of Information Management • National Taiwan University
- Sia Siew Kien • Associate Professor and Director of the Nanyang Business School • Nanyang Technological University

Introduction

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 harnessing 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.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 summarizes three strategies undertaken:

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

With our findings, one might be interested about the future direction of integration and the potential impact on market liquidity resulting from ASEAN Exchanges. In terms of a model of regional capital market integration, our analysis shows that given the extent of institutional distance and the amount of effort required, the creation of a single pan-ASEAN trading, clearing and settlement entity vertically or horizontally for the ASEAN capital market would not be a preferred option.

Compared with such cases of regional capital market integration in Europe and the U.S, the condition of multiple currencies and the likely persistence of institutional distance would make a single entity across the different markets an unrealistic option.

But with the development of modern information communication technologies, it allows ASEAN Exchanges to have the benefits of implementing "home rules apply" cross-border linkages (i.e. trading link and the depository linkage via a global custodian) while tackling the institutional disparities.

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 harmonizing 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.

ASEAN Day

Securities

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

Summary of SWIFT Institute Working Paper No. 2014-002

- Douglas Cumming • Professor and Ontario Research Chair • Schulich School of Business, York University
- Armin Schwienbacher • Professor • Faculté de Finance, Banque, Comptabilité, Université de Lille 2
- Feng Zhan • Assistant Professor of Finance • Boler School of Business, John Carroll University

Introduction

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.

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Will the Alibaba model of securitization succeed in China? Who will take the lead in shaping China's securitization market model?

Summary of SWIFT Institute Working Paper No. 2014-003

Speaking at Sibos

See agenda on page 47

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

Introduction

Speaking with China's securitization market professionals in late 2013-early 2014, I found many willing followers - no doubt due to the strong theoretical arguments, government policy and regulatory support detailed in my paper's Introduction - but no obvious leaders. Since commercial support is vital for the creation of new markets, the question of who would lead China's securitization markets seemed vital. In this research I sought to answer this question

Who are the market leaders?

Leaders are change agents. Change almost always involves interesting disruptions of rules. In China, the dance between rulemaking and disruption is particularly interesting. China's socialist-market economic model gives government more latitude to control chaos and set rules that would seem inflexible to the West. On the other hand, disruption that is tactically brilliant can gain government attention and support for change. In this research, the philosophy and psychology of the antagonistic interface between government and commercial interests are examined.

The original candidate was Alibaba, a massive trade web reinventing itself as a virtual financial-services monolith to rival the banking establishment; but this proved a false start. Securitization market leaders need expertise in ABS deal-making and manoeuvring the ins-and-outs of China's regulated markets.

Only after studying the dynamic implications of China's capital market organisation and analysing the role of China's two parallel securitization markets (CASS/ABSP) (see research results published in section III) was it possible to develop realistic leadership criteria and rankings. Private conversations with senior managers guided my thinking. Data on transaction volumes and players from Shanghai-based Wind Information. [http://www.wind.com.cn/en/] became an invaluable resource in hypothesis testing.

Good and bad securitization

Securitization also has a dark side. Good securitizations can bring "non-fundable enterprises to a fundable position." But bad securitizations can hide leverage and mask risk, potentially exposing China's economy to a Global Financial Crisis (GFC) style crisis again. Moreover, it is very difficult to understand the source of risk when generalizing from the alphabet-soup of vehicle names and collateral types: ABS, RMBS, CMBS, CDO, CLO, CBO, CFO, ABCP, SIV, etc.

Why do we have bad securitizations? If the cause has not yet been addressed in mature overseas markets, how will China tackle the threat in its own markets? Are they immune? Will China's commercial leaders in the securitization market recognize and respond appropriately to good and bad transaction types? To contextualize an answer, I proposed a universal way of classifying the global and Chinese market sectors based on their natural trading strategies. The sectors are primarily focused on pursuing funding arbitrage, pricing arbitrage, or benchmark arbitrage. Early-stage markets like China's focus on funding arbitrage, while maturing markets focus on pricing and benchmark arbitrage. Problems that are not visible at the early stage begin to surface as market institutions become savvier about unreliable bond information and initiate benchmark arbitrage trades. When the market turns this way, market leaders are in the best position to profit. They may not be able to stay above the fray, no matter how virtuous.

China also has platforms for the development of liquidity for securitizations as well as distressed and obscure collateral - tens or hundreds of them, including the public exchanges and some quasi-public or private, dedicated markets like Lufax, Beijing Financial Assets Exchange and others. However, it does not yet have the sophistication to pursue benchmark arbitrage. Nevertheless, China's government can incorporate mechanisms into its market design that avoid the costly mistakes that led to the GFC, and at the same time, resolve the liquidity problem for its own markets, open it up as a tool for managing the restructuring of the state economy, integrate the sectors and fill the exchange platforms to capacity with well-structured, innovative transactions in an open, competitive environment

ASEAN Day

Securities

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Near Real-Time Retail Payment and Settlement Systems Mechanism Design

Summary of SWIFT Institute Working Paper No. 2014-004

Speaking at Sibos
See agenda on page 47

- 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

Introduction

In the digital economy, everything wants to be faster – faster product and service design, faster ways of buying and selling, and faster product delivery. It's an age of real-time commerce today. In the middle of it all though, faster payments practices need to be given more attention. This is be-cause they enable the exchange of funds at nearly the same time that economic transactions occur, more effectively supporting the consumer, business and social objectives. Making payments "fast-er" – especially 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. The pieces only come together when the banking community in a country is able to align the stakeholders' incentives to make the mechanism attractive to adopt.

Defining faster payments problem

After reviewing the various faster payments implementation efforts in different countries around the world, we explored the design of mechanisms for faster settlement based on issues that arise from the banks' point of view. One key issue is whether the mechanism offers balanced risks and rewards for participating banks.

This led us to pursue the development of hybrid priority queuing mechanism: one that combines the tradition of delayed net settlement with the advances associated with real-time gross settlement of funds, all digitally coordinated with the capacity to solve the related computational problems to optimize performance. It emphasizes the alignment of incentives for adoption. The goal we sought to achieve was to make it so that, on average, payments will settle faster – especially in real-time or near real-time.

Key findings

Our approach involves the use of computational simulations based on experimental conditions that are set up within a mathematical model. It combines some process logic for payments settlement, and key variables that relate to the frequency of delayed net settlement, the possibility of real-time gross settlement, the concentration of banking participants, and the number of payment transactions to be processed. In this work, we focused on lower-value retail payments.

We obtained a number of key findings.

1. A payments settlement intermediary that can support participant-defined payment settlement priorities, and manage a prioritized payments queue tends to support payments faster, on aver-age. It can do this reducing overdraft penalties in the system due to diminished transient li-quidity shortfalls. The beneficial effects will be stronger when the participating banks' reserves are low, their number is large, or the number of payment transactions is large.

2. The performance of a participating bank that operates its own payments queue and an interme-diated queue that our mechanism design offers are similar when the costs of funds are low. An intermediated queue is preferred when the cost of funds is high though.

3. Payment network concentration has a positive impact on the performance of our priority queu-ing mechanism, leading to more payments being settled via real-time gross settlement.

4. As the settlement frequency increases with our intermediated mechanism, both the settlement speed and the total number of payments settled increase. However, banks will experience high settlement pressure, which will lead to higher cost of operation for them, especially a higher cost of funds.

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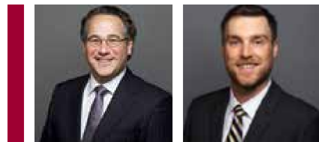
Cross-Border Low Value Payments and Regional Integration: Enablers and Disablers

Summary of SWIFT Institute Working Paper No. 2014-005



- Dr. Leo Lipis
  Founder and CEO • Lipis Advisors GmbH
- Colin Adams
  Senior Consultant • Lipis Advisors GmbH

Introduction

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 centralized 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.

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

Source: Leo Lipis and Colin Adams

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.

Read the full paper at
swiftinstitute.org/research-and-grants

Innotribe

The Miner's Dilemma: An analysis of Bitcoin as a novel distributed system

Summary of SWIFT Institute Working Paper No. 2014-006

- Ittay Eyal
  Post doctoral fellow
  Department of Computer Science, Cornell University

Introduction

Mining pools are an essential part of the Bitcoin ecosystem. They enable many small miners to operate at 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. 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. Our work shows that all this may not be necessary.

The miner's dilemma

In our analysis, which was presented at the 2015 36th IEEE Symposium on Security and Privacy, 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 than if none attacks. It is well-known that a pool can attack another open pool by pretending to work on its behalf, and thereby taking a cut of its proceeds, but never contributing by discovering blocks; this is the classical 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. 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.

Dismantling large mining pools

The dismantling of overly large pools will bring Bitcoin 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 Bitcoin community. Our analysis shows that short-term incentives can cause this dismantling to occur spontaneously, making the Bitcoin infrastructure more distributed, and so more robust and secure.

Read the full paper at
swiftinstitute.org/research-and-grants

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

Summary of SWIFT Institute Working Paper No. 2014-009

- Dr. Daniel Gozman • Associate Lecturer • Henley Business School, University of Reading
- Dr. Wendy Currie • Professor of Information Systems • Audencia Nantes School of Management
- Dr. Jonathan Seddon • Associate Professor • Audencia Nantes School of Management

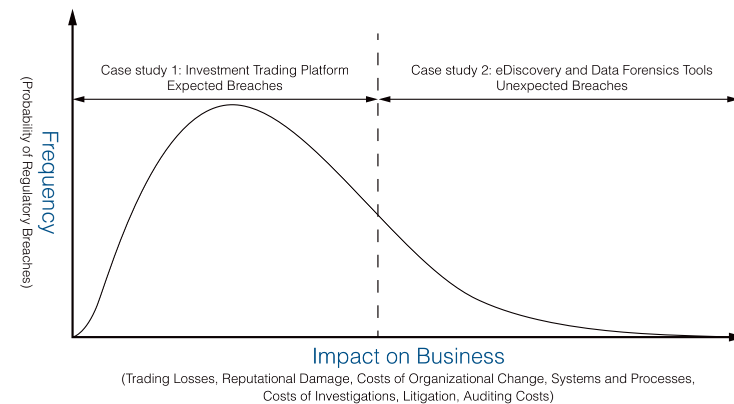
Introduction

Within post-financial crisis global markets we have seen the extensive adoption of technology, the globalization 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 organization 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 below. 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. 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.



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 organizations 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 organizations, 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 organization.

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 categorization and management of data by financial organizations. Yet often information and data governance within financial organizations 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 organizations to segregate funds appropriately and put strategies in place to mitigate reputational damage.

Conclusions and future research

Our study shows how the commercialization 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 researched 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. We would caution fellow researchers that in many regards, the 'devil is in the detail.'

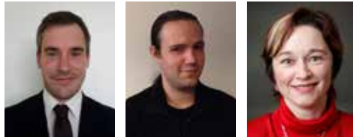
Read the full paper at
swiftinstitute.org/research-and-grants

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.

Money Laundering Risks Facing Third-party Payment Providers in Emerging Economies and the Counter Policies & Measures

Summary of SWIFT Institute Working Paper No. 2015-001

Speaking at Sibos
See agenda on page 47



- Nathan Van De Velde • Legal researcher in ICT law • KU Leuven
- Niels Van De Zande • Legal researcher ICRI/ CIR–iMinds • KU Leuven
- Peggy Valcke • Professor of Law / Research Professor • KU Leuven

Introduction

In the last decade, the financial landscape has changed considerably under the influence of new technologies and communication methods. All over the world, new legal frameworks have been adopted to bring non-credit institution actors under regulation. However, there are two major new developments for which the legal framework is less clear: third party payment providers and virtual currencies.

Third party payment providers (TPP) allow consumers to, for instance, make online payments without the need for a credit card by establishing a "link between the payer and the online merchant via the payer's online banking module". They do not require the consumer to open an account directly with them. Instead, they gather information on the consumer's existing bank accounts and present that information in an integrated manner and in doing so gain possession of a significant amount of sensitive information, for instance by providing a gateway from which consumers log in to their bank accounts using their unique identifiers and credentials.

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 examples are cryptocurrencies – such as bitcoin – which are decentralized, and use pseudonyms for their transactions.

Both of these developments do not fall under the European Union's current Payment Services Directive. TPPs are expected to be included under the upcoming Second Payment Services Directive (PSD2) and the recently adopted Fourth Anti-Money Laundering Directive (AMLD4). For virtual currencies, no legislative initiative has been taken yet within the EU.

The goals of this research were therefore (1) to analyze which TPPs are covered by the PSD2 and AMLD4, the consequences thereof, as well as to what extent such coverage goes; and (2) to analyze the potential for the regulation of cryptocurrency in terms of combatting money laundering and terrorist financing. From a methodological point of view, the initial research was focused on developments within the EU, with an expanded view to the US and Asian markets. Current legislation and ongoing legislative initiatives were critically assessed for their inclusion of TPPs and virtual currencies. The findings were reported in conclusions integrating the work from both research tracks, ultimately leading to a number of policy recommendations.

Third party payment providers

The upcoming PSD2 will include a few new actors: account information service providers (AISP), and payment initiation service providers (PISP). 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 authorization to provide their services, be it that such authorization is more lenient than that for regular payment service providers. 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 latest version of the text led to some concerns regarding how certain security and liability issues will be arranged. Therefore, despite subjecting TPPs to high regulatory standards, certain key areas remain problematic and unresolved. In particular, the current provisions on authentication including the use of security credentials, liability allocations in case of unauthorized or defective payment services and the transition period cause legitimate grounds for concern.

The Fourth Anti-Money Laundering Directive (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 organizations, 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, Article 3 of the directive specifies that financial institutions also encompass activities as listed in Annex I to Directive 2013/36/EU, including point 4, which refers to payment services as defined by the Payment Service Directive. Considering that the Second Payment Services Directive 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 once the PSD2 has been formally adopted. 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, such as minimum capital requirements and anti-money laundering rules. Taiwan has also regulated TPPs.

Virtual currencies

Currently, there are no convincing arguments to consider virtual currencies as regulated under the EU's Payment Services Directive or the Second E-money Directive. While the PSD2 does introduce new terminology and significantly amended scope exemptions compared to the original Payment

Services Directive, there is no wider inclusion of virtual currencies under its scope. 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, which is up for revision. This revised 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. At the same time, EU Member States have been adopting national responses to the growth of virtual currencies. Mostly, these responses relate to the question whether virtual currency exchange services are a taxable transaction. This question is currently pending before the Court of Justice of the European Union, which could aid in bringing the Member States on the same line regarding this matter.

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, two states – New York and California – have announced legal frameworks aimed specifically at virtual currencies. In both states, virtual currency service providers would 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 in New York's legal framework. Interestingly, these frameworks demonstrate 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. Countries that are looking into the regulation of virtual currency intermediaries are Japan and Singapore.

Policy recommendations

From the conclusions formulated to the research, the following policy recommendations were derived. These are aimed at both the public sector (1-5) and the private sector (6-9).

Public sector recommendations

- Recommendation 1: Address remaining ambiguities
- Recommendation 2: Harmonize EU legal framework
- Recommendation 3: Coordinate global regulatory initiatives
- Recommendation 4: Avoid a nationalist approach to virtual currencies
- Recommendation 5: Adopt a rational outlook on virtual currencies

Private sector recommendations

- Recommendation 6: Look beyond the disruptive forces
- Recommendation 7: Need for compliance
- Recommendation 8: Do not dismiss virtual currencies wholesale
- Recommendation 9: Mind the Block Chain

Read the full paper at
swiftinstitute.org/research-and-grants

Upcoming research

2015		
Q4 2015	Michelle Frasher	Multinational Banking and Conflicts among US-EU AML/CTF Compliance & Privacy Law: Operational & Political Views in Context

2016		
Q1 2016	Milind Saythe Bruce Arnold Paula Chadderton	Compliance focus on Competition and Innovation in Payments Services
Q1 2016	Renée Adams Tom Kirchmaier	Women in Finance: A Global Perspective
Q1 2016	Stuart Weinstein	Transatlantic Extraterritoriality and the Regulation of Derivatives: Conflict and Challenge for the Financial Services Industry What Practical Solutions Can Be Found?
Q1 2016	Suzanne Morsfield Steve Yang Susan Yount	A critical and empirical examination of currently-used financial data collection processes and standards
Q1 2016	Nicolas Glady Ashwin Malshe	Modelling the cost of financial services across countries using a Dynamic Hierarchical Bayes framework
Q2 2016	Dirk Baur KiHoon Hong Adrian Lee	The influence of virtual currency on fiat currency
Q3 2016	Jay Rosengard	Financial Inclusion: Mobile Banking in Africa
Q3 2016	Jane K. Winn	Regulatory Focus on Competition and Innovation in Payment Services
Q4 2016	Hermann Rapp	CREST – A 20th Anniversary Review

Sibos 2015 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 Singapore in 2015.

Throughout the week you will have the opportunity to attend lectures 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.

In the SWIFT Auditorium, look out for the first ever Sibos quiz show – A Question of Finance, which will take place in the SWIFT Auditorium on Tuesday 13th 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 following A Question of Finance, you are welcome to join us for a drink at the SWIFT Institute and SWIFT's Business Intelligence cocktail reception. All are welcome!

Session Date / Venue	Speaker	Topic
Monday 4pm SWIFT stand	Erik Jones, Professor of International Political Economy, The Johns Hopkins University	Safeguarding Financial Integration
Tuesday 2pm SWIFT stand	Robert J. Kauffman, Professor of Information Systems; Associate Dean (Faculty), School of Information Systems, Singapore Management University	When Will We Ever Get the Incentives for Faster Payments Right? Analytics to Pave the Road toward Future Money
Tuesday 2:30pm SWIFT stand	Carol Hsu, Professor in the Department of Information Management, National Taiwan University	Cross-Border Stock Market Links in Asia: What Makes One a Success?
Tuesday 3:30pm SWIFT stand	Chi Lo, Part-time Lecturer at the Chinese University of Hong Kong, and Senior Economist for Greater China of BNP Paribas Investment Partners (BNPP IP)	Currency War – A Window for the Rise of the Renminbi
Tuesday 4:30pm SWIFT Auditorium	**Host** Julia Streets **Academics** Robert Kauffman Erik Jones **Bankers** Marcus Treacher, HSBC / Ruth Wandhöfer, Citi / T.S. Shankar, Standard Chartered	A Question of Finance – The first ever Sibos game show! Two teams each with a mix of academics and financial industry professionals will compete in a battle of wits based on financial industry (and general) knowledge.
Tuesday 5:15pm SWIFT Auditorium	**SWIFT Institute and Business Intelligence Cocktail Reception**	
Wednesday 8am Compliance Forum Conference Room 2	Nathan Van de Velde, KU Leuven + other speakers / moderator (Panel Session)	***SWIFT Institute meets the Compliance Forum*** The evolution of third party payment providers under the EU's upcoming PSD2 and AMLD4
Wednesday 2pm SWIFT stand	Alan Laubsch, Director, Financial Network Analytics (FNA)	Risk Management in the Age of Disruption
Wednesday 2:30pm SWIFT stand	Ann Rutledge, Adjunct Assistant Professor of Finance, Hong Kong University of Science and Technology	How and Why China's Domestic Securitization Market Will Leapfrog the West
Wednesday 3pm SWIFT stand	Stuart Weinstein, Professor of Practice Informed Legal Education, and Head, Coventry Law School	Transparency in Securities Transactions in Custody Chains

About SWIFT Institute

Launched in April 2012, the SWIFT Institute fosters independent research to extend the understanding of current practices and future needs across the financial industry. Managed by SWIFT, and working in close collaboration with academics from top international universities, the SWIFT Institute brings the financial industry and academia together to explore ideas and share knowledge on topics of global importance. The research covers various aspects of transaction banking, including the following areas: Payments, Clearing /Settlement, Cash Management, Trade Finance, Trust and Securities.

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About SWIFT

SWIFT is a member-owned cooperative that provides the communications platform, products and services to connect more than 10,800 banking organisations, securities institutions and corporate customers in more than 200 countries and territories. SWIFT enables its users to exchange automated, standardised financial information securely and reliably, thereby lowering costs, reducing operational risk and eliminating operational inefficiencies. SWIFT also brings the financial community together to work collaboratively to shape market practice, define standards and debate issues of mutual interest.

For more information, visit www.swift.com

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