Understanding Banks in Emerging Markets

Observing, Asking or Experimenting?

Edited by Thorsten Beck, Ralph De Haas and Steven Ongena

CEPR

A VoxEU.org eBook

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Foreword

In September 2013, the European Banking Center at Tilburg University, the European Bank for Reconstruction and Development, the *Review of Finance*, and CEPR organised a conference aimed at better understanding the behaviour of banks in emerging markets. This eBook gives an overview of the conference presentations and discussions.

As the editors note in their introduction, one of the most interesting aspects of the conference presentations was the use of micro-level data sets combining data from different sources, such as households, enterprises, banks and credit registries to better understand the behaviour of banks. One example was the combination of the two EBRD surveys to demonstrate that firms in Russian cities with more favourable banking markets have better access to credit and as a result innovate more.

We are very grateful to the editors, Thorsten Beck, Ralph De Haas and Steven Ongena, for the energy they have shown in organising and editing the inputs to this eBook. As ever, we also gratefully acknowledge the vital contributions of Anil Shamdasani and Charlie Anderson, CEPR's Publications Officer, for their characteristic speed and professionalism in producing the book.

Stephen Yeo
Chief Executive Officer, CEPR
29 October 2013

Introduction

Thorsten Beck, Ralph De Haas and **Steven Ongena**
Cass Business School, Tilburg University and CEPR; EBRD and Tilburg University; University of Zurich, SFI and CEPR

On 5–6 September 2013, the European Banking Center at Tilburg University, the European Bank for Reconstruction and Development, the Review of Finance, and the Centre for Economic Policy Research organised the conference "Understanding Banks in Emerging Markets: Observing, Asking, or Experimenting?" at the EBRD in London. The conference brought together leading researchers to discuss recent developments in banking research. This eBook gives an overview of the different topics discussed during the conference.

While the papers deal with a wide variety of topics, a common thread is the use of innovative data to learn more about how banks operate in the often challenging environment of emerging markets. In particular, the studies use data from existing data repositories such as credit registries ('observing'); from large-scale surveys of bank CEOs and bank clients ('asking'); and from randomised experiments ('experimenting'). All three methods try to prise open the banking 'black box' in different ways – each with their own advantages and disadvantages. Using these different data sources allows researchers to address relevant policy questions, and also to better understand the micro-mechanisms of financial contracting and the supply- and demand-side constraints that (potential) borrowers in emerging markets face on a daily basis.

This introductory chapter provides a quick overview of the different chapters in this eBook, summarises the main messages, and outlines areas for further research.

Observing banks

Using bank-, firm-, or loan-level data for hypothesis testing has become a prominent tool in the empirical banking literature. Access to credit registry data or proprietary loan

data from specific banks allows researchers to drill deeper into the details of financial service provision and to gauge the effects of specific policies.

Bank taxation has been an important part of the ongoing regulatory reform debate. However, there is only limited evidence so far on the incidence of such taxes. **Olena Havrylchyk** and **Gunther Capelle-Blancard** assess the impact of the Hungarian bank asset tax, introduced in 2010. The differential rate for large and small banks allows them to apply a difference-in-differences approach that helps disentangle the impact of the tax from other shocks to the banking system. The authors find that the banks managed to shift the tax burden to their customers. The incidence was especially strong for existing retail mortgages – on which banks are allowed to change the interest – and for households who are less mobile and thus locked in with one specific bank.

Conor O'Toole and **Carol Newman** use province- and firm-level data for Vietnam to document the relationship between financial deepening and firm investment and growth for a rather special transition economy. Combining aggregate data (total credit to the private sector) with a long panel of firm-level survey data allows them to exploit significant variation in both demand for and supply of financial services. The authors find that firms' financing constraints are decreasing in the financial depth of the province (as measured by credit provided to the private sector) and the degree to which finance is allocated on market-based terms, whereas they are increasing in the use of financing by state-owned enterprises in the same province. They also find that the magnitude of the effects of financial development – across all measures of financial depth and resource allocation – are higher for private domestic and small- and medium-sized enterprises.

Collateral has been a prominent characteristic of loan contracts since ancient times. Lenders have two reasons to ask for collateral – as a commitment device against principal-agent problems, and as a hedge against default risk. Empirical researchers have been struggling to differentiate between these two objectives. **José María Liberti** and **Jason Sturgess** use data on small business loans issued by the lending division of a multinational bank spanning 15 emerging market economies. The ex-ante measure

of risk is based on internal credit ratings, while ex-post risk is measured by default probability. Their empirical design to separate commitment from hedging is based on the simple observation that if borrowers use collateral to credibly commit themselves against agency risk, then one should not observe that particular risk in equilibrium ex-post. Conversely if collateral provides a hedge against realised default, then collateral should be positively correlated with observed default and uncorrelated with ex-ante agency risk. The results indicate commitment to be the primary motive for asking for collateral.

When financial institutions and markets arise to screen and monitor borrowers, the question of who monitors the monitor is important. Loan syndications – where lead arrangers monitor borrowers on behalf of participant banks – provide a nice setting to analyse this issue. **Raoul Minetti** uses the Korean experience to study the impact of the political connections of large business groups ('chaebols') on the monitoring activity of financial institutions. Before the 1997 crisis, chaebols enjoyed an implicit bailout guarantee, and they could use the network of cross-debt payment guarantees among chaebol subsidiaries to secure funding. After the 1997 crisis, the government let six chaebols go bankrupt and also split the biggest one. Several chaebol members underwent bank-led workout programs. Using syndicated lending to a group of chaebol-affiliated and non-affiliated enterprises before and after the post-crisis corporate reform, the author shows that the concentration of syndicated loans to chaebol firms was lower than that of loans to non-chaebol firms, but that this difference in loan concentration narrowed after the crisis and the reform. This suggests that financial institutions increased their monitoring effort and started to form more concentrated syndicates to give lead arrangers stronger incentives to monitor.

Martin Brown, **Benjamin Guin,** and **Karolin Kirschenmann** use data from a large microfinance institution to examine how the proximity to a microfinance bank affects the use of bank accounts among households in southeast Europe. Using data from the EBRD's Life in Transition Survey for 2006 and 2010, they show that the institution moved into areas with a higher share of low-income households but strong economic

activity in 2006. Using a difference-in-differences approach, they find that the share of households with a bank account increased significantly more in locations in which the MFI opened a new branch compared to locations where it did not – an increase that was stronger among low-income than among high-income households.

One important area in banking research has been cross-border banking. Many countries across the developed and developing world have seen a rapid increase in cross-border banking and financial integration more generally in the first decade of the 21st century – although this trend has been partly broken during the recent crises. In his keynote speech, **Atif Mian** discussed the role of cross-border banking both on the micro-level – firms' access to credit – and the macro-level – global imbalances. A rich and expanding literature has shown significant differences in lending techniques by domestic and foreign banks – often based on detailed loan-level data from credit registries. Cross-border integration and financial integration also have macroeconomic consequences, often resulting in boom-and-bust cycles with the consequence of banking and currency crises. While this does not necessarily imply that international financial integration is to be avoided, it puts a larger burden on macroeconomic management. The recent events in the Eurozone can be interpreted along similar lines.

Experimenting

Randomised controlled trials have become increasingly popular in the economics profession over the past year. Originally designed in the medical profession, they allow the researcher to shape the intervention and gauge its impact on a treatment group – as compared to a control group – where both were formed beforehand in a random fashion. There has been a large array of randomised controlled trials assessing the impact of access to financial services on the poor, as well as the effectiveness of specific products – many of which have taken place in low-income countries. More recently, the focus has broadened to the demand side, exploring constraints related to a lack of financial literacy that prevent both the uptake and the efficient use of formal financial services.

Financial literacy has been a hot topic on the financial inclusion agenda across the developed and developing world. Many governments, employers, non-profit organisations, and even commercial banks have started to provide financial literacy courses with the aim of improving financial education. However, data from different financial education programs in the US suggests that participation rates for non-compulsory financial education programs are typically extremely low. **Miriam Bruhn**, **Gabriel Lara Ibarra** and **David McKenzie** explore the reasons for this low participation by examining a voluntary financial literacy course in Mexico City. Potential participants were given considerable monetary and non-monetary incentives to attend, but with little success. Survey results indicate that the lack of interest in training appears to be a rational choice, since users see relatively little benefit from it. Even among participants, however, the impact of the training on subsequent financial behaviour was quite limited. The conclusion? There are limited gains to trying to encourage people to attend financial literacy courses. "Instead, tailoring financial education to individuals at teachable moments, and experimenting with novel media for teaching, such as edutainment, may be more promising areas for policy innovation."

Antoinette Schoar took a broader view in her keynote lecture on the use of randomised control trials. As shown by an increasing literature, slight changes in how financial products are set up and sold can influence both take-up by customers and outcomes such as default probability. Experiments across Bolivia, Peru, the Philippines, and Uganda have shown that reminders sent to customers by text message have the same effect on repayment performance as cash incentives to repay on time. Reminders can thus help people stick to their plans. An experiment in India has shown that establishing personalised relationships between loan officers and borrowers can also help reduce default probability, with the conclusion that such relationships can constitute an alternative type of collateral. What these different experiments show is that repayment behaviour is very much an endogenous variable, and behavioural economics can provide important insights into optimal loan design.

Asking banks

A relatively new line of research uses bank-level survey data to capture banks' lending techniques and organizational structures, and their relationship with real-sector outcomes. The EBRD has undertaken two rounds of the Banking Environment and Performance Survey – the first one in 2006 and the second in 2012, in cooperation with the European Banking Center at Tilburg University. As part of this survey, face-to-face interviews were conducted with the CEOs of over 600 banks across 32 EBRD countries of operation. In addition, detailed information was collected on the exact geographical location of over 135,000 bank branches across these countries. Several papers in the conference use these data to test existing and new hypotheses on banks' behaviour.

Cagatay Bircan and **Ralph De Haas** combine the bank-level survey data from the Banking Environment and Performance Survey with information on the financing needs of Russian firms, taken from another EBRD survey – the Business Environment and Enterprise Performance Survey. By combining these data, they show that firms in Russian cities with more favourable banking markets not only have better access to credit but – because of this improved access – also innovate more. Micro-evidence like this helps us understand *why* banking development contributes to long-run economic growth, and thus complements earlier studies that use less detailed, country-level data.

Ralph de Haas, **Liping Lu**, and **Steven Ongena** revisit the bank competition question using the Banking Environment and Performance Survey question on each bank's direct competitors. They find that banks are more likely to identify other banks as key competitors when their branch networks overlap more, and when the potential competitor has fewer hierarchical layers, is larger, and foreign-owned. Using this new indicator of bank competition, they find that in localities with more intense bilateral bank competition SMEs are more likely to be credit constrained than in less competitive credit markets, providing evidence for the importance of long-term relationships between local banks and clients. In contrast, the local level of concentration as measured

by a conventional Herfindahl–Herschman Index does not appear to have a first-order impact on access to credit.

Conclusions

New micro-level data sets allow a better testing of existing and new hypotheses. These data sets are on the country- and cross-country level and from different sources, including households, enterprises, banks, and credit registries. Information gained through lab or field experiments can provide additional insights into optimal product and policy design. It will be the combination of different methodologies and data sources that will push this research programme forward.

The papers presented in the conference and summarised in this eBook point the way towards an exciting research agenda. First, more detailed micro-level data help researchers and also practitioners better understand the impact of innovative products, lending techniques, and delivery channels. Second, micro-level data allow a more careful analysis of the impact of specific financial-sector policies on banks and customers. A third important area is that of demand- and supply-side constraints on entrepreneurs in accessing external finance. Applying lessons from behavioural economics will be critical here.

The economists on the ground

While research economists certainly do not spend all day in armchairs, our profession tends to be seen as a low-risk one. However, observing, asking, and experimenting carries risks – especially in today's world of constant terrorist threats. It was with great shock that we heard the sad news that one of our conference participants was murdered on 21 September 2013 in the Westgate shopping centre in Nairobi. While Ravi Ramrattan was still a young economist, he had already made an enormous impact around the world, in his native Trinidad, at LSE in the UK, and especially in Kenya where he was involved in randomised control trials as well as household- and bank-

level surveys. He was about to start a PhD at Tilburg University as another stepping stone in what promised to be a bright career. As testimony to the impact he has made on people even on their first encounter, we reprint an obituary by **Koen Schoors**, another conference participant.

About the editors

Thorsten Beck is Professor of Banking and Finance at Cass Business School in London and Professor of Economics at Tilburg University. He was the founding chair of the European Banking Center at Tilburg University from 2008 to 2013. He is also a research fellow of the Centre for Economic Policy Research (CEPR). Previously he worked in the research department of the World Bank and has also worked as consultant for – among others - the IMF, the European Commission, and the German Development Corporation. His research, academic publications and operational work have focused on two major questions: What is the relationship between finance and economic development? What policies are needed to build a sound and effective financial system? Recently, he has concentrated on access to financial services, including SME finance, as well as on the design of regulatory and bank resolution frameworks. In addition to numerous academic publications in leading economics and finance journals, he has co-authored several policy reports on access to finance, financial systems in Africa and cross-border banking. His country experience, both in operational and research work, includes Bangladesh, Bolivia, Brazil, China, Colombia, Egypt, Mexico, Russia and several countries in Sub-Saharan Africa. In addition to presentation at numerous academic conferences, including several keynote addresses, he is invited regularly to policy panels across Europe. He holds a PhD from the University of Virginia and an MA from the University of Tübingen in Germany.

Ralph De Haas is a Deputy Director of Research at the EBRD and a part-time Associate Professor of Finance at Tilburg University. Ralph holds a PhD in Economics from Utrecht University and has published or has papers forthcoming in the *Review*

of Financial Studies, *American Economic Review Papers and Proceedings*, *Journal of Money, Credit, and Banking*, *Journal of Financial Intermediation*, *Economic Policy*, and *Journal of Banking & Finance*. His main research interests include international banking and financial integration, development economics, and small-business finance. He is currently working on large-scale randomized field experiments to measure the impact of microfinance on poverty alleviation in Bosnia, Mongolia, and Morocco.

Steven Ongena is a Professor in Banking at the University of Zurich and the Swiss Finance Institute. He is a research fellow in financial economics of CEPR. He has published more than 35 papers in refereed academic journals, including in the *American Economic Review, Econometrica, Journal of Finance, Journal of Financial Economics, Journal of International Economics*, and *Review of Finance,* among other journals, and he has published more than 40 papers in other collections. He is currently a co-editor of the *Review of Finance*; and he serves as an associate editor for a number of other journals. He is a director of the European Finance Association and of the Financial Intermediation Research Society. In 2009 he received a Duisenberg Fellowship from the European Central Bank and in 2012 a Fordham-RPI-NYU Stern Rising Star in Finance Award.

Who Pays Bank Taxes?

Olena Havrylchyk and **Gunther Capelle-Blancard**
CEPII; Université Paris 1 "Panthéon- Sorbonne" and CEPII

Taxing banks is back on the agenda as a matter equity and efficiency. This chapter presents evidence that the incidence of Hungary's bank levy falls on borrowers via higher interest rates. Complementary policies that boost borrower choice could increase market competition and protect consumers.

In the aftermath of the financial crisis, several proposals for taxation of the banking sector have emerged. This idea first appeared during the Pittsburgh G20 Summit in 2009, when policymakers argued that "the financial sector could make a fair and substantial contribution toward paying for any burdens associated with government interventions to repair the banking system".

Since then, a number of new banking taxes have been proposed by the IMF (2010) and the European Commission (2010, 2012), and several European countries have introduced levies on some elements of banks' balance sheets.

Bank tax goals

The design and objectives of these new bank levies differ from one country to another (see Table 1).

- In Germany and Sweden, the revenues go to a special reserve fund to ensure that taxpayers' money will not be used for future bailouts;
- In Hungary, France, and the UK, tax revenues go to the budget.

Many proponents of bank levies argue that they could be designed as Pigouvian taxes that would serve as macro-prudential tools to discourage risky activities.

Table 1 Examples of new levies on the financial sector's balance sheets

	Austria	France	Germany	Hungary	Sweden	UK
Start date	2011	2011	2011	2010	2009	2011
Funds raised contribute to	Treasury	Treasury	Banking Fund	Treasury	Banking Fund	Treasury
Tax base	Balance sheet. Insured deposits and capital are excluded	Minimum own funds required to comply with capital requirements	Liabilities. Non-bank liabilities and equity are excluded	Total assets. Interbank loans and securities of credit institutions are excluded	Liabilities with some exceptions	Liabilities. Insured deposits and Tier 1 capital are excluded
Threshold	Tax base of EUR €1 billion	€500 million of minimal own funds	None	None	None	£20 billion of "relevant" liabilities
Rate	0.055-0.085%	0.25% of own funds	0.02-0.04%	0.15-0.53%	0.036%, but reduced rate for 2009-10. Could depend on risk in the future	0.07%. 50% tax rate for "stickier funding" (>1 year of maturity)

Source: KPMG International Cooperative.

- In the UK and Germany, the tax is levied on volatile short-term funding, whereas stable forms of funding, such as equity and deposits, are excluded.
- In France, the tax is levied on risk-weighted assets, and banks can reduce their tax liabilities only by decreasing their risk.

Who pays these taxes?

Imposing a tax on banks, however, does not mean that banks will ultimately pay. Banks could, for example, shift the burden to their customers by raising interest rates on loans.

- Tax incidence depends on the tax base.
- If the tax is imposed on profits, *a priori* this should not affect the profit-maximising behaviour of banks and so intermediation margins should not be affected.

We tested this theoretical prediction with an empirical analysis of existing corporate income taxes in Europe, and found no evidence of pass-through to consumers.

- If new bank levies are imposed on one element of banks' balance sheets, we might observe a significant impact on consumers.

For example, if the tax is levied on bank loans, a simple extension of the standard Monti-Klein model shows that the effect on loan rates should be positively correlated with banks' market power over borrowers (Capelle-Blancard and Havrylchyk 2013b).

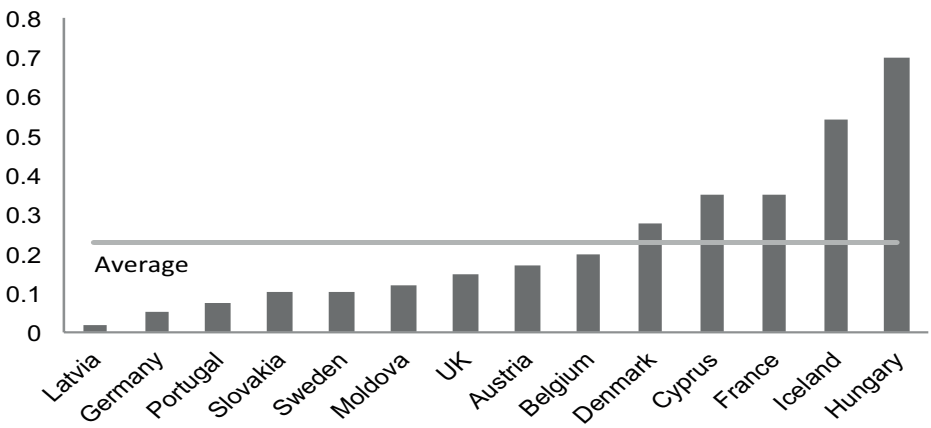
This observation leads us to empirically analyse the incidence of existing corporate income taxes using Hungry as an example (Capelle-Blancard and Havrylchyk 2013a).

Results from Hungarian data

We analyse the tax incidence of the Hungarian bank levy, which provides a good test case for two reasons (Capelle-Blancard and Havrylchyk 2013b).

- First, *Hungary was one of the first countries to introduce a bank levy in 2010*. As its rate is the highest in the world, it has more than tripled banks' tax burden (Figure 1).
- Second, *the levy is much higher for large institutions than for small ones*. This heterogeneity provides us with a control group of smaller banks to disentangle the impact of the tax from any other shock that might have occurred simultaneously.

Figure 1 Expected revenue from existing financial sector taxes (in % of GDP)



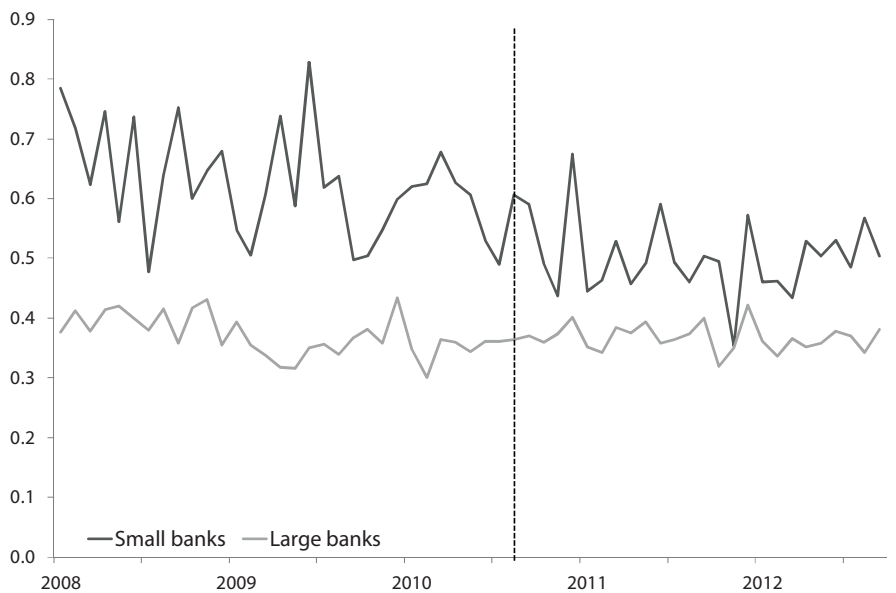
Source: IMF

The unique design of the Hungarian levy allows us to apply differences-in-differences methodology. Figure 2 shows that the difference between the interest and fee margins of large and small banks has decreased after the introduction of the bank levy. This implies that large banks have succeeded in shifting the tax burden to their customers. However, not all borrowers have seen their interest rates rise, because tax incidence depends on the degree of banks' market power.

In Hungary, the retail market is characterised by weak competition (Havrylchyk, 2012). During the period analysed, the regulatory environment equipped banks with market power over households because banks were able to unilaterally change the contract terms of outstanding loans. In other words, banks were able to change interest rates on outstanding loans even if interest rates were fixed.

Given this, it is not surprising that we find that households with outstanding mortgages saw their interest rates go up after the introduction of the tax. Their positions were locked in. In contrast, non-financial corporations and households that signed new loan contracts were not affected, reflecting their greater mobility.

Figure 2 Banks' average net interest and fee margins



Policy recommendations

We conclude that, unlike a corporate income tax that has no impact on customers, a bank levy on loans is shifted to borrowers' interest rates. One is tempted to conclude that a corporate income tax is a 'better' tax because it is not distortionary. At the same time,

it is also easier for banks to avoid profit taxation by shifting profits to countries with more favourable tax regimes. It is more difficult to avoid balance sheet levies, which might explain their higher incidence. Nevertheless, the Hungarian case shows that the regulatory environment has an important impact on banks' market power. Policymakers can take a number of steps to increase borrower mobility, such as improving the comparability of banking services, reducing switching costs and mitigating lock-in problems by introducing credit bureaus. These measures not only increase market competition but also protect consumers.

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Investment Financing and Financial Development: New Evidence from Vietnam

Conor O'Toole and **Carol Newman**
ESRI; Trinity College Dublin

Financial development is widely recognised as important for economic growth and development . Using data from the Vietnamese Enterprise Survey, we test the impact of financial sector depth, state interventionism, and the degree of market financing on firms' reliance on internal funds and how much they invest. We find that financial development decreases the external finance premium and thus stimulates investment.

A considerable body of academic research highlights the role of finance in fostering economic growth and development (see Levine 2005 for a review). Theoretical models suggest that financial development should improve investment outcomes and capital allocation, improve monitoring and governance, improve risk management, and increase trade.

On the basis of this research, many emerging market economies and developing countries have been advised to liberalise financial markets and reduce government control in the banking sector. However, since the recent global financial crisis, a somewhat more hesitant view of the benefits of financial liberalisation has emerged (Andersen et al. 2013). This is especially salient in the context of delivering growth with financial stability.

Given these considerations in an emerging market context, it is important to explore the relationship between finance and the real economy in settings where both better outcomes and financial stability have been broadly achieved.

Financial development in Vietnam

Our recent work revisits this debate by testing whether domestic financial development improves access to investment finance in Vietnam – a country that has had impressive growth as well as relative financial stability (see Abbott et al. 2009; Thurlow et al. 2011). Our data are taken from the Vietnamese Enterprise Survey and cover all firm sizes across private-, state-, and foreign-owned firms in manufacturing, industrial, and market service sectors. Such an extensive survey in a development context is very rarely available to researchers.[1]

We measure financial development at the provincial level in Vietnam focusing on financial depth -- measured as credit to the private sector relative to output – and financial resource allocation -- measured by state interventionism in finance and the degree of market-based lending in the economy. Our research is novel in that it is the first time that indicators of financial development measured within-country are linked to investment by small- and medium-sized, non-listed firms in a developing economy across both manufacturing and services.

Vietnam provides an interesting case study for evaluating the impact of financial development on the performance and activity of firms. Over the past 20 years – i.e. since the original 'Doi Moi' reforms -- the country has moved from central planning to a more open, market-oriented economy. This transition has included a process of liberalisation in both capital and product markets. It culminated in 2007 with WTO membership.

Vietnam's economic performance has been impressive: Growth exceeded 9% per annum prior to the East Asian financial crisis and has been 8% per annum up to the recent international financial and economic crisis.

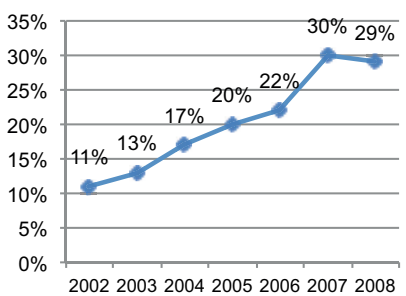
1 We would like to thank Finn Tarp and the Development Economics Research Group in the University of Copenhagen as well as the Central Institute for Economic Management (CIEM) and General Statistics Office in Ha Noi, Vietnam for facilitating access to the data.

While many Asian economies embraced financial liberalisation prior to the East Asian crisis, Vietnam did not do so. This may have insulated it against the worst effects of the crisis, when many other nations faced sharp reversals in capital flows and severe exchange rate pressures. However, in the post-crisis period, Vietnam has been more embracing of financial openness, with increases in domestic financial restructuring as well as capital account liberalisation. This has led to considerable financial deepening and an increase in market-oriented allocation of credit.

Figure 1 Overview of financial development in Vietnam, 2002 – 2008

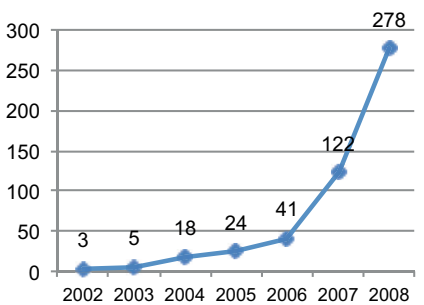
Financial depth

(Private business credit as % of industrial output)



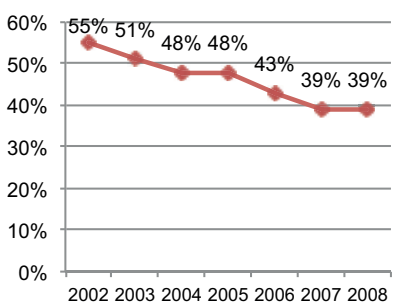
Degree of market financing

(Ratio of loans by commercial banks to loans by government banks)



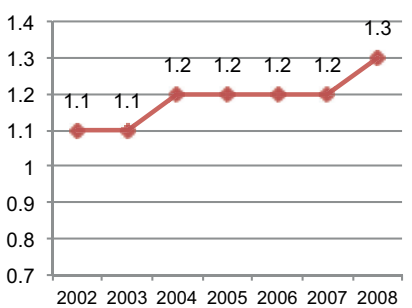
State firms' use of credit

(State-owned enterprises' share of total business loans)



State firms' use of credit

(State-owned enterprise loan share to output share)



Source: Authors calculations using Vietnamese Enterprise Survey data

Estimating financial development

An important aspect of our research is to appropriately measure financial development. Rajan and Zingales (1998, p. 569) provide a broad definition of the parameters of financial development stating that:

"Financial development should be related to the variety of intermediaries and markets available, the efficiency with which they perform the evaluation, monitoring, certification, communication and distribution functions and the legal and regulatory framework assuring performance".

Following this holistic definition, we estimate financial development along three dimensions:

- financial sector depth and intermediary development,
- state interventionism in finance, and
- the degree of market financing in the economy.

Financial depth is measured as the volume of credit extended to the private sector as a percentage of output. State intervention is measured by the share of total loans held by state-owned enterprises (SOEs) as well as the ratio of SOE loans to SOE output. Market financing is measured using the ratio of investment financed through loans from commercial banks relative to investment financed by government banks. These three indicators enable a broad definition of financial development to be analysed and are presented in Figure 1.

These data paint a picture of a rapidly changing, dynamic banking sector which is channelling increasing amounts of credit to the private sector. This provides the perfect setting to evaluate the impact of financial development on firm-level investment and financing constraints.

Linking financial development to firm investment

Having estimated financial development at a cross-provincial level, we then link this to investment financing by firms. We first test how reliant firms are on internal funds for investment and then evaluate how this sensitivity is affected by financial development.

We find a positive and significant association between investment and our measure of internal finance dependence. This is indicative of a differential cost of capital between internal and external funds. We then test how this relationship is affected by financial development. The interactions of financing constraints and financial development indicate that constraints are decreasing in credit provided to the private sector, increasing in the use of financing by SOEs, and decreasing in the degree to which finance is allocated on market-based terms.

We also investigate the distributional impact of financial development on financing constraints across firms. We find that the magnitude of the effects of financial development, across all measures of financial depth and resource allocation, are higher for private domestic and small- and medium-sized enterprises.

There does not appear to be any differential effect on foreign firms of increases in financial depth or the allocation of credit on market-based terms. However, we do find that foreign firms are not in competition with state firms for credit. It appears that competition for domestic capital is between private and state firms.

Our results indicate that services firms are less credit-constrained than other types of firms, and are the main beneficiaries of increases in financial depth and improvements in resource allocation.

Conclusions and policy implications

These findings provide evidence that financial development alters the investment behaviour of firms by improving access to external capital. As financial development

increases, through either greater volumes of available business credit or more market-oriented financial intermediation, the differential cost of capital between internal and external finance is eliminated – clear evidence that financial development improves access to finance.

This is an important finding from a development perspective. Financial reform policies and financial deepening can provide real growth benefits through firm investment activity. As the effect is greatest for SMEs and private domestic firms, this is further evidence of the benefits of financial development to the real economy.

While such improvements in investment are evidently due to financial development, the backdrop of this research in Vietnam is a period in which the authorities have balanced the capital market reform agenda against wider macroeconomic stability. If financial development is to continue to provide a growth impetus, stability in the wider macro environment as well as in the banking sector are required.

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Uncovering Collateral Constraints

José María Liberti and **Jason Sturgess**
DePaul University and Northwestern University; DePaul University

Collateral plays two roles: it incentivises borrowers to repay, and it insures lenders against the possibility of default. If the former effect is strong enough, then borrowers will always choose to repay as long as they can afford to do so. In that case, the realised default rate should be independent of the degree of agency risk. This chapter presents evidence from a multinational bank's lending to firms that this is indeed the case, implying that the commitment role of collateral is the most important.

Collateral has been a prominent characteristic of loan contracts since ancient times. In the earliest statute of Roman Law, the Twelve Tables, "De Debitore in Partes Secando", describes how the debtor or her estate is to be divided upon default. The law of *cession*, introduced by the Christian emperors of Rome, allowed debtors to avoid debtors' prison if the debtor ceded, or yielded up, all his fortune to his creditors.

Agreeing to transfer assets to the creditor upon default has two implications: first, the debtor should be less likely to default if default is costly; second, the creditor is able to recover – at least partially – the loan made to the debtor.

In new research, we examine the role of collateral from an ex ante standpoint. Our study is the first to empirically separate these commitment and hedging motives of collateralisation. We find evidence that commitment is the primary motive for collateral – results that are consistent with papers such as Stiglitz and Weiss (1981) and Chan and Thakor (1987), which argue that the threat of agency risk in the form of unobserved borrower attributes or action leads to greater use of collateral as a commitment device.

The theory of collateral

From an ex-ante standpoint, one can provide two reasons for a bank to ask for collateral. On the one hand, the bank may need to ask for collateral because it is unable to discern the borrower's quality, and whether she is posting valuable collateral. In this particular case, collateral may be seen as a *commitment* device against agency risk. On the other hand, the bank may be aware that the borrower is in a potentially unprofitable line of business exposed to production risk or business risk. In this case, independently of the borrower's type, pledging collateral may be seen as a hedge against default risk.

Understanding the role of collateral is important, not only because of its widespread use, but also because of its implications for monetary policy and the lending behaviour of financial institutions. Since the information environment where banks and borrowers operate is constantly changing, this may have implications for the quality of the collateral that has been posted and pledged to the bank. Many influential theories use the presence of collateral to explain a wide variety of phenomena, including financing constraints and investment (Chaney, Sraer, and Thesmar 2012), the cost of debt capital (Benmelech and Bergman 2009), financial contracts and liquidation values (Benmelech, Garmaise, and Moskowitz 2005), business cycles (Bernanke and Gertler 1989, Kiyotaki and Moore 1997, Aghion, Banerjee, and Piketty 1999), income inequality (Banerjee and Newman 1993) and poverty traps (Mookherjee and Ray 2002). Further, collateral – or at least the quality of collateral – played a critical role in the recent financial crisis by amplifying shocks (Gorton and Ordonez 2012).

Methodology

To test the two motives empirically, we examine small business loans issued by the lending division of a multinational bank spanning 15 emerging market economies. The data includes comprehensive borrower-level information including: liquidation value of the collateral and asset class, loan pricing, and an ex ante measure of firm risk computed by the bank. This risk measure is derived from an information template that includes

the bank loan officer's assessment of production risk (such as profitability, leverage and ability, among others), as well as agency risk (such as reliability of information, management character and trustworthy, among others), but not collateralisation.

Our empirical design to separate commitment from hedging is based on the simple observation that if borrowers use collateral to credibly commit themselves against agency risk, then one should not observe that particular risk in equilibrium ex post. Specifically, if commitment explains collateralisation, then default should be unrelated to agency risk. Conversely, if collateral provides a hedge against realised default, then collateral should be positively correlated with observed default, and uncorrelated with ex ante agency risk. We use the measure of ex ante risk compiled by the bank, while ex post risk is measured by the default probability.

Results

We find *commitment* to be the primary motive for collateralisation. Debtors pledge collateral to mitigate agency risk ex ante, which results in lower observed default, ceteris paribus.

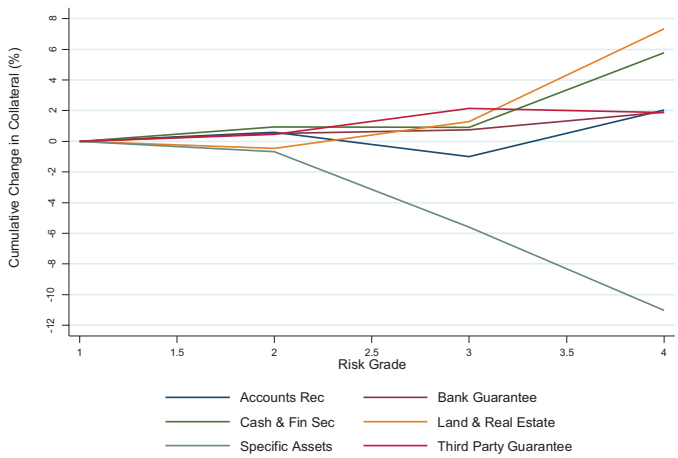
Furthermore, we uncover an interesting collateral 'pecking order', which resembles the flight-to-quality that financial systems around the world experienced during the financial crisis. This pecking order of collateralised assets lends further support to the commitment view that collateral limits agency risk, and reinforces the view that asset class and liquidation values are important for collateral.

As credit ratings of borrowers deteriorate, there is a shift in the composition of the collateralised assets required by the financial institution towards safer, more tangible, and less agency-prone assets. Specifically, we show that the creditor is more likely to accept firm-specific assets that are prone to agency concerns from firms with low agency risk. Examples of agency-prone assets include inventory and machinery, since their value is susceptible to bad actions such as stealing or neglect by firm management.

On the other hand, the bank only accepts non-specific assets not susceptible to agency concerns from firms with high ex ante agency risk. Non-specific assets include land and real estate, cash, and bank guarantees, which are difficult to hide or abscond with, and have valuations less susceptible to management neglect.

Figure 1 illustrates the cumulative effect of the collateral pecking order for each asset class, moving from a risk grade of 1 (best) to a grade of 4 (worst). As firms' risk deteriorates, there is a shift in the composition of the assets required by the bank. There is a cumulative decrease of roughly 11% for specific/movable assets for those firms in the worst rating category. At the same time, these firms experience an increase in both Land & Real Estate and Cash & Financial Securities of roughly 7% and 6% respectively.

Figure 1 Cumulative changes in collateral due to changes in risk



These pecking order results are in contrast to recent work by Benmelech and Bergman (2009), who study the airline industry and find that – holding agency risk constant – more redeployable collateral leads to lower credit spreads, higher credit ratings, and higher loan-to-value ratios in the US. Taken together, the results suggest that within the same debtor, better collateral lowers interest rates in financially developed markets

such as the US, but that across debtors collateral mitigates agency risk in financially developing markets.

Conclusion

The use of collateral predominantly as a commitment device to prevent agency risk raises a number of interesting questions for further inquiry. At one end of the spectrum, the existing macro literature treats collateral as one of the main causes of frictions that lead to volatility, contagion, and poverty traps. At the other end, however, micro theory coupled with the evidence presented in this paper perceives collateral as a critical factor in limiting agency risk. It may not be unreasonable, therefore, to think of collateral as a 'necessary evil' needed to sustain financing in a less than perfect world.

This view of collateral raises a number of interesting research questions regarding alternative mechanisms available to an economy for limiting agency concerns, such as: more efficient enforcement of laws, market discipline through the use of credit registries, social or venture networks with better enforcement and information tools, and better social norms. Why do some economies adopt different – and potentially superior – mechanisms for dealing with agency risk than others? We hope that future work will guide us towards the answers.

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Bank Monitoring and Institutions: The Korean Lesson

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Monitoring the behaviour of borrowers is one of banks' most important tasks. However, banks' incentives to monitor may be weakened by the possibility of bailouts. Under syndicated lending, participating banks must provide sufficient incentives for the lead arranger to monitor the borrower, so the lead arranger's share of syndicated loans should increase when monitoring is more important. This chapter presents evidence from Korea that syndicated loans to politically connected firms were less concentrated, but that this concentration increased after the implicit guarantees to these firms were reduced.

A primary objective of financial institutions is to monitor and discipline the behaviour of borrowers (Diamond 1984; Holmstrom and Tirole 1997; Sufi 2007). This is especially true in emerging economies, where porous laws and inefficient legal systems hinder the role of courts. However, in many circumstances financial institutions can have weak incentives to conduct due diligence on borrowers. Moreover, they can also be exposed to the pressure of political and industrial lobbies. Put differently, a problem of 'Who monitors the monitor?' arises. As a result of the weak monitoring of financial institutions, the managers of borrowing firms can engage in inefficient investments, divert resources and extract private benefits. These problems have allegedly played a crucial role in creating the conditions for various recent financial crises, including the Great Recession.

In recent work with Sung-guan Yun, we investigate the impact of the institutional arrangements of 'chaebols' and of their reform on the monitoring activity of financial institutions.

Institutions and bank monitoring

The South Korean economy constitutes an ideal empirical laboratory to investigate the above issues. South Korea went through a dramatic reform of its financial and corporate sectors after the 1997 financial crisis. Prior to the crisis, the government protected firms affiliated to business groups called chaebols, in the expectation that they would be better global competitors.

A chaebol is owned by the founder or his family successor, and includes several businesses operating in different industrial sectors. Founded during the dictatorship of the 1960s, in the 1970s chaebols became instrumental to the government's development policy. In the 1980s and 1990s, chaebols expanded into a wide range of industrial sectors, from manufacturing and commodities to high tech. In 1995, for instance, chaebols produced about 16% of the South Korean GDP and 41% of manufacturing GDP, and accounted for 14% of bank loans.

Before the crisis, chaebol firms relied strongly on bank loans and bonds. Their access to financial markets and especially to bank credit allegedly occurred without close monitoring or screening by financial institutions. Banks frequently engaged in a mere renewal of outstanding loans to chaebol firms, and exerted limited monitoring effort.

Two institutional arrangements could depress banks' monitoring incentives. The first was the safety net that protected chaebols from the risk of failure. The government supported chaebol firms with an implicit bailout policy (Lim, Haggard and Kim 2003). When a chaebol firm encountered financial distress, the government could put pressure on state-controlled banks to write off bad loans. Even when a bailout was not offered, chaebol firms could put pressure on supervisors to obtain a favourable treatment by creditors.

The second institutional arrangement that protected chaebols was the network of cross-debt payment guarantees among chaebol subsidiaries – chaebol affiliates could use their equity to secure the loans granted to other members of the same chaebol.

Corporate reforms and the structure of syndicated loans

In the second part of 1997 and the first part of 1998, a deep financial crisis hit South Korea. In response to the crisis, the government enacted a reform of the corporate sector. Chaebol-affiliated firms were forced to significantly reduce their debt. A key step of the reform consisted of removing the safety net that protected chaebols. The government let six chaebols go bankrupt and also split the biggest one. Several chaebol members underwent bank-led workout programs.

The decision to let some chaebols go bankrupt or undergo restructuring was accompanied by the abolition of debt guarantees among chaebol affiliates. Moreover, the government introduced tougher rules for corporate reorganisations, such as more stringent time limits. Another pillar of the reform was the improvement in accounting transparency. Chaebols were requested to make available combined financial statements of all affiliated firms rather than consolidated financial statements, and to comply with international accounting principles. All these reforms allegedly induced financial institutions to stop automatically rolling over loans to chaebol companies and induced them to subject firms to more careful monitoring.

Methodology

We focus on syndicated lending to a group of chaebol-affiliated and non-affiliated enterprises before and after the post-crisis corporate reform. As shown by Sufi (2007), the design of syndicated loans can convey information on the monitoring incentives of financial institutions. Syndicated loans constitute a crucial source of financing in emerging economies, and in the Asia-Pacific region they account for a large portion of businesses' external financing. A syndicated loan is granted by multiple banks to a firm. The firm designates a lead arranger, who then contacts other lenders for a co-financing of the loan; the lead arranger earns a fee from the borrowing firm for its role in managing the loan. The lead arranger is in a key position to monitor the borrower but, since its monitoring cannot be observed by the co-financiers, it must be given incentives

to monitor. The lead arranger must then retain a strong interest in the performance of the borrower, that is, a large stake in the loan. Therefore, the structure of a syndicated loan – such as the loan share of the lead arranger(s) and the concentration of the loan – conveys information about the monitoring incentives of the lenders.

Results

After controlling for a battery of firm and contract characteristics and for aggregate effects, we find that the concentration of syndicated loans to chaebol firms was lower than that of loans to non-chaebol firms. Most importantly, after the chaebol reform the difference in loan concentration narrowed. This supports the hypothesis that the safety net formed by the government's implicit bailout guarantee and by the chaebol cross-debt guarantees, as well as the dearth of accounting information, reduced lenders' incentives to monitor chaebol firms before the crisis. When the reform removed the safety net and improved the quality of information on chaebols, financial institutions increased their monitoring effort and started to form more concentrated syndicates to give lead arrangers stronger incentives to monitor.

This result is confirmed by an alternative test. In emerging economies, foreign banks are generally tougher monitors than local banks because they have better assessment techniques and are less likely to face political pressure (Giannetti and Ongena 2009). When one employs the participation of foreign lenders to the arrangement of syndicated loans as an alternative measure of creditors' monitoring intensity, the results are analogous to those obtained when using the concentration of syndicates.

The channels

It is important to study the channels through which the institutional environment has an impact on the monitoring activity of financial institutions.

First, we find that the results are primarily due to the top five chaebols. In line with the 'too big to fail' principle, the bailout policy of the government especially protected the top five. Thus, finding that the results are especially driven by the top five points to a role of this bailout policy in determining creditors' monitoring.

Second, we find that the larger the equity held by domestic banks in chaebol firms, the lower lenders' monitoring; moreover, this effect disappeared after the reform. This is consistent with the idea that state-controlled domestic banks acted as a channel for bailout execution – until the bailout guarantee was removed, their presence among the shareholders of chaebol firms reassured creditors that the government would step in in the event of distress. Third, we find evidence that chaebol cross-debt guarantees contributed to depressing lenders' monitoring.

We also investigate the agency problems that lenders' monitoring can ameliorate by studying the interplay between chaebol creditors and shareholders. We find that in chaebol firms with poorer incentives for controlling shareholders, the monitoring of financial institutions was stronger. When the reform strengthened the mechanisms of internal governance and the accountability of shareholders, this effect tended to disappear.

Conclusions

All in all, the experience of Korea strongly supports the view that the institutional environment shapes the effectiveness of the financial system in monitoring and disciplining firms.

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Microfinance Banks and Financial Inclusion in Southeast Europe: Is Public Funding Still Warranted?

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Commercial microfinance banks usually operate in emerging markets in which retail banks with large branch networks provide broad access to financial services. This raises the question of whether public support for microfinance banks in these markets is still warranted. This chapter argues that commercial microfinance banks contribute significantly to the financial inclusion of low-income households beyond what 'ordinary' retail banks do.

Financial services for low-income households and small enterprises are increasingly provided by commercially oriented, deposit-taking microfinance banks. Commercial microfinance banks are particularly important in emerging countries. In eastern Europe and central Asia, for example, 91% of the 102 large microfinance providers are regulated, while 66% are profit-seeking.[1] However, many of these countries are at the same time served by international retail banks that operate large branch networks. This raises the question of whether public investment by international donors and development banks to increase financial inclusion – for example, by supporting microfinance banks through subsidised credit and equity participation – is necessary in these markets. If the retail networks of international banking groups provide banking services similar to those of microfinance banks, then public support of the latter is hardly warranted.

1 The figures are based on 2011 data for large microfinance institutions reporting to MIX Market (http://www.mixmarket.org).

Bank branch expansion in southeast Europe

In a recent study we examine how the proximity to a microfinance bank affects the use of bank accounts among households in southeast Europe (Brown et al. 2013). Our analysis is based on four countries in which the major microfinance bank in the region – ProCredit Bank – more than doubled its branch network in recent years: Albania, Bulgaria, Macedonia, and Serbia. All ProCredit banks operate under a local banking license and are regulated by the local banking supervisory agency. The aim of ProCredit is to offer a wide range of banking services to small and medium enterprises as well as low- and middle-income savers. ProCredit views its business model as one of "socially responsible banking that seeks to be transparent, efficient and profitable on a sustainable basis".[2] However, ProCredit is neither the largest bank (measured by total assets) nor the most accessible bank (as measured by branch network) in any of the countries. For example, in 2006 the largest retail bank in Bulgaria and Macedonia had three times more branches than ProCredit, and in Albania and Serbia the largest bank had five times more branches. Moreover, between 2006 and 2010 these retail banks expanded their branch networks substantially. Besides, the use of bank accounts in these countries was very low in 2006 – varying between 18% and 55% – but had increased substantially by 2010. Emerging Europe is therefore an ideal region to study the impact of commercial microfinance banks on household access to finance in the presence of large retail bank branch networks – a context which is common to many emerging markets.

The data

Our main data source is the EBRD Life in Transition Survey (LITS). This survey provides information on the use of bank accounts, socioeconomic characteristics, and location (Primary Sampling Units – PSUs) of households in our four countries in 2006 and 2010. We geocode the location of each household in the survey and match this data

2 See http://www.procredit-holding.com.

to information on the branch network of ProCredit Bank in 2006 and 2010, as well as the branch network of the major retail banks in each country. To account for local economic activity, we use satellite data on night light intensity, which we match via the geographic coordinates.[3] This setting allows us to study the *additional effect* that ProCredit has on the use of bank accounts, controlling for the presence of retail banks and the economic development on a very local level.

We focus our analysis on the 100 PSUs in which at least one retail bank was present in 2006 but in which ProCredit did not have a branch, and then compare the effect of ProCredit on account use by comparing households in regions where ProCredit opened a new bank branch between 2006 and 2010 with households in regions where it did not open a new branch.

Bank location decision

In a first step, we examine whether ProCredit is more likely to open new branches in regions that are characterised by a large share of low-income households. We compare the economic characteristics of the 54 PSUs in which ProCredit opened a bank branch between 2006 and 2010 to the 46 PSUs in which it did not.

We find that ProCredit opens new branches in regions that already have strong economic activity in 2006 rather than those regions which experience strong growth of activity between 2006 and 2010. Our results also show that in those regions where ProCredit opens new branches between 2006 and 2010, the share of low-income households is significantly higher than where it does not open a new branch (35% versus 26%). By contrast, the share of middle-income (34% versus 39%) and high-income households (31% versus 35%) are both lower where ProCredit opens new branches compared to where it does not.

3 Henderson et al. (2012) show that satellite night light intensity is a useful proxy for economic activity on a local level where national accounts data are of poor quality or unavailable.

ProCredit's impact on account use

We assess the impact of new ProCredit branches on the share of banked households in a differences-in-differences framework. We assign households in regions where ProCredit opened a new bank branch between 2006 and 2010 to a treated group, and households in regions where ProCredit did not open a branch to the control group. Households which are surveyed in 2006 constitute the pre-treatment observations, while households surveyed in 2010 constitute the post-treatment observations. We then conduct subsample analyses in order to study whether the estimated differences-in-differences effect is larger for low-income households than for high-income households. Given the differences between regions in which ProCredit opens a new branch and regions in which it does not, we control for differences in the socioeconomic characteristics of households as well as differences in economic activity and the number of retail bank branches.[4]

We find that in those locations where ProCredit opened a new branch between 2006 and 2010, the share of households with a bank account increases significantly more than in locations where ProCredit did not open a new branch. The economic magnitude of this effect is significant – our multivariate results indicate that ProCredit leads to a 19 percentage point increase in the use of bank accounts. We further find that the increase in the share of banked households goes hand in hand with a change in the composition of banked households – the opening of a new ProCredit branch leads to a stronger increase in the use of bank accounts among low-income households than among high-income households.

To mitigate concerns about whether our results are indeed driven by the opening of a microfinance bank branch – as opposed to just an increase in the number of banks competing in a region – we perform a placebo test. We replace ProCredit by a retail

4 A graphical analysis actually suggests that the trends in economic activity are parallel in the treatment and control PSUs, so that any increase in account use that we find when ProCredit opens a new branch can hardly be attributed to accelerated economic growth in that region.

bank that is similar to ProCredit with respect to its foreign ownership, its number of branches in 2006, and the expansion of its branch network between 2006 and 2010. We find that the placebo bank also opens new branches in areas with higher economic activity in 2006, and also with a higher share of low-income households. However, we find that the use of bank accounts does *not* increase more in areas where the placebo bank opens a new branch than in areas where it does not. In addition, low-income households do not benefit from a disproportionate increase in bank accounts. The placebo test provides evidence that our findings are specific to ProCredit.

Conclusions

Our results suggest that commercial microfinance banks contribute significantly to the financial inclusion of low-income households in emerging markets. We show that ProCredit is more likely to open new branches in regions with a high share of low-income households. Our differences-in-differences analysis shows that the share of households with a bank account increases significantly more in locations in which ProCredit opened a new branch compared to locations where it did not. Furthermore, this increase in account use is stronger among low-income than among high-income households.

Our findings complement the recent evidence provided by Allen et al. (2013), who study how the geographic proximity to a commercial microfinance bank impacts on households' use of financial services in sub-Saharan Africa. Similar to our analysis, they study the expansion of the branch network of a large Kenyan microfinance bank between 2006 and 2009. They document that compared to other banks, the microfinance bank is more likely to open branches in districts with low population density. Moreover, they show that new microfinance bank branches in a district are associated with a stronger increase in the use of financial services – especially among the low-income population – than new branches of other banks.

Together, both studies show that commercial microfinance banks have an additional effect on the use of financial services among low-income households. Importantly, our study shows that this effect prevails even in the presence of large branch networks of retail banks. This conclusion is particularly important for policymakers who aim to foster access to financial services by supporting commercial microfinance banks, because most commercial microfinance banks operate in markets that are also served by large international banking groups. Our findings imply that public investment in microfinance banks can nevertheless have benefits for low-income households.

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Why is Voluntary Financial Education so Unpopular? Evidence from Mexico

Miriam Bruhn, Gabriel Lara Ibarra and **David McKenzie**
The World Bank

Take-up of voluntary financial education programmes tends to be extremely low. Participants in one such programme in Mexico City experienced only modest gains in financial knowledge and small, short-lived increases in saving. This column argues that low participation rates are a rational response to the limited benefits of financial education, and that novel teaching methods may be more effective than increasing incentives for participation.

The global economic crisis, the microfinance over-indebtedness debate, and the increasing numbers of people in developing countries using credit cards for the first time have all increased policy interest in the topic of financial literacy.

Many governments, employers, non-profit organisations, and even commercial banks have started to provide financial literacy courses with the aim of improving financial education. However, data from different financial education programmes in the US suggests that participation rates for non-compulsory financial education programmes are typically extremely low (Brown and Gartner 2007; Duflo and Saez 2011; Willis 2011, p. 430).

Thus, despite financial education programmes becoming increasingly popular among policymakers and financial providers, they appear to be deeply unpopular among customers. This raises two interrelated questions which are important for research and policy. The first is whether there are economic or behavioural constraints which prevent more individuals from participating in such programmes? The second question is

whether there are any benefits to these marginal individuals from doing so, or whether they are rationally choosing not to participate in such training?

A field experiment conducted in Mexico City allows us to investigate these questions. We evaluated a voluntary financial literacy course offered on a large scale by a financial institution in Mexico City. The course lasts half a day and consists of modules on saving, retirement, credit cards, and responsible use of credit.

The interventions and experiment

A first step in the evaluation was to identify individuals in and around Mexico City who were interested in taking a financial education course. This was done through three approaches:

- The financial institution sent letters to 40,000 of their clients with a short screener survey that clients were asked to return in a pre-paid envelope. This approach only resulted in 42 responses.
- A Facebook advertisement was displayed about 16 million times, pointing to a page with introductory information about financial education and a short screener survey that individuals could take to express interest in taking the course. About 120 individuals filled out this survey.
- Surveyors conducted screener surveys in a busy location in Mexico City and outside branches of the partnering financial institution. Overall, the response rates to the screening efforts were quite low, suggesting relatively little interest in financial education among the general population in Mexico City. However, with sufficient surveying we obtained a final group of 3,500 interested individuals to use for the experiment.

These individuals were randomly divided into two equally-sized groups:

- A treatment group which received an invitation to participate in the financial education course.

- A control group which did not receive this invitation.

Those who were selected for treatment were given a reminder call the day before their training session, which was at a day and time of their choosing.

Some randomly-selected individuals in the treatment group were also offered additional incentives for attending the course to shed light on some potential key barriers to take-up. These incentives included monetary payments for attendance, free transportation to the training location, and a video CD with positive testimonials about the training.

A follow-up survey conducted six months after the course was then used to measure the impact of the training on financial knowledge, behaviours, and outcomes. In addition, the financial institution provided administrative data on savings account balances and credit card outcomes for individuals in the study who were clients of the institution.

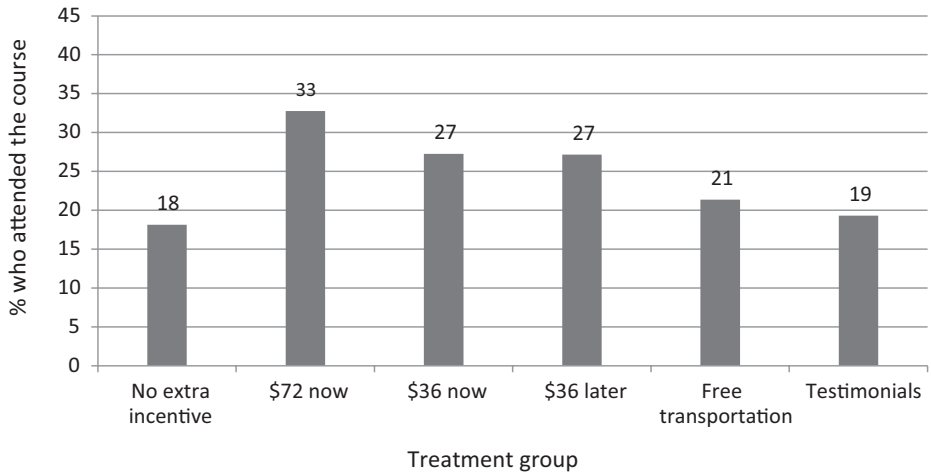
Results

The initial participation rate in the course among invited individuals was low (18%), particularly given that they had all expressed interest in financial education.

Two of the extra incentives for participation – free transportation and positive testimonials – did not increase take-up, but monetary payments boosted attendance rates by about 10 percentage points (Figure 1).

Follow-up survey data show that attending training resulted in a nine percentage point increase in both financial knowledge and saving outcomes, but no impact on credit card behaviour, retirement savings or borrowing. Moreover, administrative data suggests that the savings impact was relatively short-lived. Also, data on credit card balances and repayment rates show no systematic differences across the treatment and control groups related to the course. Effects do not vary by gender or whether the individual is a customer of our partner financial institution, but savings impacts were stronger for individuals with a bachelor's degree than for those without.

Figure 1 Impact of incentives on attendance



Conclusions and policy implications

Our take-up experiments suggest that low participation rates are not mainly due to high discount rates, time-inconsistency, or lack of information, but rather appear to be due to individuals thinking that the benefits of such training are not high enough to warrant participation. The lack of interest in training therefore appears to be a rational choice, since users see relatively little benefit from it.

One natural response to the modest impacts of training measured here is to note that the training is only a few hours long, and to thus argue that much longer and more intensive training sessions are needed. However, our study shows that most of the general population has very little interest in attending even a short financial literacy course.

Such programmes may offer benefits to the individuals who voluntarily choose to go without being given any additional information or incentives, but this study shows that there are limited gains to trying to encourage more people to attend. Instead, tailoring financial education to individuals at teachable moments, and experimenting with novel

media for teaching, such as edutainment, may be more promising areas for policy innovation.

Author's note: The views expressed here are those of the authors and do not necessarily represent those of the institutions with which they are affiliated.

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Bank Funding and Firm Innovation: Evidence from Russia

Cagatay Bircan and Ralph De Haas
EBRD; EBRD and Tilburg University

Can bank-based financial systems boost innovation and help emerging markets catch up to the technological frontier? Based on an analysis of new micro-data from Russia – where venture capital and private equity are still in their infancy – this chapter argues that banks can indeed reduce funding constraints and facilitate firm innovation. Bank-funded innovation nevertheless remains limited to process and marketing innovation, while 'deeper' R&D and product innovation appear not to be encouraged by bank lending.

Innovation is an important driver of factor productivity and economic growth. In countries that operate close to the technological frontier, innovative activity typically involves R&D and the patenting of new products and technologies. In contrast, innovation often equals imitation in emerging markets, as existing technologies are adapted to local circumstances (Grossman and Helpman 1991).

Somewhat surprisingly, governments in many emerging markets tend to focus on local R&D as a key source of innovation rather than on reaping the low-hanging fruits of adaptive imitation. Russia is a case in point: President Putin has endorsed a push towards innovation in 'priority' sectors such as nuclear and space technology. As a result of this top-down approach, the government-sponsored share of Russian R&D and innovation has gradually increased at the expense of innovation by private companies, many of which also remain plagued by limited access to external finance. In this chapter, we discuss whether and how improved access to bank funding would allow Russian firms to innovate more and, if so, which types of innovation would benefit most.

Dissecting the link between local banking and firm innovation

The extant evidence on banks' ability to fund innovation is mainly indirect in nature. Evidence from the US suggests that inter-state bank deregulation led to more innovation as measured by state-level patenting (e.g. Amore et al. 2013). In a similar vein, Italian evidence shows that a higher bank branch density goes hand-in-hand with more firm innovation (Benfratello et al. 2008). This suggests that changes in the local banking landscape can affect innovation, presumably because firms' access to credit is improved. Indeed, Herrera and Minetti (2007) show that firms with longer borrowing relationships innovate more.

Our contribution is to make the various steps in the causal chain from local banking conditions to firm innovation more explicit. First, we use cross-locality variation in banking *competition* and *composition* to explain differences in access to credit. While bank competition may alleviate credit constraints (Jayaratne and Strahan 1996), other evidence suggests that competitive credit markets may prevent long-term lending relationships that would benefit opaque firms in particular (Petersen and Rajan 1995). In terms of bank composition, we focus on the local market share of foreign-owned banks. While foreign banks may have more difficulty in overcoming information asymmetries vis-à-vis domestic firms, they may be relatively well-placed to help firms introduce new technologies once agency problems have been overcome and credit has been granted.

Second, we use the differential access to credit induced by local banking conditions to explain firm-level innovation at the extensive and intensive margins. Finally, we analyse whether the identity of the lender impacts firm innovation over and above the pure liquidity effect of access to credit.

About BEPS and BEEPS...

To get a detailed picture of the impact of the local banking environment on firms' access to credit and subsequent innovation, we combine three pieces of information: data on the exact geographical location of bank branches across Russia; data on firms' credit constraints; and data on firm innovation. To this end, we link two new and unique micro-datasets.

The BEEPS Russia 2012 survey was conducted among 4,220 firms across 37 regions, and was stratified to achieve representativeness across industries, firm size and regions. A special innovation module elicited detailed information about firms' innovative activity over the past three years. A separate finance module asked firms about their use of internal and external funding, including bank credit. This module allows us to identify firms with a demand for bank credit, and then divide them into those that received bank credit and those that were credit constrained. The latter include both firms that applied for a loan but were rejected and firms that were discouraged from applying in the first place. Uniquely, those firms that used bank credit were also asked to disclose the name of the lender as well as various loan terms.

We combine these firm-level data with another new dataset, the Banking Environment and Performance Survey, undertaken by EBRD in 2012. As part of the BEPS, structured face-to-face interviews were undertaken with a large number of bank CEOs. A specialised team also collected detailed information on the geographical location of bank branch networks. In Russia, geo-coordinates were collected for 45,728 branches of 853 banks. We use the BEPS data to calculate a Herfindahl-Hirschman Index as a measure of local bank concentration in each locality with one or more BEEPS firms. We also calculate the market share of foreign banks in each of these localities.

Main findings

A first look at the innovation data shows a clear difference in innovation activity among borrowing and non-borrowing firms (Table 1).

Table 1 Bank credit and innovation activity

	Innovate?		Observations	
Loan	57.03%		1,010	
Private domestic		56.47%		425
State		57.39%		467
Foreign		57.63%		118
No loan	40.93%		2,839	
No demand		38.97%		1,555
Demand + constrained		43.30%		1,284
Total	45.15%		3,849	

Source: BEEPS Russia 2012.

These numbers already suggest that access to credit facilitates innovation: among firms that needed credit, there is a clear difference in the likelihood of innovation activity between those that received credit (57%) and those that did not (43%). The lowest innovation probability (39%) occurs amongst firms that did not even demand a loan.

Further analysis shows that, when correcting for various firm characteristics, firms in more concentrated banking markets are significantly less credit constrained. As expected, concentration is mainly beneficial for smaller firms, which depend more on lending relationships with banks that allow the latter to extract and use proprietary information. A higher local market share of foreign banks further reduces firms' credit constraints.

We then show that this variation in credit constraints brought about by the external lending environment has significant impacts on both the extensive and intensive innovation margins. Credit-constrained firms are less likely to undertake at least one innovation, and are also less likely to be involved in several types of innovation. In line with the results for Italy, we find that bank credit facilitates process and marketing innovation, but not product innovation or R&D. This likely reflects that process

innovation typically involves the acquisition of new machinery, which banks can accept as collateral.

Finally, we ask whether it matters *which* bank a firm gets a loan from. We find that, while the identity of the bank does not matter much overall, getting a loan from a state bank only stimulates innovation by larger firms. In effect, state banks tend to specialise in lending to bigger and older firms, and do so at significantly lower interest rates (all else equal). Foreign banks, on the other hand, serve a broad range of firms and give loans at considerably longer maturities.

Conclusions

Our findings suggest that banks can play a crucial role in stimulating technological progress in emerging markets. While core innovation activities such as R&D and product innovation may need venture capital or private equity to take off, banks can help fund process and other forms of innovation. This suggests that countries such as Russia could benefit from a two-pronged approach in which government efforts to stimulate R&D are complemented by bottom-up and bank-funded private innovation.

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‘Know thy Competitor, Know Thyself?’ First Evidence from Banks in Emerging Europe

Ralph De Haas, Liping Lu and **Steven Ongena**
EBRD and Tilburg University; VU University Amsterdam; University of Zurich, SFI, and CEPR

How best to measure banking competition? The empirical banking literature typically resorts to well-known concentration measures such as the Herfindahl–Hirschman index, or performance indicators like the Lerner or Boone indexes. While these have their merits, none of them explicitly takes into account that banks may actively compete with some banks but not with others. This chapter presents micro evidence on the determinants of such dyadic banking competition, and argues that this concept can advance our understanding of how banking competition affects firms’ access to credit.

To compete or not to compete…

Why does a bank identify bank A as a competitor but not bank B? And do such dyadic competitive relationships affect real outcomes? We propose that even if two localities (say, villages or cities) contain the same number of banks with the same market shares, the intensity of local bank competition may still differ considerably between these localities. In particular, if more bank pairs actively compete with each other for clients, then local competition will be more intense. This level of dyadic banking competition may be important to understand how economic outcomes – such as access to credit – vary across localities within one and the same country. Unfortunately, we know very little about how banks choose their competitors and whether these choices affect firms’ credit constraints.

... that was our question

To analyse inter-bank competition in more detail, one would ideally like individual banks to disclose whom they regard as their core competitors. As part of the EBRD Banking Environment and Performance Survey (BEPS II), we were able to collect such information during confidential face-to-face interviews with almost 400 bank CEOs across emerging Europe. Banks were asked to divulge the identity of their three main competitors in retail lending, the retail deposit market, SME lending, and lending to corporate clients.

For each country we create a set of all possible bank pairs; this yields almost 15,000 bank-pair observations (two banks yield two bank pairs as bank A can identify bank B as a competitor and vice versa). We then use the interview information to create a dyadic dummy variable that indicates for each bank pair – and for each client segment – whether bank A identified bank B as a main competitor. As part of BEPS II we also collected the geographical coordinates of over 56,000 branches of these banks.

Who competes with whom?

Using our dyadic competition data, we first assess what determines the probability that a bank perceives another bank as a major competitor (correcting for the fact that in countries with more banks the 'base' probability that any particular bank is identified as a key competitor is lower for all banks in that country). We find that the following characteristics are strong and robust determinants of bank competitor status (we limit ourselves here to competition for SME clients):

- *Multi-market contact* (cf. Heggestad and Rhoades 1978): We find that when the branch networks of two banks overlap more at either the intensive or extensive margin, this significantly increases the probability that they identify each other as a key competitor. We define intensive branch overlap as the average number of branches of bank B within a 5 km radius of the branches of bank A. Likewise, we

define extensive overlap as the percentage of branches of bank A that have at least one branch of bank B within such a radius.

- *Bank size and ownership*: Perhaps not surprisingly, banks are more likely to regard larger banks (measured by the total number of branches) as a serious competitor. Moreover, all banks – both domestic and foreign-owned ones – are more likely to perceive (other) foreign banks as key competitors.
- *Hierarchical distance*: We find that, *given the size and ownership of bank B*, bank A is more likely to indicate that bank B is an important competitor if bank B applies more streamlined SME loan application procedures. In particular, the fewer hierarchical decision layers that an SME loan application has to overcome in bank B, the more likely it is that this bank is seen as highly competitive.
- *Reciprocity*: Finally, if bank A identifies bank B as a competitor, bank B is more likely to identify bank A as a competitor too, all else equal.

The determinants of dyadic banking competition in the market for corporate lending are very similar to those for SME lending, with two important exceptions. In corporate lending, there is no evidence that either bank size or the number of hierarchical layers has any impact on being perceived as a more formidable competitor. This reflects that the between-bank variation in bank size and the number of hierarchical layers involved in corporate lending is typically smaller when compared to SME lending. Moreover, information on large clients tends to be less 'soft', and therefore more easily transferable across hierarchical layers within a bank.

Local impact on access to credit

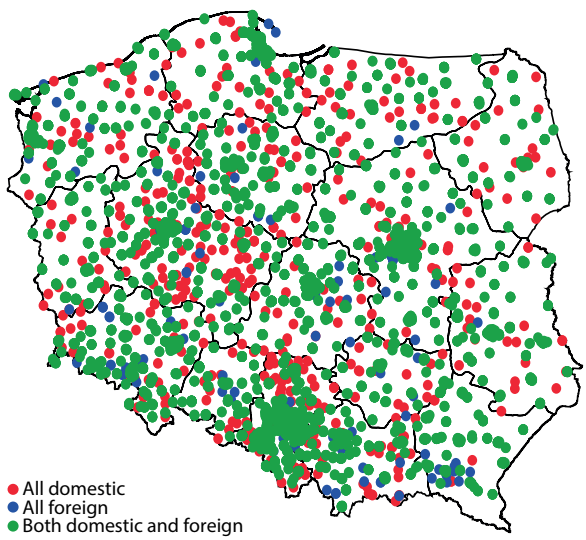
Does our dyadic competition measure have anything to say about local competitive conditions over and above what we can learn from 'traditional' concentration measures such as the Herfindahl–Hirschman index? To this end, we run probit regressions to

analyse whether dyadic banking competition at the locality level has an impact on firms' access to credit.

We first identify the banks present in each locality. Figure 1 illustrates these data for Poland. The dots indicate the various localities where at least one bank branch is present – the red (blue) dots indicate villages or cities where only domestic (foreign) banks are present, while the green dots indicate localities with 'mixed' ownership.

We then use the dyadic competition variables to create locality ('city') level measures of inter-bank competition. We determine all possible bank pairs in each locality, and our local competition measure is then the percentage of these bank pairs that is 'active': where bank A at the headquarter level identified bank B as a key competitor. For each locality we also create a standard Herfindahl–Hirschman index, where individual banks' market shares are measured by the number of local branches.

Figure 1 Bank branches across Polish localities



Source: BEPS II.

Finally, we link the BEPS data to information from the Business Environment and Performance Survey (BEEPS) on over 5,600 firms. For each of these firms we know whether they have a demand for credit and, if so, whether this demand was fulfilled or

whether the firm was credit constrained. Firms can be credit constrained either because their loan application was rejected by a bank or because the firm was discouraged from applying for a loan in the first place.

Linking both datasets allows us to contribute to a long-standing debate in the literature, namely whether local bank competition improves firms' access to credit (e.g. Carbo-Valverde et al. 2009) or deteriorates access – at least for opaque firms with whom banks need to establish long-term relationships to overcome information asymmetries (Petersen and Rajan 1995).

Our results suggest that in localities with more intense bilateral bank competition, SMEs are more likely to be credit constrained than in less competitive credit markets. In contrast, the local level of concentration as measured by a conventional Herfindahl–Hirschman index does not appear to have a first-order impact on access to credit. Put differently, bilateral competition between banks may help us to better understand the behaviour of banks than standard competition measures.

Concluding remarks

Using the new BEPS II survey, we provide the first evidence on the drivers of competition between individual banks and its impact on firms' access to credit. We find that banks are more likely to identify other banks as key competitors when their branch networks overlap more and when the potential competitor has fewer hierarchical layers, is larger and is foreign-owned. We also find that more intense bilateral competition between banks at the local level leads to tighter credit constraints for SMEs. This suggests that intense bilateral competition between banks may impede the formation of long-term lending relationships between these banks and local clients, potentially harming relatively opaque firms' access to credit.

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A Tribute to Ravi

Koen Schoors
Gent University and Vlerick Business School

Koen Schoors met Ravi Ramrattan, a research economist from Financial Sector Deepening Kenya, at the "Understanding Banks in Emerging Markets" conference last month. They connected for a brief time afterwards, but then Koen was shocked to hear that Ravi was tragically killed at the recent Westgate shopping centre siege in Nairobi. Here Koen pays tribute to Ravi and their all-too-brief friendship.

Dear Ravi,

It was the pure luck of alphabetical order that placed us next to one another at the "Understanding Banks in Emerging Markets" conference in London. At first I thought you were Indian, but you turned out to be a true African – although with ancient Indian roots and trained on different continents, including at the London School of Economics. It seemed, indeed, that you could have gone anywhere. But you decided to work in your own country, for your own people, to foster financial inclusion and help reduce poverty.

Your work at Financial Sector Deepening Kenya, a non-profit organisation that supports the development of financial markets in Kenya, sounded fascinating. You talked to me about your research into the behaviour of banks and credit access of Kenyan SMEs. You were also working on an analysis of the mobile banking business that is currently flourishing in Africa, where paying with your mobile phone has become common practice. You seemed convinced that mobile phone companies are entering the realm of banks, and that this would likely lead to the development of a true mobile credit market. We also discussed a new tax on each mobile payment in Kenya. This tax basically amounts to the first modern financial transaction tax, and it would have been interesting to derive lessons for the European financial transaction tax that is currently still up in the air.

Later, we went for a drink with some young Romanian colleagues in one of the many bars bordering the City to discuss research possibilities, but also to chat about life. You mentioned you had a Romanian girlfriend a while ago, which seemed to impress our Romanian colleagues. With your expert knowledge of London you took us to one of the nicer restaurants – a small Sri Lankan place – where one of your former classmates at the London School of Economics joined us. I remember calling the classmate for you, as your mobile phone's battery had run out. It was a wonderful and interesting evening with economic facts, stories about life in many countries, and especially dreams about the future – about what we hoped we would do and achieve. All the possibilities…

After the conference we stayed in touch, exchanging emails back and forth. You also sent me some of your work to foster future cooperation and research opportunities. I really felt like taking a good look at African banking. I think you were right – this century will inevitably be the century of Africa, so I was keen to learn all about it.

When the flow of emails suddenly stopped I was too busy with the start of the academic year to be worried, until I received a text message from your classmate who had joined us that evening in London. Had I heard the bad news? The world turned deadly silent for a while. Apparently you had been in the Westgate shopping centre in Nairobi when the terrorists of al-Shabaab unleashed hell and snuffed out your young and promising life. I couldn't believe it. You, a multicultural talent, squashed casually like a fruit fly by a bunch of idiots who believe that salvation is found in a cultural and religious monoculture, and are willing to murder innocent people for it.

Losing a new friend and a good colleague like this came as a terrible shock. It makes me so sad, Ravi, to see how a narrow view of identity seems to conquer the minds and hearts of people around the world. Why is a 'pure' identity for more and more people in these postmodern times an object of such burning desire, though clearly an empty shell? Why do so many prefer the sterile illusion of pure pedigree over the complex reality? How much longer will we have to bear them, Ravi, all those navel-gazing zealots that so fervently believe in their romantic and bygone ideal of a narrow identity?

Why can't they see that we need to bring people together around a shared future, a common project, rather than classifying them in small boxes and keeping them in that box at all costs?

Rest peacefully, Ravi. Thank you for your friendship. But most of all, thank you for opening my eyes.

Koen

About the author

Koen Schoors is Professor of Economics, specialised in transition economics and the enlargement of the European Union, at Gent University and Vlerick Business School. He is also director of CERISE (Center for Russian International Soci-political and Economic Studies). He has been involved in a large number of European projects in various countries of Central, Eastern and Southern Europe and has been working for RECEP (Moscow) and Saïd Business School (Oxford University) before rejoining UGent. He works on a wide range of research projects on topics such as banking, venture capital, foreign direct investment, enlargement of the European Union and transition in general.

On 5–6 September 2013, the European Banking Center at Tilburg University, the European Bank for Reconstruction and Development, the *Review of Finance*, and CEPR organised the conference "Understanding Banks in Emerging Markets: Observing, Asking, or Experimenting?" at the EBRD in London. The conference brought together leading researchers to discuss recent developments in banking research. This eBook gives an overview of the different topics discussed during the conference.

While the contributions deal with a wide variety of topics, a common thread is the use of innovative data to learn more about how banks operate in the often challenging environment of emerging markets. In particular, the studies use data from existing data repositories such as credit registries ('observing'), from large-scale surveys of bank CEOs and bank clients ('asking'), and from randomised experiments ('experimenting'). All three methods try to prise open the banking 'black box' in different ways – each with their own advantages and disadvantages. Using these different data sources allows researchers to address relevant policy questions, and also to better understand the micro-mechanisms of financial contracting and the supply- and demand-side constraints that (potential) borrowers in emerging markets face on a daily basis.

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