

SMEs and the credit crunch: Current financing difficulties, policy measures and a review of literature

by
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After a brief overview of current financing difficulties for SMEs and policy measures to support SME lending during the crisis, this article presents a literature review related to difficulties in SME's access to finance during the crisis, against a background of a sharp decline in bank profitability and an erosion of bank capital that negatively affected lending. The articles reviewed are classified according to four main issues of interest: the impairment of the bank-credit channel and its economic effects; factors potentially attenuating the effect of a financial squeeze; the role of global banking in mitigating but also transmitting financial shocks; and, looking ahead, issues related to so-called "credit-less recoveries" that should be relevant in guiding policy makers in the current environment of financial deleveraging. All the results hold important implications for policy making given the bail-outs and the large injections of liquidity by central banks during the crisis.

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1. SMEs' financing difficulties and policy measures to support the SME sector

1.1. Current financing difficulties for SMEs

Small- and medium-sized enterprises (SMEs¹) play a significant role in their economies as key generators of employment and income, and as drivers of innovation and growth. SMEs employ more than half of the private sector labour force in OECD economies. Given their importance in all economies, they are essential for the economic recovery from the current economic and financial crisis.

But the crisis has had a negative effect on bank lending. When bank lending is reduced, SMEs tend to be more vulnerable and affected than larger corporations (OECD, 2012) and credit sources tend to dry up more rapidly for small firms than for large companies during economic downturns (ECB, 2013a).² In the United States, where loan growth has been stronger than in the other large economies, bank lending conditions have eased, but slightly less so for smaller firms.³ In Japan, where bank lending has increased, the financing conditions for small as compared to larger enterprises remain more difficult.⁴

In the euro area, the problem of obtaining bank loans is aggravated for some of the weaker economies, even though policy support helped to overcome many of financing constraints faced by SMEs (Box 1). SMEs in these countries are encountering specific

Box 1. The situation of SMEs in Greece

Risks of a credit crunch and increase in the financing gap

Greek SMEs currently continue to face very intense problems in accessing finance due to both demand and supply side constraints. On the supply side, Greek banks are under pressure mostly due to the high level of non-performing loans (NPLs) and on the demand side there is a limiting influence from the large fall in business turnover and the lack of investment plans. However, the pace of decline in credit to non-financial corporations in the last few months (-4.5% y-o-y in October 2013) suggests that there are also positive factors at play, influencing the supply of credit from banks. These include the recent recapitalisation of banks and the rebound in confidence in the economy, resulting in a return of deposits during the second half of 2012 while outflows during 2013 have been limited. That said, credit towards Greek SMEs remains particularly expensive. Although Greek MFI loan interest rates recently began to fall, in real terms they have been following an upward trend.

Considering indications from a recent round of the ECB's SAFE survey, the financing gap of Greek SMEs remains particularly wide, especially compared to other countries. For example, the percentage for "financing obstacles for Greek SMEs" was standing at 21% for April-October 2013, albeit lower than in previous rounds of the survey. So there is some kind of credit crunch but there are signs of improvement. At the current conjuncture, the financing gap of Greek SMEs remains both cyclical and structural. Considering the SME support policy measures and the contribution of EIB funds in particular for 2013-15 as well as the projected rebound of output to positive growth in 2014, the cyclical component of the financing gap is

Box 1. The situation of SMEs in Greece (cont.)

expected to improve somewhat by the end of 2014. However, the structural financing gap is not expected to start narrowing, at least in the next two years till 2015 (with the exception of a small injection to the otherwise low investment levels in 2014 from the recent restart of road infrastructure projects). Greek banks would continue to need to rely on Eurosystem funding in the period until investment eventually rebounds and the SME financing gap narrows. A factor limiting this reliance is that Greek banks have regained access to the cross-border interbank market for secured deposits. Overall, bank deleveraging would not increase the SME financing gap further, to the extent that it occurs mainly through the disposal of unwanted bank assets and loan portfolio clean-up.

Policy measures taken to support lending

SME support policy measures in Greece in the form of guarantee programs and loans to SMEs have so far had limited effects in channelling new lending to SMEs, whereas Greek banks have to a large extent refinanced loans to SMEs that they consider viable. The lack of viable investment projects at an acceptable level of risk has been a key source of delay for the absorption of public/EIB/EU SME funds (and some of the programmes have already been redesigned to address working capital as well as investment needs). Nonetheless, these measures are appropriate and should continue being implemented as they address pressing bank loan supply issues. It is expected that additional funds will reach SMEs in 2014, especially from the EIB funds that do not require the loan participation of Greek banks and the new EIB trade financing facility. They could become more effective in the medium term if complemented by measures targeting i) improvements to the present institutional framework (e.g. better and low-cost information available to banks regarding SME loans through an SME credit registry and firm pre-insolvency procedures); ii) guidance/help on the demand side, especially to starting SME entrepreneurs (how to set-up a realistic business plan, legal advice, tax advice), along the lines suggested in the report by Bain and IIF (2013). Expertise employed by the new development fund for Greece, the so-called “Institution for Growth” to be set up in 2014 – with the participation of German KfW and the Greek authorities – could also be envisaged to help towards this end.

The contribution of institutional investors to SME finance

Efforts could focus on loan securitisation instruments. The recent EU initiatives (EC/EIB proposals) regarding the use of securitisation instruments to help restart the EU securitised SME loan market would contribute to attracting funds from institutional investors towards banks and help finance SMEs. The instrument may attractively combine guarantees for outstanding SME loans (that were not guaranteed). Efforts at a European level should also be devoted to raising the volume of funds invested to venture capital and bringing individual country SMEs in contact with international investors (the Greek fund of funds “TANEO” could benefit from an injection of funds from foreign institutional investors).

Source: Written submission by the Greek Delegation to the Committee on Financial Markets.

difficulties in accessing finance owing to the fragmentation of the financial and banking markets (ECB, 2013a; and Box 3). Sovereign spreads and macroeconomic weakness, in addition to borrowers’ risk, are likely to influence financing costs in their local home markets. Spreads between bank lending rates on small and large loans to non-financial corporations remained substantially higher for SMEs in Italy and Spain than before the start of the financial crisis, although they have declined since the last quarter of 2012. The general economic situation characterised by bank funding fragmentation and subdued loan dynamics in some jurisdictions constitutes a challenging environment for SMEs (ECB, 2013c).

Data from the ECB bank lending survey and the survey on the access to finance of SMEs in the euro area (SAFE) also show that since 2009 banks' perceptions of increasing macro and micro risks as well as the firm-specific outlook, in particular of SMEs, have played an increasing role in the tightening of business credit standards and reduced availability of external financing, albeit with regional differences. Indicators constructed from these data show that smaller companies are most affected.⁵ These indicators also show that almost one quarter of euro area SMEs faced some sort of financing obstacle when applying for a bank loan during the period from 2009 to March 2013. Among the SMEs of large euro area countries, those from the France, Italy, Spain face a financing gap above the euro area average. Financing obstacles for SMEs were reported to be also very high in Greece and Ireland. However, the level and pattern of such obstacles have been heterogeneous across euro area countries more generally. Further details (ECB, 2013b) also show that the rejection of a loan application was the most common obstacle. The second most important obstacle was receiving only a part of the credit requested. Only a limited number of SMEs turned down a loan owing to high borrowing costs.

1.2. Policy actions to support the SME sector during the crisis and beyond: Selected issues

Policy measures to support debt finance

As SME lending suffered during the crisis, governments took specific measures to address these problems (Table 1; OECD, 2009, 2010). Besides introducing specific emergency programmes, governments maintained or expanded the assistance programmes that they had introduced in late-2008 or early-2009. Government guarantees provided to SMEs via the financial system increased dramatically over 2009-10, but declined in 2011 in some countries.

In many countries, Credit Guarantee Schemes (CGSs) represent a key policy tool to address the SME financing gap while limiting the burden on public finances. Given the severe credit conditions faced by SMEs in the aftermath of the 2008-09 crisis, such schemes have also represented an instrument of choice for policy makers in many countries to improve SME's access to finance (OECD, 2013a). Such schemes were therefore subject of a recent comprehensive OECD analysis that identifies structural and emerging challenges for the financial sustainability and the financial and economic additionality of these schemes, in a rapidly changing economic and regulatory environment.⁶

A number of European OECD countries⁷ also introduced credit mediation schemes that turned out to be rather successful and continued in many countries, evolving into longer-term initiatives to support SMEs which encounter difficulties in credit and insurance markets (OECD, 2013b). Small firms with fewer than 50 employees have been the main users of the programmes, although the lack of awareness about the service often represents a key obstacle for a broader uptake by SMEs.

There is also an important contribution to be made by public financial institutions (PFIs) in fostering SMEs' access to finance. PFIs have been playing an increasing and often varying role in the aftermath of the crisis, addressing short-term financing gaps and mitigating cyclical fluctuations in lending activities of financial institutions, especially to SMEs. With increasing importance of PFIs in fostering SMEs' access to finance, PFIs' strategic orientation and instruments are likely to evolve in the coming years. The OECD⁸ is currently studying these issues, and some of the questions that will need to be further investigated are those regarding policy effectiveness and crowding out of private sector financial activities.

Table 1. **Government programmes to facilitate SMEs access to financing, 2008-2011**

	Government loan guarantee programmes ¹		Strengthening capital base of support institutions	Direct credit	Export facilitation			Credit mediation and monitoring
	Working capital (short-term)	Investment capital (long-term)			Increased capital of export support institutions	Export credits	Export guarantees or insurance	
Australia			✓			✓ ²	✓ ²	
Austria	✓	✓		✓				
Belgium	✓	✓	✓	✓	✓		✓	Mediation
Canada	✓	✓	✓	✓	✓	✓	✓	
Czech Republic	✓	✓			✓	✓	✓	
Denmark	✓	✓		✓	✓	✓		Mediation ³
Estonia	✓	✓		✓			✓	
Finland	✓	✓	✓	✓	✓	✓	✓	
France	✓	✓	✓	✓		✓	✓	Mediation
Germany	✓	✓		✓	✓	✓	✓	Mediation
Greece	✓							
Hungary	✓	✓	✓	✓				
Ireland								Mediation
Israel			✓	✓		✓	✓	
Italy	✓	✓	✓			✓	✓	Monitoring and collective agreement
Japan	✓	✓	✓	✓	✓	✓	✓	
Korea	✓	✓		✓			✓	
Netherlands	✓	✓		✓			✓	Monitor
New Zealand					✓	✓	✓	
Poland	✓	✓					✓	
Portugal	✓	✓						
Slovak Republic				✓				
Spain	✓	✓		✓	✓	✓		Mediation
Sweden	✓	✓	✓		✓	✓	✓	
Switzerland					✓			
Turkey	✓	✓		✓		✓	✓	Mediation
United Kingdom	✓	✓		✓				
United States	✓	✓		✓				Monitor

Note: Based on Country Responses to the OECD WPSMEE Questionnaire to Policy Makers on the Impact of the Global Crisis on SMEs and Entrepreneurship Financing and the Policy Responses, follow-up launched November 2009, update from June 2010 and publicly available information.

1. Some programmes apply to all firms, not just SMEs.
2. Policies implemented prior to the crisis.
3. Credit mediation carried-out by the Danish Banking Association.

Source: OECD (2010) and further information provided by the Czech Delegation to the CMF.

Risk capital and policy issues

The crisis has severely affected the venture capital industry. The increasing concern by policy makers about the growing financing gap for high growth firms, particularly in the seed and early stage phase, have led the OECD to undertake research aiming to assess the links between seed and early stage policy interventions, the regulatory and administrative environment, and the outcomes in terms of seed and early stage investment. Results from a questionnaire that was part of the project show that supply side policy interventions in terms of debt, tax incentives as well as equity funds, have increased in the past five years in many OECD countries.⁹ While a majority of OECD countries has had grants, loans and/or guarantee schemes in place for many years, support

for these programmes has increased over the past five years, as have other support measures. Regulatory and administrative frameworks as well as equity markets and corporate governance play an important role in this context.¹⁰ The survey also finds that there has been little evaluation of such programmes thus there is scant evidence of the impact of these instruments and whether or not they crowd out private investors. Further efforts will be required to gauge the impact of such policies.

Non-bank SME finance: Selected issues

SMEs have long been heavily reliant on traditional bank finance, but especially the crisis has shown that it is therefore necessary to broaden the range of financing instruments available to SMEs and entrepreneurs to improve their financing. Issues regarding non-bank SME finance are currently being studied by OECD.¹¹ This includes the role of mezzanine finance (OECD, 2014) but also new alternatives such as crowdfunding¹² or peer-to-peer lending – which also raises some issues related to financial consumer protection. Revitalising securitisation is among the most important elements in the effort to strengthen non-bank finance, and it can be tailored to fit the needs of SME finance in particular. As securitisation has been tarnished during the crisis, “new” securitisation needs to be made safer, simpler and more transparent, perhaps also by offering some (initial) government and regulatory support. For mid-sized companies, bonds and private placements may also provide useful alternatives.

2. SME financing and credit crunch issues: A review of selected literature

2.1. Overview

The crisis has had detrimental consequences for banks’ health, in terms of balance sheets, cost of funds and profitability. Many empirical studies explore the effect of the current and past crises on the supply of credit to the real economy. Besides the sharp decline in bank profitability and an erosion of bank capital cushions that hit these lenders, the current crisis led to disruptions in banks’ access to wholesale funding and their ability to securitise assets. It also put severe pressure on their liquidity positions. All these developments imposed serious strains on banks’ balance sheet positions and consequently impaired their lending capacity as they were forced to readjust their balance sheets.

The seminal model for credit rationing has been developed by Stiglitz and Weiss (1981). The most severe form of a credit rationing is a “credit crunch” that occurs when the supply of credit is restricted below the range usually identified with prevailing market interest rates and the profitability of investment projects (according to a definition by the Council of Economic Advisors, 1992; as quoted in Pazarbaşıoğlu, 1997). However, the empirical observation of a sharp decline in lending still requires disentangling supply (credit crunch) from demand effects, and several studies have pursued different ways to do that. Most commonly, approaches are based on a disequilibrium model as developed and applied by Fair and Jaffee (1972), Rimbara and Santomero (1976), and Laffont and Garcia (1977). Using such a disequilibrium framework, several studies have investigated a possible credit crunch in the aftermath of the financial and banking crises, such as Pazarbaşıoğlu (1997) for the Finnish banking crisis and Ghosh and Ghosh (1999) and Agung et al. (2001) for the Asian crisis (Shinozaki, 2012). Blundell-Wignall and Gizycki (1992) explore the lending behaviour of financial intermediaries taking into account agency costs and demonstrate that rationing should, theoretically, not be, and has empirically not been important over the business cycle in Australia.

However, there is empirical evidence for credit crunch effects during crises, but these effects may vary across firms and, as in the current global financial crisis, also across economies. Especially in the current crisis, strong policy support has attenuated or abated the risk of a true or more severe credit crunch. While it may therefore be hard to draw strong conclusions about the precise occurrence and extent of a credit crunch during this crisis, the measures taken to support lending especially to SMEs were likely the right response to the crisis given that policy makers want to err on the downside rather than on the upside (OECD, 2010).

Other studies have examined the adverse effects of such credit shortages on real economic activity. Looking at the factors that led to the impairment of the bank-credit channel following the global financial crisis, the main findings of this literature as reviewed below suggest that some firms, especially those depending on bank lending, have suffered severe restrictions in their access to credit, and that this has had significant effects on economic activity. Several studies have been specifically devoted to analysing the impact of the current crisis on access to credit for SMEs.

In summary, a number of empirical studies have assessed the impairment of the bank-credit channel and find evidence which suggests that significant segments of the economies studied appear to have severely restricted access to financial credit as a result of the financial crisis, bank deleveraging and the lack of alternative financing channels. The deleveraging of European banks in particular has led them to reduce their exposures to SMEs, and only dedicated policy measures to support SME lending could counterbalance some of these effects (as also discussed in the final chapter).

In the following a selection of such research is briefly reviewed, and a schematic overview of the findings are presented in Box 2. The next section looks at studies that deal with the impairment of the bank-credit channel and its economic effects. Factors potentially attenuating the effect of a financial squeeze are analysed in several studies and reviewed in the following section. Global banking can attenuate but also transmit financial shocks, as examined in the studies reviewed in the subsequent section. Looking ahead, a final section in this chapter discusses various papers related to the issue of “credit-less recoveries” that should be relevant in guiding policy makers in the current environment of financial deleveraging.

2.2. Impairment of the bank-credit channel and economic effects

The credit channel at work: Supply vs. demand effects and evidence for a credit crunch

While aggregate loan development typically hinges on a combination of factors that simultaneously affect the demand and the supply side of bank lending, empirically the challenge in analysing credit channel effects is disentangling changes in credit supply and demand. To address this issue, Ciccarelli et al. (2010) use detailed replies to US and euro area bank lending surveys in a standard VAR model, spanning a period from 1992Q3 to 2009Q4 for the US and 2002Q4-2009Q4 for the euro area. They find that credit channel propagation takes place via households’ balance sheets and that the credit channel amplifies the impact of a monetary policy shock on GDP and inflation. While for household loans the demand channel is the strongest, for business loans the impact through the (supply) bank lending channel is higher than through the demand and balance-sheet channels. Furthermore, significant contributions to the reduction in GDP during the crisis came from tighter standards for mortgage loans in the US and from loan supply

Box 2. Main results from the literature survey

This literature survey explores the effect of the crisis on the supply of credit and on the real economy. The review is necessarily selective, but papers are mostly recent and in a crisis context; many studies are on banks in Europe; the survey also finds that data availability plays an important role. The following key messages can be distilled from this survey:

- *The Crisis has had detrimental consequences for borrowers and lenders; SMEs were most affected.*
- *There is some empirical evidence for credit crunch effects, but results vary across firms and economies.*
- *Strong policy support has attenuated or abated risk of a severe credit crunch.*
- *The need for bank recapitalisation has reduced lending and further aggravated the crisis.*
- *The euro area sovereign debt crisis had a major impact on financing conditions.*
- *There are also negative effects of the crisis on trade finance as well as on syndicated loans.*
- *Safer banks make for better lending; small banks with close customer relationships can play a positive role in certain cases.*
- *The availability of pledgeable assets, trade credit and non-bank finance can ease financial constraints.*
- *Cross-border banking can attenuate a local credit squeeze, but can also transmit crises.*
- *An internationally coordinated approach to regulatory reforms is needed in order to avoid regulatory spillover.*
- *There are implications for monetary policy as domestic lending channels are weaker and the international transmission of shocks is stronger.*
- *Credit-less recoveries are possible, even though they are weaker; thus the current on-going deleveraging should not prevent a recovery in principle. However, more important for recovery may be increasing competitiveness and, in certain cases, lower public debt.*

Source: OECD Secretariat.

restrictions to firms in the euro area – i.e. the euro area suffered a credit crunch with effects on the real economy. However, they also find that ECB monetary policy support (rate cuts and non-standard measures) significantly alleviated further effects on the real economy and helped to sustain economic growth, thus lending empirical support to central bank responses to financial crises that aim at relaxing banks' balance sheet constraints and lower policy rates.

Supply constraints have slowed euro area bank lending in the crisis

Similar conclusions are reached in a study by Hempell and Sorensen (2010) that shows that strains on banks' liquidity positions and their access to market financing contributed significantly to the slowdown in corporate lending in the euro area during the financial crisis of 2007-09. Examining the impact of supply constraints on bank lending with a special focus on this turmoil period, they present empirical evidence suggesting that banks' ability and willingness to supply loans affects overall bank lending activity in general and has done so particularly during the financial crisis. Applying a cross-country panel-econometric approach using a (unique and confidential) data set from the Eurosystem's bank lending survey allows them to disentangle loan supply and demand effects. They find that even when controlling for demand effects loan growth is supply constrained, besides a negative impact of some broader risk-related factors that include cyclical effects such as changes in borrowers' risks and changes in banks' risk aversion. This applies both for loans to households for house purchase and for loans to non-financial corporations.

Some evidence for a credit crunch may be seen in their findings regarding the terms and conditions by which banks alter their credit standards: they show that both price effects (like higher margins) and restrictions on the size of loans negatively affect the growth of corporate loans, and similarly housing loans. Furthermore, the authors provide evidence that the impact of supply-side constraints, especially related to disruptions of banks' access to wholesale funding and their liquidity positions, was reinforced since the eruption of the financial crisis. However, a true credit crunch seems not to have been present as crisis-related adjustments in banks' loan portfolios seem to have been geared primarily via prices rather than outright quantity restrictions. However, they point out that the ECB's (and other central banks') efforts during the financial crisis to help reignite the money and capital markets have helped alleviate a liquidity squeeze and, in combination with the substantial recapitalisation of national banking sectors, have mitigated the strains on euro area banks' balance sheets. This, the authors note, should enable banks to start lending again once loan demand picks up.

In France, credit crunch effects seem to have been less prevalent, according to a study by Kremp and Sevestre (2013). Based on a sample of around 60 000 SMEs, the authors analyse whether the observed evolution of credit to SMEs over the recent period was a result of the decrease in firms' activity and investment projects, i.e. demand driven, or whether it was supply driven due to an increase in credit rationing. They conclude that, despite the stricter standards used by banks when granting credit, French SMEs do not appear to have been strongly affected by credit rationing since 2008. As the authors note, this result goes against the common view that SMEs suffered from a strong credit restriction during the crisis but is in line with results of several surveys about the access to finance of SMEs conducted in France.

However, as Cabannes et al. (2013) argue, French companies suffered from a slump in domestic and global demand during the 2008-09 crisis as well as tighter their credit standards. This had a negative impact on firm creation and firm growth, suggesting that younger, more dynamic firms may have faced the most difficulties, as also indicated in preliminary research by Avouyi-Dovi et al. (2013). Many companies, often those that seemed less financially constrained, lowered their production, employment and investment at least over the short term. In aggregate, these short-term firm-level (micro) effects also lead to longer-lasting macroeconomic effects.

Loan supply shocks affect economic activity particularly during slowdowns

The role of loan supply shocks is further analysed by Gambetti and Musso (2012), covering a longer time period, from 1980 to 2010. Using a time-varying parameters VAR model with stochastic volatility and identifying these shocks by sign restrictions they provide empirical evidence on the role played by loan supply shocks over the business cycle in the euro area, the United Kingdom and the United States. Their findings suggest that loan supply shocks appear to have a significant effect on economic activity and credit market variables, but to some extent also inflation, in all three economic areas. Moreover, there is evidence that the short-term impact of these shocks on real GDP and loan volumes have increased in all three economic areas over the past few years. The results of the analysis also suggest that the impact of loan supply shocks seems to be particularly important during slowdowns in economic activity. For the 2008-09 recent recession, the contribution of these shocks explain about half of the decline in annual real GDP growth in the euro area and the United States, and possibly about three fourths of that observed in

the United Kingdom. Finally, loan supply shocks contributed to almost half of the overall decline in annual loan growth from the 2007 peaks to the 2009-10 troughs (in all three economic areas considered).

Lending suffers when capital adequacy has to be improved

The crisis, especially via losses on mortgages and other mortgage-related securities, has dramatically eroded the capital base of many banks. Supervisors, regulators and Basel III reforms have all aimed at improving the capital adequacy of banks. But in order to achieve a better capital adequacy, or even just to maintain the minimum capital adequacy ratio, capital-constrained banks began collecting outstanding loans or became reluctant to approve new lending. This has further aggravated the crisis. In principle, capital-constrained banks can recover the capital ratio either by reducing assets or by increasing equity capital. It has been shown, theoretically and empirically, that banks reduce lending more often than they recapitalise. In a theoretical model, Hyun and Rhee (2011) show that banks cut lending when economic conditions are poor or when raising new capital is costly, and that capital constrained banks are more reluctant to advance new lending in an attempt to maintain minimum capital adequacy ratios.

Specifically, they use a dynamic banking model to show that if a bank's decision is made by incumbent shareholders, the bank will find it advantageous to meet the higher capital ratio by reducing high-risk assets, even though recapitalisation can be achieved by selling new equity to the public. Their results hold under certain conditions but are derived without imposing any kind of cost on equity issue (as have done previous studies that often relied on this feature to obtain their results). They show that, for a modest increase of the minimum capital ratio, banks may prefer to choose the asset reduction strategy when they hold a relatively small amount of long-term loans or when the economy is in a bad state. But if banks have significant amounts of long-term loan relationships they may be more willing to extend new credit to the firms in their portfolio in order not to put the existing loans at default risk. The authors argue that, if their results are valid in general, then bank regulation should be enforced with caution. This is especially the case when the economy is weak, as the increased bank capital adequacy ratio may cause a credit crunch. Interestingly, they claim that in their model, a credit crunch would be more likely under a Basel risk-weighting approach. While in their simple model they assign a risk weight of one to all loans (and zero to government bonds), their model could be used to study varying (and default risk-dependent) risk-weighting assumptions – or, one may add, the application of a simple leverage ratio, i.e. applying a risk weight of one to all loans as well as government bonds. However, this is left for future study.

Credit supply during a sovereign debt crisis

The euro area sovereign debt crisis that erupted in 2010 has had a major impact on financing conditions for firms in the affected countries. The negative impact of increased country risk on financial intermediaries' balance sheets, in particular on their funding costs and on their capacity to grant credit all played a role. As sovereign bonds yields raise and sovereign ratings deteriorate, sources of funding become indeed more scarce and more costly: availability of wholesale funding markets, especially uncollateralised, becomes much thinner and banks' capacity to access collateralised lending decreases, as the value of eligible collateral, typically sovereign bonds, drops. Moreover, bank profitability may be reduced, in particular if sovereign bonds are held in banks' trading books which are

marked-to-market. These factors all contribute to transmit tensions from the sovereign bond markets to banks' ability to supply credit and to the cost of credit for borrowers. Hence, a credit crunch may occur at a time in which governments may tighten fiscal policy to combat the sovereign tensions, triggering or amplifying a contraction in economic activity. Finally, higher sovereign yields may also impair the transmission mechanism of monetary policy, in particular within a monetary union: policy rate changes may not affect banks funding costs if the latter are increasingly driven by domestic sovereign yields. This is the background exposed by Bofondi et al. (2013) for their study of the effect of the increase in Italian sovereign debt risk on credit supply. They use a sample of 670 000 bank-firm relationships between December 2010 and December 2011, drawn from the Italian Central Credit Register. To identify a causal link, they exploit the lower impact of sovereign risk on foreign banks operating in Italy than on domestic banks. They study firms' borrowing and find that Italian banks tightened credit supply: the lending of Italian banks grew by about 3 percentage points less than that of foreign banks, and their interest rates were 15-20 basis points higher, after the outbreak of the sovereign debt crisis. They test robustness by splitting foreign banks into branches and subsidiaries, and then examine whether selected bank characteristics may have amplified or mitigated the impact. They also study the extensive margin of credit, analysing banks' propensity to terminate existing relationships and to grant new loan applications. Finally, testing whether firms were able to compensate for the reduction of credit from Italian banks by borrowing more from foreign banks, they find that this was not the case, so that the sovereign crisis led to a significant aggregate effect on credit supply.

Holton et al. (2012) study specifically the effects of the recent euro area financial and sovereign debt crisis on SMEs' access to bank finance. They use the (abovementioned) ECB survey on access to finance of SMEs in the euro area (SAFE) which allows them to separate firms' demand for credit from banks' supply of loans. It also provides a distinction between firms' perception of the availability of finance and their actual experience obtaining credit and the terms and conditions at which they receive it. They can then test what micro-level firm characteristics and macroeconomic factors affect each of these different components of credit access. Overall, they find that larger, older firms are less likely to be denied bank financing. At the country level, they identify three distinct aspects of the crisis in Europe: the real economy, the financial/sovereign sector and private sector debt overhang. They find that the level of debt overhang affects all aspects of SME financing, with suggestive evidence that the effect on credit rejection operates through the bank balance sheet, as opposed to borrower balance sheet, channel. Bank credit default swaps and sovereign yields are found to affect, as expected, only the supply-side rejection and terms and conditions of credit. A weak real economy is found to only affect the demand for bank financing. They conclude that the three crises have distinct effects, with the real economy affecting credit demand, the sovereign/financial crisis affecting supply decisions and conditions, and debt overhang affecting all three outcomes. As the authors argue, this final finding points to the hugely debilitating effect of the credit expansion across the euro area in the years preceding the financial crisis.

The impact of interbank finance on lending

The squeeze, even freeze, of the interbank market has had several ripple effects in the course of the crisis and has had a negative impact on bank lending. Against this background, Iyer et al. (2010) analyse the effects of the 2007-09 banking crisis on the supply

of credit to businesses in Portugal. They use loan level data for the entire Portuguese banking sector matched with firm and bank information. They exploit a shock to bank liquidity induced by the unexpected freeze of the European interbank market in August 2007. Using a difference-in-difference approach, they compare lending before and after the crisis by banks with different susceptibility to the shock, based on their exposure to the interbank market prior to the onset of the crisis. In addition, they use firm fixed-effects to control for unobserved heterogeneity in firm loan demand and risk. They find that for the same borrower, banks that rely more on interbank finance before the crisis decrease their lending more severely during the crisis. The credit supply reduction is stronger for smaller, younger firms, with weaker banking relationships (the role of relationship banking is briefly discussed below). Moreover, they show that these firms cannot compensate the reduction in supply via obtaining credit from other, less affected, banks, nor from other sources of debt, suggesting that the credit crunch was binding. As the authors point out, these results hold important implications for policy making given the bail-outs and the large injections of liquidity by central banks during the crisis. Finally, they find no reduction in credit supply for large firms. These results therefore suggest that the liquidity shock at the onset of the financial crisis of 2007-09 affects SMEs most severely, while larger, more established firms were less affected, as discussed in the following.

Small firms tend to be more vulnerable to credit constraints

As pointed out above, small firms tend to be most affected by a credit squeeze. Mach and Wolken (2012) therefore examine the effects of credit availability on small firm survivability over the period 2004 to 2008 for non-publicly traded small enterprises in the United States. Using data from the 2003 US Survey of Small Business Finances to develop failure prediction models for a sample of small firms they find that credit constrained firms were significantly more likely to go out of business than non-constrained firms. Moreover, credit constraint and credit access variables appear to be among the most important default predictors for the sample of firms, even when various firm, owner, and market characteristics are controlled for.

During the recent financial crisis, euro area firms, and especially SMEs, have been reporting acute problems of access to external finance. Artola and Genre (2011) corroborate these claims, analysing firm-level replies to the ECB-EU SME survey on access to finance between 2009 and 2010. They use two indicators of financing constraints based on perceptions on the one side and on experienced financing constraints on the other and run probit and multinomial regressions models to determine which firms', sectoral or national characteristics drove perceptions and experiences of financial constraints during the financial turmoil studied. They find that perceptions of financing crunch was broadly based across firms but those firms who really experienced a credit crunch tended to be small and young, confirming the fact that SMEs tend to suffer more when credit standards are tightened.

In a similar vein, Chava and Purnanandam (2011) find that firms that can only access capital through banks – which tends to be the case to smaller firms – are most vulnerable to banking crises compared to firms with alternative sources of capital. Their results also suggest that the global integration of the financial sector can contribute to the propagation of financial shocks from one economy to another through the banking channel. Specifically, using an exogenous shock to the US banking system during the Russian crisis in the autumn of 1998 to separate the effect of borrowers' demand of credit from the supply of credit by the banks, they provide causal evidence that adverse capital shocks to banks affect their

borrowers' performance negatively. They find that bank-dependent firms experienced significantly larger valuation losses as compared to their rated, bond-issuing counterparts during the crisis period. Other results show that bank-dependent firms cut their capital expenditure significantly more than the rated firms in the quarters immediately following the crisis as compared to the earlier quarters. In addition, their operating profits dropped considerably more in the post-crisis quarters as compared to the corresponding decline for the rated firms. The authors also investigate the effect of injection of liquidity into the banking sector by the Federal Reserve in the immediate aftermath of the crisis and find that bank-dependent firms recovered a part of their initial valuation loss after these policy interventions. Consistent with an adverse shock to the supply of credit, they also find that crisis-affected banks decreased the quantity of their lending and increased loan interest rates in the post-crisis period significantly more than the unaffected banks. Finally, the authors point out that their results underline the importance of corporate bond markets during the time of banking crises in emerging markets (as pointed out by Greenspan in 1999¹³) but also the positive impact corporate bond markets can have developed economies (the beneficial effects of non-bank finance are briefly discussed below).

However, being small does not necessarily put a firm at a financing disadvantage. Ferrando and Griesshaber (2013), analysing survey data from the abovementioned SAFE with a sample of around 5 000 firms from euro area countries, do not find firm size to be a significant financing obstacle. The data from that survey, started at the end of 2009, let them investigate the determinants of financing obstacles, testing whether firm characteristics such as size, age, economic branch, financial autonomy and ownership have been valid predictors of financing obstacles during the recent financial crisis. Their results show that only age and ownership are robust explanatory variables for firms' perceived financing obstacles while mixed results are found for size and economic branches.

Effects of the 2008 banking panic on syndicated loans

A specific event, and mostly seen as the trigger to the current crisis, was the default of Lehman Brothers in September 2008, that caused a banking panic and had major effects throughout the financial system. In order to understand the effects of this 2008 panic on the supply of credit to the corporate sector in the US, Ivashina and Scharfstein (2010) analyse panel data of syndicated large bank loans in the United States over the period 2000-08. They document that new loans to large borrowers fell by 47% during the peak period of the financial crisis (2008Q4) relative to the prior quarter and by 79% relative to the peak of the credit boom (2007Q2). New lending for real investment (such as working capital and capital expenditures) fell by only 14% in the last quarter of 2008, but contracted nearly as much as new lending for restructuring (LBOs, M&A, share repurchases) relative to the peak of the credit boom. After the failure of Lehman in September 2008 there was a run by short-term bank creditors, making it difficult for banks to roll over their short-term debt. There was also a simultaneous run by borrowers who drew down their credit lines, leading to a spike in commercial and industrial loans reported on bank balance sheets. The study examines whether these two stresses on bank liquidity led them to cut lending and finds that banks cut their lending less if they had better access to deposit financing and thus they were not as reliant on short-term debt. The analysis also shows that banks that were more vulnerable to credit line drawdowns because they co-syndicated more of their credit lines with Lehman Brothers reduced their lending to a greater extent.

Impact on trade finance

Financial crises often also cause exports to drop more strongly than GDP: in the 2008 financial crisis, real world exports plunged 17% while GDP fell 5%. Amiti and Weinstein (2009) examine whether deterioration in bank health can help explain such a collapse. Analysing a unique data set that allows to match exporters with their trade credit-providing banks and that covers the Japanese financial crises from 1990 to 2010, they establish a causal link between the health of banks providing trade finance and growth in a firm's exports relative to its domestic sales.

2.3. Factors potentially attenuating the effect of a financial squeeze

Safer banks make for better lending

Blundell-Wignall and Roulet (2013)¹⁴ study the business activities of banks with a special focus on their lending behaviour, and their responsiveness to unconventional monetary policy. They show that deleveraging has been mainly via mark-to-market assets falling in value, and policy has been serving to reflate these assets without a strong impact on lending. Using a panel regression approach they find that global systemically important banks (G-SIBs) are least responsive to policy, and non-G-SIBs respond to the lending rate spread to cash rates, the spread between lending rates and the alternative investment in government bonds, and the distance to default (the banks' solvency). The paper shows that better lending in the US is a result of safer banks and a better spread to government bonds; yields on the latter are too attractive relative to lending rates in Europe.

These findings are supported by evidence presented in Schoenmaker (2013). The author finds that at the bank level, the top tertile of well-capitalised banks (with a market-based leverage ratio well above 4%) continues its lending, with a gradual rise. By contrast, the second tertile of medium-capitalised banks (between 3% and 4%) and third tertile of weakly-capitalised banks (well below 3%) show a strong decline in lending. Moreover, the market to book ratio is below one for these banks. As the author points out, his findings "provide prima facie evidence of an emerging credit crunch in Europe". Another fall-out of the financial crisis is an increase of concentration in banking (except in the CESEE countries). The enhancement of financial stability through (forced) M&As during this crisis that should have helped to avoid bankruptcies, seems to come at the expense of reduced competition. But then again, there is no conclusive empirical evidence as to whether concentration increases or decreases financial stability (e.g. Anginer and Demirguç-Kunt, 2011).

"Healthier" firms face fewer financing constraints

Besides general constraints on the supply of credit, financing constraints are related to a specific firm's financial soundness and profitability. Ferrando and Mulier (2013) therefore investigate which financial and non-financial firm characteristics are correlated with the firm's self-reported financing constraints in order to get a better understanding of the nature of financing constraints during the recent financial crisis. They investigate the role of firm characteristics with respect to the experience of facing financing obstacles in the period 2009-11. For this they use a non-parametric matching procedure to match survey replies to balance sheet information, drawing on the (above-mentioned) SAFE survey on access to finance for a sample of 11 886 euro area firms which are matched with their nearest neighbour in an extended dataset with balance sheet information on 2.3 million firms. They distinguish between firms' perceived financing constraints and actual

financing constraints and find that more profitable firms are less likely to face actual financing constraints. Also firms with more working capital and lower leverage ratios are less likely to be actually financially constrained, however profitability measures seem to be more robust. Firms are more likely to perceive access to finance problematic when they have more short-term debt. Finally, firm age, but not size, is important in explaining both the perceived and the actual financial constraints.

Similar results are obtained by McCann and McIndoe-Calder (2012) using unique borrower-level balance sheet information for a cross-section of 6 000 Irish SME loans. The study tests the determinants of default at the micro level, finding that typical financial ratios, such as the ratio of loans to total assets, the current ratio, leverage ratio, liquidity ratio and profitability ratio, are significant predictors of default. Further, the length of time the borrowing firm's owner has been with the firm mitigates the likelihood of default – confirming results by Carbó-Valverde et al. (2012b) discussed below. Conditional on the above, significant sector-level effects remain. The paper moves beyond average effects of the above-mentioned variables by repeating the analysis across seven sectors of economic activity, and across the quintiles of firm size, exposure and credit quality. The share of defaults is shown to fall as firms get larger, and to rise as loans get larger relative to assets. The results suggest that different warning signals can be identified, particularly for borrowers of different sizes and with small versus large loans. As the authors point out, these results contribute to the literature on “fundamentals-based” modelling of corporate default risk, and represent one of very few sets of results on the determinants of default in SME lending in particular.

But an SME's health cannot be easily decoupled from the economic environment, or the economic cycle, it operates in. A study by Lawless and McCann (2012) examines the evolution of loan performance throughout the period of economic and financial crisis. Using unique Irish SME loan-level data complete with quarterly loan ratings assigned by the lending institution over a period of three years 2008-10 they document the shift in the distribution of loans across ratings as economic conditions deteriorated, but also show that this effect was heterogeneous across sectors. In panel data estimations, changes in employment across sectors are shown to be a leading indicator of loan performance, demonstrating the importance of the link between real economy demand and loan impairment. Levels of outstanding credit in a sector cannot explain current loan performance. However, they calculate a measure of excess credit using deviations from a long-run trend that is strongly associated with higher levels of current impairment. This provides evidence on the effect of a build-up in credit during a boom on crisis-era loan delinquency, thereby pointing out the dangers of post-boom debt overhang, similar to the results by Holton et al. (2012) discussed above.

The influence of the macroeconomic environment is also highlighted in the study by Michala et al. (2013). The authors develop distress prediction hazard models for non-financial SMEs using a dataset that includes a very high number of micro companies from eight European countries over the period 2000-09. They find that in addition to financial indicators, whose importance has also been noted in past studies, SMEs in urban areas and SMEs with less than three shareholders have higher distress probabilities. Including systemic patterns and industry effects, in addition to firm-specific variables, to the distress prediction models they find that the exchange rate change, the economic sentiment, the bank lending conditions and the bankruptcy codes are important distress determinants. Their results validate the superiority of models that incorporate macroeconomic

dependencies but do not find strong evidence that industry effects significantly improve prediction accuracy. They also find that as SMEs become larger, they are less vulnerable to macroeconomic conditions. Splitting their sample into regional groups, they identify regional variations in the importance of macro variables. Moreover, industry effects usually demonstrate significance but provide only small improvements.

Jakobson et al. (2012) explicitly study the relationship between macroeconomic fluctuations and corporate defaults while conditioning on industry affiliation and an extensive set of firm-specific factors. By using a panel data set for virtually all incorporated Swedish businesses over 1990-2009, a period which includes a full-scale banking crisis, they find strong evidence for a substantial and stable impact from aggregate fluctuations on business defaults. While their analysis shows that firm-specific factors are useful in ranking firms' relative riskiness, macroeconomic factors are necessary to understand fluctuations in the absolute risk level.

The role of small banks: “Evergreening” and “patience”

Albertazzi and Marchetti (2010) analyse the effects of the financial crisis (“Lehman’s collapse”) on credit supply in Italy, using a highly detailed dataset of about 19 000 observations on bank-firm relationships, comprising data on outstanding loans (from September 2008 to March 2009) extended by 500 Italian banks (September 2008 data) to almost 2 500 non-financial firms in manufacturing (firm data are 2007 averages). Control for firms’ unobservable characteristics, such as credit demand and borrowers’ risk, by exploiting multiple lending, they find evidence of a contraction of credit supply. Specifically, they show that the dampening effect on credit supply has been quite sizeable for less-capitalised banks; moreover, as other studies discussed here have shown, they offer some evidence that the ability of borrowers to substitute loans from less-capitalised banks with loans from the other banks has been limited, and almost nil in the case of firms that borrow from few lenders. They also find that larger, less-capitalised banks have reallocated their credit away from riskier firms – a flight to quality that has not been observed for smaller less-capitalised banks. While they discard as an explanation for this dichotomy a possibly different impact of Basel capital regulations on larger vs. smaller banks (because Basel II implementation was still incomplete in the observation period), they point out the role “evergreening” and “patience” for which they provide corroborating evidence.

Evergreening, i.e. providing cheap credit to a risky borrower in order to postpone credit losses from the lender’s default is presumably easier for a smaller bank where discretion in lending decisions is higher and the weight of credit scoring is lower than for a larger bank, where lending decisions are based on more automatic procedures. “Patience”, i.e. for bearance lending or debt restructuring to help a potentially profitable lender through temporary difficulties and to regain its competitiveness, is also easier for small banks to apply. They can act as non-myopic lender that do not only have to rely on a firm’s (current) balance sheet information and credit scoring but can also take into account more forward-looking measures of a firm’s economic prospects and other, “soft” information. The study’s results thus indicate that pressure on bank capital may induce two opposite and simultaneous lending biases: A generalised excessive tightening on the one hand, and on the other some excessive loosening of credit policies towards risky borrowers (evergreening). The study also highlights the role of relationship lending. As other studies (also briefly discussed below) have found, there is a positive link between several measures of relationship lending and firms’ credit availability after Lehman. The other aspect of their research is the role of a

bank's health for SMEs to obtain credit during crises (as briefly discussed above). Their results also seem to indicate that smaller banks are faring better on all these accounts.

The role of bank relationships and securitisation

As mentioned, SMEs are relying heavily on bank credit and are thus particularly vulnerable to a credit squeeze. At the same time, SMEs typically benefit from intense bank-firm relationships, which may help mitigating loan supply constraints – even though perhaps at the expense of disproportionately higher credit cost when banks are able to strategically exploit private information.¹⁵ Carbó-Valverde et al. (2012b) thus study whether intense bank-firm relationships help in reducing credit rationing. Using firm-level data of 56 752 Spanish firms over the period 1993 to 2008 (about 7% of total firms in Spain) and employing a disequilibrium model to identify credit rationing they find that that more intense lending relationships, measured through their length and lower number, considerably improve credit supply and reduce the degree of credit rationing.

Furthermore, they find that a relationship with a bank that is more involved in securitisation activities relaxes credit constraints in normal periods; however, it also increases credit rationing during crisis periods. This shows that securitisation generates supply effects which differ in normal and crisis periods. Finally, they study the impact of different types of securitisation – covered bonds and mortgage-backed securities (MBS) – on credit rationing. While both types of securitisation reduce credit rationing in normal periods, the issuance of MBS by a firm's main bank aggravates these firm's credit rationing in crisis periods. This may indicate the role that the ECB may have played since 2007 when offering liquidity in exchange for covered bonds.

Pledgeable assets and cash flow financing

Internal financing is still a dominant form of financing for SMEs. At the same time, collateral is important for SMEs to obtain credit. Financing investments from cash flow can potentially mitigate effects of a credit crunch if firms can switch relatively easily from external to internal finance. Empirical studies have thus tried to find out whether this is indeed the case and how external financial constraints impact firms' financing behaviour.

Almeida and Campello (2010) look at this issue by using pledgeable assets to identify financially constrained firms: such assets support more borrowing, which allows for further investment in pledgeable assets. Using this credit multiplier to identify the impact of financing frictions on corporate investment, they find that sensitivity of investment to internal funds (investment-cash flow sensitivity) increases with pledgeable assets (the tangibility of firms' assets is used as a proxy for pledgeability) if firms are financially constrained, as theory would predict. But the effect of tangibility on cash flow sensitivities is nonmonotonic: while investment-cash flow sensitivities are increasing in the tangibility of constrained firms' assets, tangibility has no effect on the cash flow sensitivities of financially unconstrained firms. In fact, this nonmonotonicity is used to identify financially constrained and unconstrained firms (in using this endogenous specification method they address criticisms about earlier studies).

Thus, at low levels of tangibility, the sensitivity of investment to cash flow increases with asset tangibility, but this effect disappears at high levels of tangibility. Asset tangibility itself affects the credit status of the firm, as firms with very tangible assets may become unconstrained. The results of the study provide evidence for the impact of credit frictions on corporate spending (investment). The positive effect of pledgeable assets

(tangibility) on constrained cash flow sensitivities is evidence for a credit multiplier in US corporate investment. Shocks to firms' income (cash flow) have especially large effects for constrained firms with tangible assets, because these firms have highly pro-cyclical debt capacity. It can be assumed that this tends to be the case for SMEs rather than for large firms. While the negative effects on a firms' spending by external credit constraints – in the extreme, a credit crunch – can be buffered by cash flow financing, such buffers are limited as firms will reduce cash-flow based spending when external credit constraints tighten. If the credit crunch is caused by a general macroeconomic downturn that reduced firms' income, internal financing will be reduced even further, and more so by firms that face external constraints. While in this scenario high collateral can provide alleviation, the valuation of pledgeable assets may decline in an extreme downturn (falling real estate prices) thus reinforcing negative effects.

The role of trade credit

Trade credit is the most important alternative to bank loans as a source of external funding in the SME sector. Thus trade finance could potentially ease financing constraints when bank credit is harder to obtain. A first analysis of whether trade credit provided an alternative source of external finance to SMEs during the credit crisis is provided by Carbó-Valverde et al. (2012a). Using firm level panel data on over 40 000 Spanish SMEs from 1994 to 2008 in a disequilibrium model framework they find that: i) financially constrained firms are more dependent on trade credit to make their investment decisions; ii) the financial crisis was associated with a credit crunch that affected the SME sector by increasing the number of credit-constrained firms; and iii) capital expenditure sensitivity to trade credit increased during the crisis period. This study thus provides evidence that trade creditors play a role in the SME sector as an alternative source of short-term financing and this role becomes more important during a credit crunch.

Effects of expansionary monetary policies: Evidence for a credit channel

The crisis and policy responses have highlighted the key role played by monetary policy in assuring the availability of credit to corporations and households. Expansionary monetary policy on both sides of the Atlantic should not only stimulate investment but also counter a deepening credit crunch. This policy worked through the credit channel (Bernanke and Gertler, 1995) that crucially hinges on the balance sheets of banks (bank lending channel) and firms (balance sheet channel). But as balance sheets continue to adjust to crisis conditions – banks hoard liquidity or attempt to recapitalise and firms forcefully shed assets – it is vital to disentangle the relative strengths of both channels to inform policy-making. This is the object of a study by Jimenez et al. (2011) who contribute to previous literature on these issues by empirically identifying the bank lending and the balance sheet channels of monetary policy transmission. To do so, they analyse a comprehensive dataset of individual bank loan contracts (matched with extensive bank and firm accounting information) from Banco de España's credit register that contains detailed monthly information on all, new and outstanding, loans over 6 000 euros to non-financial firms by all credit institutions in Spain during the last twenty-five years (a total of over thirty million records). As the authors point out, the comprehensiveness of the dataset directly addresses concerns about unobserved changes in bank lending, a key issue for the identification of the credit channel, and the choice of country is relevant because Spain is a country that is bank dependent and, as euro area member, monetary policy is fairly exogenous.

The study finds robust evidence that a credit channel exists, and that this channel of the monetary policy transmission comprises a distinct bank lending and balance sheet channel. Moreover, the two channels partly dampen each other. If firm net worth is high the bank lending channel is weakened, and if banks have ample liquidity, the balance sheet channel partly shuts down. The authors claim that their findings may therefore explain the estimated differences in potency of balance sheet and bank lending channels across countries and time, and have important policy implications.

The role of alternative, non-bank finance

If bank lending dries up, alternative sources of funding may provide some relief for SMEs in need of financing. As Véron (2013) points out, the available evidence actually points towards a correlation between the development of non-bank credit and higher resilience against systemic risk, at least in developed economies. Allen et al. (2012) provide a comprehensive review of firms' financing channels (internal and external, domestic and international) around the globe, with the focus on alternative finance, i.e. financing from all the non-market, non-bank external sources. They argue that while traditional financing channels, including financial markets and banks, provide significant sources of funds for firms in developed countries, alternative financing channels provide an equally important source of funds in both developed and developing countries. Alternative finance is often the dominant source of funds for firms in fast-growing economies. They compare market- and bank-finance with alternative finance, along with the supporting mechanisms such as legal and institutional structures. They conclude that much more research, and firm-level data to conduct such research, are needed to better understand alternative finance and its role in corporate financing.

2.4. Globalisation of banking and transmission financial shocks

Cross-border banking and internal capital flows can attenuate a local credit squeeze

Internal capital flows via cross-border banking can attenuate a credit squeeze by local or national banks. De Haas and Van Lelyveld (2010, 2011) look at this problem using panel data on intra-group ownership structure and balance sheets of 45 of the largest globally active banking groups over the period 1991-2004 to analyse the determinants of credit growth of their subsidiaries. They find that parent banks trade off lending across several countries ("substitution effect") and that they support weak subsidiaries ("support effect"). The first effect implies that lending of the subsidiary on the host country will be negatively related to the business cycle in the home country and to the business cycle in the other countries where the parent bank operates as the parent or holding bank will reallocate its capital to ensure that the return on bank capital is equalised across all countries of operation. The second effect implies that host country lending by multinational bank subsidiaries is insensitive to banking crises because they can rely on parental capital and liquidity back-up. In case part of a subsidiary's capital is wiped out, the parent will support this subsidiary by allocating additional capital and liquidity to it (at least in the short term; it may eventually close operations if problems persist). This is in contrast with the lending behaviour of domestic banks that tend to reduce lending during financial crises.

Thus the study provides evidence for the existence of internal capital markets through which multinational banks manage the credit growth of their subsidiaries and that can help attenuate credit crisis in the host country. The paper also finds that "greenfield" subsidiaries (newly founded by their parent bank) are most closely integrated into such

internal capital markets, as opposed to subsidiaries that result from a take-over of a local bank that tends to remain, for some time at least, more closed linked to the local (original home) home market.

Interestingly, the study also finds that subsidiaries that are at a greater geographical distance from their parent banks turn out to be most closely integrated into such internal capital markets. An explanation for this is that at a larger distance, parent banks can operate an internal capital market on a more objective basis since there is less room for local bank managers to influence the headquarters.

During the period studied (1991-2004), such internal capital markets were especially relevant for banking systems in central and eastern European (“transition”) countries that are characterised by large-scale presence of subsidiaries of multinational banks that expanded into the region after the breakdown of the old communist regimes. The study confirms anecdotal observations made during the global liquidity squeeze that started in the summer of 2007. For example, the Kazakh banking system had depended on foreign funding to maintain very high credit growth rates, but following that squeeze most banks in Kazakhstan were forced to abandon refinancing through international bond issues or syndicated loans. This sudden stop in the availability of foreign financing translated directly into lower lending growth. However, the foreign-owned ATF Bank (a mid-sized Kazakh bank acquired by the Italian UniCredit group in June 2007) continued its corporate and retail lending backed by its new parent bank. As the authors claim, this demonstrates the practical importance that parental support through internal capital markets may have within multinational banks.

Global banks played a significant role in the crisis transmission

However, as Cetorelli and Goldberg (2012) show, internal capital markets of global banks also contribute to the international propagation of shocks. Using balance sheets data for chartered US banks over the period 1980-2009¹⁶ they find the following: *First*, having global operations insulates banks from changes in monetary policy while banks without global operations are more affected by monetary policy than previously suggested in the literature. *Second*, using data on actual internal funding between banks’ head offices and their foreign offices, they provide direct evidence for the conjectured internal capital market activity of global banks. *Third*, they show that these internal capital market flows of global banks directly contribute to the international propagation of domestic liquidity shocks into the lending done by their foreign affiliates. These internal capital market transfers in global banks were also an important feature of bank liquidity management during the financial crisis of 2007 through 2009. Thus, under increasing banking globalisation the impact of monetary policy on domestic bank lending and on the US economy as a whole is more attenuated, while at the same time the domestic shock is transmitted more broadly to foreign markets through affiliated banks.

As the authors claim, their findings have implications for monetary policy as increasing banking globalisation tends to weaken the domestic lending channel (within the United States) but international transmission of domestic shocks becomes more important. The period of the financial crisis demonstrated that understanding the dynamics of international, intra-bank funding and allocation of liquidity is important for effective policy making. There are also lessons for regulators from these results as many national regulatory authorities are proposing possible restrictions to the ability of financial firms to manage liquidity at a global level (arguments for “ring fencing”, “local liquidity

pools"). Regulators need to weigh the benefits of global banking against its risks: banks operating in a potentially deeply integrated international environment have exposures to markets that are sometimes beyond the direct purview of regulators. The authors point out that these interlinkages are important for the supervision and risk assessments of globally active banks. As the crisis has demonstrated, these issues may have bearing on the division of lender of last resort responsibilities across national borders.

In a related study, Cetorelli and Goldberg (2010) confirm that global banks played a significant role in the crisis transmission to emerging market economies. Using banking statistics data from the BIS and IMF's International Financial Statistics for 17 source countries from the OECD and 94 destination countries from emerging Europe, Asia, and Latin from 2006 to 2009¹⁷ they examine the relationships between adverse liquidity shocks on main developed-country banking systems to emerging markets, isolating loan supply from loan demand effects. They find that loan supply in emerging markets was significantly affected through three separate channels: a contraction in direct, cross-border lending by foreign banks; a contraction in local lending by foreign banks' affiliates in emerging markets; and a contraction in loan supply by domestic banks resulting from the funding shock to their balance sheet induced by the decline in interbank, cross-border lending. The authors note that policy interventions, such as the Vienna Initiative introduced in Europe, influenced the lending channel effects on emerging markets of head office balance sheet shocks. Moreover, openness to international funding was not the main vehicle of propagation. Rather, it was exposure to international funding from source country banking systems that were *ex ante* more likely to suffer from the liquidity shock.

The authors conclude that, while cross-border lending and internal capital markets are both conduits for (positive and negative) international shock transmission, these features should not be an argument for closing or reducing access to international capital markets on grounds of improving welfare for emerging markets. Instead, they claim, the results suggest the importance of addressing the vulnerabilities in source funding markets so that these funding sources remain a net positive for the economies in which they operate.

Using model simulations and econometric estimates based on a world-wide dataset, Čihák et al. (2011) find an M-shaped relationship between financial stability of a country's banking sector and its interconnectedness. In particular, for banking sectors that are not very connected to the global banking network, increases in interconnectedness are associated with a reduced probability of a banking crisis. Once interconnectedness reaches a certain value, further increases in interconnectedness can increase the probability of a banking crisis. These findings suggest that measures in support of making a country's banking system more linked to the global banking network may need to be finely tuned in order not to make the system more prone to a banking crisis. It may be beneficial for policies to support greater interlinkages for less connected banking systems, but after a certain point the advantages of increased interconnectedness become less clear.

Lending by foreign banks' subsidiaries reflect the financial conditions of parent banks

The impact of foreign banks on lending in emerging Europe during the early stages of the 2007-08 crisis is the topic of a study by Popov and Udell (2012), besides their analysis of the sensitivity of domestic credit supply conditions to bank balance sheet conditions and the consequences to borrowers. In particular, they investigate whether business lending by the subsidiaries of foreign banks reflect their parents' financial condition. To pursue this they use survey data from SMEs in emerging Europe consisting of 10 701 firms in 1978

localities in emerging Europe served by a total of 155 banks over the 2005-08 period, and from parent banks' balance sheet data they construct an index of locality-specific financial health (distress) which they map into data on firm credit constraints. They find that different types of financial shocks – both positive and negative – at foreign as well as domestic banks are associated with a significant impact on business lending to firms in emerging Europe over the credit cycle. Their evidence also shows that SMEs report higher credit constraints in localities dominated by branches or subsidiaries of banks which have low equity capital and low Tier 1 capital ratios, and which have recorded losses on financial assets. The evidence is particularly strong during the early stages of the 2007-08 financial crisis. They also find that high-risk firms and firms with fewer tangible assets are relatively more sensitive to bank capital shocks. This evidence also implies that all else equal, firms in countries where major portions of the banking market were held by relatively undercapitalised foreign banks were more credit constrained than identical firms in countries served by better capitalised foreign banks. The paper thus presents evidence of the transmission of negative shocks to bank balance sheets in the relatively early stages of the 2007-08 financial crisis, unrelated to the demand for loans in local markets. With globalised banking, effects of large financial shocks cannot be confined locally.

Exposures to US subprime mortgages affected lending capacity of non-US banks

An important channel of the international transmission of the global financial crisis was via the exposure to US subprime mortgage loans by non-US banks. Puri et al. (2011) examine retail bank lending in Germany distinguishing between savings banks affected by the US financial crisis through their holdings in Landesbanken with substantial subprime exposure and unaffected savings banks. For this they use a unique data set of loan applications at German savings banks during the period 2006 to 2008 that enables them to distinguish between demand and supply side effects of bank lending. They find that the US financial crisis induced a contraction in the supply of retail lending in Germany. While a decline in loan demand affects banks with subprime exposures and those without in a similar way, reductions in loan supply, i.e. a rejection of loan applications, is substantially stronger for subprime exposed than for non-exposed banks. This result is particularly strong for smaller and more liquidity-constrained banks as well as for mortgage as compared with consumer loans. Similar to Carbó-Valverde et al. (2012b) discussed above for bank-SME relationships, they also find that bank-depositor relationships help mitigate these supply side effects.

Home-country regulation affects global banks' lending standards abroad

Ongena et al. (2012) provide the first empirical evidence that bank regulation and supervision is associated with cross-border spillover effects through the lending activities of large multinational banks. They analyse business lending by 155 banks to 9 655 firms in 1 976 different localities across 16 countries, finding that enhanced bank competition, tighter restrictions on bank activities, and higher minimum capital requirements in domestic markets – all factors that weight on banks' profitability at home – are associated with lower lending standards of cross-border banks abroad, presumably to make up for the profits they are unable to generate at home. The effects are stronger when banks are less efficiently supervised at home, and are observed to exist independently from the impact of host-country regulation.

The key data for this study come from the 2005 and 2008 vintages of the World Bank-EBRD Business Environment and Enterprise Performance Survey (BEEPS) of SMEs in emerging Europe. Regulatory, supervisory and barriers to entry (competition) data are taken from Barth et al. (2006) who construct indices of bank regulation and supervision for over 150 countries for end-2002 based on specific survey questions, and from Abiad et al. (2008) who construct indices of bank regulation and supervision for 91 economies over 1973-2005 based on an assessment of the respective country's regulatory regime.

In discussing their results, the authors note that studies on the effect of regulation on the domestic market have indicated that that restrictions on bank activities negatively affect bank development and fewer regulatory restrictions increase the franchise value of banks and therefore augment incentives for more prudent behaviour (Barth et al., 2004). Likewise, policies that increase banks' market power tend to enhance profitability and may support more prudent risk-taking behaviour in domestic markets (Keeley, 1990), and may give banks incentives to "export" these higher lending standards to foreign markets. However, empirical evidence is not conclusive and the authors' conclusion that restricting competition (barriers to entry) and promoting state ownership of banks would result in more loans being extended to predominantly *ex ante* safe corporate clients in foreign markets may be premature.

Capital requirements and capital stringency enhance bank stability as they reduce risk-taking by banks, however, this effect depends crucially on the bank's ownership structure (Laeven and Levine, 2009). Cross-border banks' behaviour abroad would thus be a mirror image of their behaviour at home. For example, the result that higher restrictions on bank activities in home countries lead cross-border banks to extend more loans to opaque corporate clients in host-country markets, to the extent that informational opacity is associated with higher *ex ante* risk¹⁸ this suggests that increased risk-taking abroad following higher restrictions on bank activities at home should potentially compensate for the inability to perfectly diversify in home markets. Likewise, higher capital stringency in home countries leads cross-border banks to extend more loans to "informationally opaque" (riskier) firms in foreign markets – but only when banks are inefficiently supervised at home. This may imply that these banks may be making up abroad for the inability to engage in high risk-high return lending at home.

Overall, these findings suggest that domestic bank regulation and supervision have important spillover effects through the activities of cross-border banks. While the current policy debate is focused on implementing a stricter regulatory framework, the authors caution that their results show that restrictive regulation may not eliminate risk, but simply re-allocate it across markets through the actions of multinational banks. Therefore, one should add, coordination of financial reform policies across borders is so important.

“Financial fragmentation” and the decline in banks’ foreign exposures

Developments during the crisis have shown that banks significantly reduced their foreign exposures and as 'financial fragmentation' has taken hold the countercyclical effects of internal capital markets has been working less efficiently especially (a topic discussed at the OECD Financial Roundtable in October 2013; see Box 3). As BIS banking statistics show, cross-border bank assets have declined at a global level. This is especially the case in the European Union, as pointed out by Coere (2013) and recently illustrated by Schoenmaker and Peek (2014) using EU Banking Structures data. The author finds that within the EU, while the cross-border penetration has gone up from 12 per cent in 1997 to 21 per cent in 2007, it has declined to 17 per cent after the crisis.

Box 3. Banking in times of de-globalisation: How to cope with financial fragmentation and revitalise lending to the real economy

The current crisis and its aftermath have been characterised by deleveraging of the financial sector that was accompanied by a decline in cross-border asset holdings. While this may seem a healthy reaction in order to reduce certain risk exposures, this has increased financial fragmentation and has at times impeded enhanced cross-border risk sharing when it was most needed, especially in the euro area. In the longer run, a stronger home-bias and a move towards a “de-globalisation” of the financial sector may deprive investors and the economies they operate in of the benefits of financial integration that come through international diversification and a more efficient allocation of global resources.

Against this background, on 17 October 2013 the OECD Committee on Financial Markets held a Financial Roundtable with representatives of financial services to discuss issues related to financial fragmentation, covering: i) the current state of financial fragmentation and outlook for cross-border financial activity; and ii) the question of how to cope with financial fragmentation and revitalise lending to the real economy. Some of the key points made at the discussion are summarised in the following.

Participants agreed that financial fragmentation has increased during the crisis, though views differed as to whether that was problematic or just an outcome of market realities that force price divergences due to differences in underlying fundamentals and perceptions of risk. Some viewed fragmentation even as having benefits, at least as long as it would not degenerate into disintegration. Views also differed to some extent among participants on the interpretation of the term “fragmentation” – such as geographical fragmentation, cross-policy fragmentation within the same jurisdictions, and so on. A participant also raised the issue of “workable competition” within banking markets being important to overcome the crisis and fragmentation, and on these grounds banking structures would play an important role for sustainable supply and demand that “generate financial services at a high quality and good prices”. SMEs were singled out as suffering most from fragmentation, though the constraints facing bigger corporates also drew attention. Fragmentation was furthermore considered to impact upon financial innovation, as licensing and regulatory treatment of start-up innovative financial firms often differs from country to country.

Besides differences in macroeconomic fundamentals and risk perceptions, uncoordinated national regulations (including “gold plating”) were seen among the main drivers of financial fragmentation, and greater regulatory coordination was called for (especially by cross-border banks), as well as greater understanding of unintended consequences. The development of national regulations with extra-territorial impacts was also cited as a source of concern. Furthermore, it was claimed that government guarantees as well as ECB’s injection of liquidity into the system have distorted risk pricing and were also responsible for fragmentation. Regarding ample liquidity in the system, some raised concerns about inflation risks further down the road. But it was also pointed out that the ECB had saved the monetary union and had thus played a positive role.

Nevertheless, it was contended that a functioning financial system without government backstops would be possible if credible resolution regimes could be established. However, the role of backstops was not entirely discarded, and the US example of Fannie Mae and Freddie Mac was cited, as well as the well-functioning FDIC, but noting that these entities had full treasury backing. In this context, some participants called for closer consideration of the link between the state and banks, citing examples of the US and China. It was also pointed out by some that only late did regulators realise that self-regulation doesn’t work, neither in banking nor in other industries. It was meanwhile also argued that banks are

Box 3. Banking in times of de-globalisation: How to cope with financial fragmentation and revitalise lending to the real economy (cont.)

sometimes not granular enough, aimed at deposit-takers but actually also covering hedge funds and risk-takers.

It was noted that banks have often been used as tools in a political game that has now global dimensions. Politicians had urged banks to lend in the lead-up to the 2007 financial crisis in order to encourage home ownership; post-crisis, banks have been contending with political pressures, but that didn't work because of their weak balance sheets and stricter capital requirements, while still being urged to lend.

It was pointed out that in the current environment it was difficult to find buyers for the several trillions of dollars of bank assets. At the same time, the role of banks' shareholders was seen as partly responsible for fragmentation as they were influencing banks' decision making to reap benefits of segregated markets. Moreover, as long as the negative sovereign-banking feedback loop persists banks will remain risky and unattractive investments for most investors.

While the role of smaller savings banks and relationship banking was pointed out as positive – as they tended not to reduce lending as much as did bigger banks during the crisis – it was also noted that in Spain the crisis was one of the *cajas*, which acted not as savings banks because they had abolished the regional principle years ago. Current regulatory reforms were seen as addressing mostly the problems of big banks but ignoring the specificities of savings banks.

Several solutions to overcome financial fragmentation were offered, like the implementation of bail-in regimes (as currently underway in Europe and elsewhere), as well as further strengthening the pillars of a banking union in Europe like the single supervisory mechanism and the single regulator. The asset quality review scheduled for next year (2014) should also help to enhance transparency regarding the health of banks' balance sheets.

While some saw a banking union in Europe as key to overcoming financial fragmentation, other felt that such a union would not help solving the fundamental problem underlying fragmentation, such as problems with sovereign debt and lack of competitiveness. Some participants, mostly those representing smaller savings banks, expressed strong reservations against a common deposit insurance scheme. It was also emphasised that a banking union needed strong political support, which was currently not the case. Moreover, especially in Europe, there was still a lot of regulatory uncertainty, in particular as regards the issue of bank separation and financial sector taxation.

Regarding the question of how much financial integration was necessary it was pointed out that excesses of globalisation had led to the build-up of the crisis. Some limitations to cross-border banking may be warranted, and the McFadden Act of 1972 was mentioned that prohibited interstate branching (in order to give national banks competitive equality with state-chartered banks). A cost-benefit analysis of cross-border banking activities was felt to be worthwhile pursuing. Regarding banks' internal cross-border markets, it was noted that foreign branches are more vulnerable to domestic liquidity shocks than subsidiaries that can rely on local funding.

While banks are deleveraging to the tune of two to two and a half trillion USD, non-bank finance could fill the financing gap. However, such financing alternatives were seen as not being active enough in this respect. Moreover, more regulation of the non-bank financial sector would impose further impediments to the lending capacity of these alternative financing sources. In this context, it was also mentioned that current regulatory reforms are addressing the problems of 2007 when opaque and risky securitisation caused havoc,

Box 3. Banking in times of de-globalisation: How to cope with financial fragmentation and revitalise lending to the real economy (cont.)

but not those of today when this “bad” securitisation is not an issue anymore. “Good” securitisation should be supported as an effort to foster non-bank lending. Transparency, liquidity and economies of scale would make securitisation attractive for investors.

It was also noted that the balance of current regulatory reforms was tilted too much towards stability and not enough towards growth. Some participants called for greater balance and coordination among the goals of economic growth, financial stability and returns on investment. The effects of regulatory reforms on the real economy should not be only an afterthought but be part of the design from the beginning. The OECD was seen as well placed to analyse the unintended negative consequences of regulation on the real economy. Summing up, the role of regulatory firewalls, compartmentalisation of liquidity and gold-plating’ were seen as the main culprits for fragmentation, and regulatory reforms needed to find a better balance between creating safer financial systems while supporting growth.

Source: OECD Secretariat.

This gradual and modest decline hides some significant dynamics at the country level. The data suggest that the Baltics and Ireland, in particular, are hit by a strong decline in lending in the wake of the (on-going) financial crisis. This deleveraging is mainly caused by a reduction in cross-border supply of credit. As the authors point out, part of the cross-border fragmentation is regulatory driven: some supervisors demand that assets and liabilities need to be matched locally. Moreover, there is an emerging tendency among supervisors to ask for a subsidiary rather than a branch. Nevertheless, the cross-border business from EU countries remains sizeable. Business from third countries is relatively stable around 8 per cent throughout the period. Overall cross-border penetration remains solid with a fall back to the pre-crisis level of 2004. There are no major reductions in the aftermath of the Global Financial Crisis.

2.5. Credit-less recovery: A “Phoenix Miracle”?

Credit-less recoveries are common after banking crises

Once a crisis is over, the question is in how far remaining credit constraints impede a swift economic upswing. Using a sample of emerging markets that are integrated into global bond markets, Calvo et al. (2006) analyse the collapse and recovery phase of severe economic downturns finding that output often recovers with virtually no recovery in either domestic or foreign credit, a phenomenon that they call “Phoenix Miracle”: output “rises from its ashes”, suggesting that firms go through a process of financial engineering to restore liquidity outside the formal credit markets. The Great Depression could be catalogued as such a Phoenix Miracle.

After that seminal Calvo et al. (2006) paper, several studies have been conducted on the issue of “credit-less recoveries”, i.e. recoveries in output without a pick-up in credit. For example, Abiad et al. (2011), analysing a large sample of OECD and emerging economies with macro and industry-level data from 1964 to 2004 find that about one out of five recoveries is “credit-less” and average growth during these episodes is about a third lower than during “normal” recoveries, due to impaired financial intermediation. Credit-less recoveries are more common after banking crises and credit booms. Furthermore, sectors more dependent on external finance grow relatively less and more financially dependent activities (such as investment) are curtailed more during credit-less recoveries.

Credit-less recoveries are relatively weak

Among others, Bijsterbosch and Dahlhaus (2011) find similar results using an unbalanced panel dataset consisting of 86 middle and low income countries from Latin America, Asia, Africa, central and eastern Europe and the Caribbean over a time span ranging from 1970-2009 (or shorter, depending on data availability). Their analysis suggests that credit-less recoveries are typically preceded by large declines in economic activity and financial stress, in particular if private sector indebtedness is high and the country is reliant on foreign capital inflows. While new credit may not be a necessary condition for output to recover, it does not imply that credit is irrelevant for a recovery in output. Rather, credit-less recoveries tend to be relatively weak as stressed credit conditions contribute to the sluggishness of these recoveries. If that is the case, the authors suggest that policy measures aimed at supporting the financial intermediation process may help the recovery in output. Such policy measures should not only focus on the financial sector, but also concentrate on restoring confidence among lenders and savers. Furthermore, credible fiscal consolidation and structural reforms to correct imbalances that led to the crisis should play a key role in this regard.

Sugawara and Zalduendo (2013) examine differences in recovery pattern of credit-less and “credit-with” recoveries, using data from 96 countries and identifying 272 recovery episodes. Similar to earlier studies, they find that more than a quarter of all recoveries are credit-less and around 45 per cent of all credit-less recoveries occurred in 2009-10. They also find that output and investment growth tends to be lower in credit-less events but, by eight quarters after the trough date, the gap between credit-less and credit-with episodes is mostly exhausted. They also show that the size of the downturn and the extent of external adjustment are associated with the likelihood of credit-less recoveries. Moreover, fiscal loosening tends to be related to credit-less events while monetary easing and a country’s decision to seek an IMF-supported program reduce the probability of credit-less recoveries. Finally, their model suggests that many countries in the Europe and Central Asia region were likely to experience credit-less recoveries following the global financial crisis in 2008-09.

On-going deleveraging might not harm recovery too much

In another very recent study contributing to the “credit-less recovery” literature, Takáts and Upper (2013) examine data from 39 financial crises which were preceded by credit booms. They find that in these crises the change in bank credit, either in real terms or relative to GDP, were consistently uncorrelated with growth during the first two years of the recovery, with correlation becoming statistically significant in the third and fourth year but remaining small in economic terms. Thus, their results suggest that the on-going deleveraging in advanced economies might not be as harmful for the recovery as many fear and that declining bank credit to the private sector does not necessarily constrain the economic recovery after output has bottomed out following a financial crisis.

Interestingly, their data show that increasing competitiveness via real exchange rate depreciations is statistically and economically significantly associated with faster recoveries. However, while this finding indicates that crisis hit countries can generate growth via substantial real effective exchange rate depreciation (either via nominal exchange rate depreciation or internal cost adjustments), the authors admit that, given the global nature of the current crisis, this (beggar-thy-neighbour) solution might not be available for all countries at the same time.

Regarding public debt, the data reveal some weak negative association between public debt ratios and recoveries: increasing public debt seems to lead to somewhat weaker recoveries. As the authors point out, this might cast doubt on the claims that fiscal stimulus is the appropriate answer to fasten the recovery from the current crisis.

Credit-less recoveries may be less of a miracle

A more critical view of the “Phoenix Miracles” is given by Mayer et al. (2010) who criticise that they are normally based on the inappropriate comparison between the *flow* of GDP and the stock of credit. Mayer et al. (2010) argue that to the extent that spending is credit-financed, demand in a particular period should be a function of the new borrowing that takes place in that period. Demand (and consequently GDP) is therefore a function of the flow of credit, and growth of GDP should be related to growth in the flow of credit rather than growth in the credit stock. This implies that what is required for a recovery in demand growth is that new borrowing rises – it is not necessary that the level of new borrowing (and therefore credit growth) is positive. If the private sector is de-leveraging, then a slowdown in the pace of de-leveraging is sufficient to boost domestic demand growth. A credit-led rebound in domestic demand can occur even while credit growth is negative. They argue that this is particularly relevant for the recovery from the current crisis. For example, in the US the non-financial private sector de-leveraged by more than USD 600 billion in 2009Q3; if the pace of de-leveraging slows gradually, the increase in the credit impulse would support private sector demand growth even as debt levels fall.

Notes

1. The OECD defines small- and medium-sized enterprises (SMEs) as “non-subsiary, independent firms which employ fewer than a given number of employees. This number varies across countries. The most frequent upper limit designating an SME is 250 employees, as in the European Union. However, some countries set the limit at 200 employees, while the United States considers SMEs to include firms with fewer than 500 employees. Small firms are generally those with fewer than 50 employees, while micro-enterprises have at most 10, or in some cases 5, workers.” See <http://stats.oecd.org/glossary/detail.asp?ID=3123>.
2. The situation of SMEs in this context is well-documented in the annual *OECD Scoreboard on Financing SMEs and Entrepreneurs* (OECD 2011, 2012, 2013a, 2014) that monitors trends in SMEs’ and entrepreneurs’ access to finance – at the country level and internationally.
3. Federal Reserve Board (2014).
4. Bank of Japan (2014).
5. The indicator of a perceived external financing gap reflects the obstacles faced by enterprises in obtaining bank loans (Ferrando et al., 2013). As explained in ECB (2013b), the indicator is constructed by adding together the percentage of SMEs that applied for a bank loan but were rejected, the percentage that received only a portion of the amount for which they had applied, and the percentage that did not take up a loan because borrowing costs were too high. It should be noted, however, that there is an additional part of SMEs that are discouraged to even apply for a bank loan; this part is not accounted for by this indicator.
6. The study (OECD 2013c) was undertaken by WPSMEE and a slightly abbreviated version of it is published as special chapter in the 2012 edition of the *SME Finance Scoreboard* (OECD, 2013a).
7. France was the first country to set up a credit mediation programme in 2008, followed by Belgium in 2009 and Germany in 2010. Germany phased out the programme at the end of 2011, as planned, while in France and Belgium mediation schemes have been continued, evolving into a longer-term initiative to support SMEs which encounter difficulties in credit and insurance markets. Other countries have subsequently introduced similar mechanisms under different names and at different scales, including Ireland, which created a Credit Review Office in 2010, and Spain, which set up a financial facilitation mechanism in 2011 to provide SMEs with independent risk

assessment and to facilitate applications for public funding. In the United Kingdom, an independent credit review system was set up in 2012, to oversee the process of appeal to credit rejection at the largest UK banks, in accordance with a new set of principles for a fair, prompt and transparent process.

8. Under the *aegis* of the Working Party on SMEs and Entrepreneurship (WPSMEE).
9. The final results were published in Wilson and Silva (2013).
10. See also Isaksson and Çelik (2013); Weild et al. (2013); and WFE (2012).
11. Under the *aegis* of the Working Party on SMEs and Entrepreneurship (WPSMEE) and the Committee on Financial Markets (CMF).
12. Research into crowdfunding is also supported by the industry; see De Buysere et al. (2012).
13. They quote *The Economist* of 17 November 2005: "... Financial crises have a cruel way of revealing what an economy lacks. When many emerging markets suffered a sudden outflow of capital in the late 1990s, one painful lesson was that their financial systems had relied too heavily on bank lending and paid too little attention to developing other forms of finance. *The lack of a spare tyre*, said Alan Greenspan, chairman of America's Federal Reserve, in 1999, is of no concern if you do not get a flat. East Asia had no spare tyres. If a functioning capital market had existed, remarked Mr Greenspan, the East Asian crisis might have been less severe. Developing deep and liquid corporate-bond markets, in particular, could make emerging economies less vulnerable..."
14. A draft version of that paper was discussed the April 2013 meeting of the OECD Committee on Financial Markets (CMF).
15. As reported by Ongena et al. (2012), empirical work regarding lending relationships in different countries has demonstrated that the average distance between SMEs and banks is usually very small. For example, Petersen and Rajan (2002) using US National Survey of Small Business Finance (NSSBF) data over the period 1973 to 1993 find that the median distance between a firm and its main bank over that period was only four miles, even though the distance was increasing over that period. A sample by Degryse and Ongena (2005), comprising 15 000 loans to small firms from a Belgian bank's entire loan portfolio over the period 1975 through 1997 shows the median distance between a firm and its main bank is 2.25 kilometres (1.6 miles). Agarwal and Hauswald (2010), analysing a dataset that consists of all loan applications by small businesses to and credit offers over a 15-month period (from January 2002 to April 2003) by a major US bank, a leading provider of SME loans with a total of 1 552 branch offices, find a median distance between a firm and its main bank is 0.55 miles. Note also the complementary conjecture that banks derive market power *ex ante* from their relative physical proximity to the borrowing firms and/or *ex post* from private information they obtain about firms during the course of the lending relationship (Agarwal and Hauswald, 2010; Degryse and Ongena, 2005).
16. The analysis is split over two samples, a pre-crisis period using quarterly data on individual banks from "Call reports" from 1980Q1 to 2005Q4, and a crisis period sample using weekly series on aggregate Assets and Liabilities of Commercial Banks in the United States (Fed. H.8 Statistical Release).
17. The sample is split in to a pre-crisis period from 2006Q2 to 2007Q2 and a post-crisis period from 2008Q3 to 2009Q2, leaving out the crisis event period between 2007Q3 and 2008Q2 when market functioning was disrupted by the Lehman shock. Alternative datings were considered in robustness tests.
18. In this study, opacity is a dummy which is equal to 1 if the firm does not have its financial accounts verified by an external auditor, and to 0 if it does. Audited statements allow banks to underwrite loans primarily based on financial statement ratios and covenants associated with those ratios (Berger and Udell, 2006). Information opacity is thus related to *ex ante* risk because unaudited statements (i.e., financial statements that have not been verified by an external auditor) have a much higher risk of material misstatement (e.g. Blackwell et al. 1998; Allee and Yohn, 2009). Evidence suggests that many firms (especially SMEs) choose not to file a financial report when in distress, implying that firms which do not have their accounts verified by an external auditor are more likely to default (Jakobson et al., 2012, cited above). As a consequence, information opacity also captures an important dimension of *ex post* risk. Lending based on information opacity is therefore directly related to both bank lending standards and to risk taking by banks. Interestingly, Ongena et al. (2012) note that there is considerable variation across countries in this variable: for example, 80% of the SMEs in Estonia use external auditors to verify their accounts, while only 37% of the firm in Romania and Poland do. On average in the sample, about half of the firm are opaque.

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