
CMU—a threat to the German banking sector?

HORST GISCHER AND CHRISTIAN ILCHMANN

Horst Gischer, Otto-von-Guericke University Magdeburg and Forschungszentrum für Sparkassenentwicklung e.V., e-mail: horst.gischer@ovgu.de (corresponding author)
Christian Ilchmann, Otto-von-Guericke University Magdeburg, e-mail: christian.ilchmann@ovgu.de

Summary: To counteract (alleged) stagnating lending and the consequential low investment activity across the European Union following the 2008 financial crisis, the European Commission developed the Capital Markets Union Action Plan in 2015. After a brief overview of the status quo of the banking sector and corporate financing in Germany, we sketch planned measures of the Capital Markets Union and possible impacts on the German Banking Sector. In addition, we highlight some possible alternatives.

Zusammenfassung: Um der in Folge der vergangenen Finanzkrise (vermeintlich) stagnierenden Kreditvergabe und damit verbundenen niedrigen Investitionstätigkeit in der Europäischen Union zu begegnen, legte die Europäische Kommission 2015 den Aktionsplan zur Schaffung einer Kapitalmarktunion vor. Nach einem kurzen Überblick über den Status Quo des Bankensektors und der Unternehmensfinanzierung in Deutschland, werden anhand der geplanten Maßnahmen im Rahmen der Einführung der Kapitalmarktunion ausgewählte Auswirkungen auf den deutschen Bankensektor skizziert und mögliche Alternativen aufgezeigt.

→ JEL Classification: E60, G28, G30

→ Keywords: Capital Markets Union, German banking sector, European Union, SME

I Introduction

Economic development and the state of an economy's financial industry are close-knit. Following the 2008 financial crisis, the European Commission developed the Capital Markets Union Action Plan in 2015 to lead the European economy to its old strength. With a deeper integration of the European Union's domestic market for capital, corporate investments should be stimulated. Based on a brief summary of planned actions of the Capital Markets Union (CMU) and the special features of the German economic structure, this paper investigates threats to the German banking sector and the European Union. In addition, some possible alternatives are highlighted.

2 Features of the German banking sector

The respective literature consistently applies various criteria to characterize financial industries. A first approach distinguishes between capital-market- and bank-based-systems. Doubtlessly, the German finance sector is a bank-based system. Key characteristics include the fact that instead of institutional markets taking center stage, financial intermediaries shift funds from savers (e.g. private households) to borrowers (e.g. enterprises) while also providing a diversified bundle of financial services. Additionally, one can think of quite different compositions of particular institutions, which leads toward a second criterion to compare financial industries. In Germany, about 95 percent of all independent institutes are banks offering almost a complete set of services ("universal banks"). Universal banks account for more than 70 percent of total assets. Only a few market segments are simultaneously served by banks specialized on supplying specific financial services: mortgage banks provide funds for residential or commercial acquisition of real estate; building and loan associations promote private housing; special purpose banks support private and corporate investments of public interest. Hence, the German finance industry contrasts strongly with traditional Anglo-Saxon models with rather separated banking systems.¹

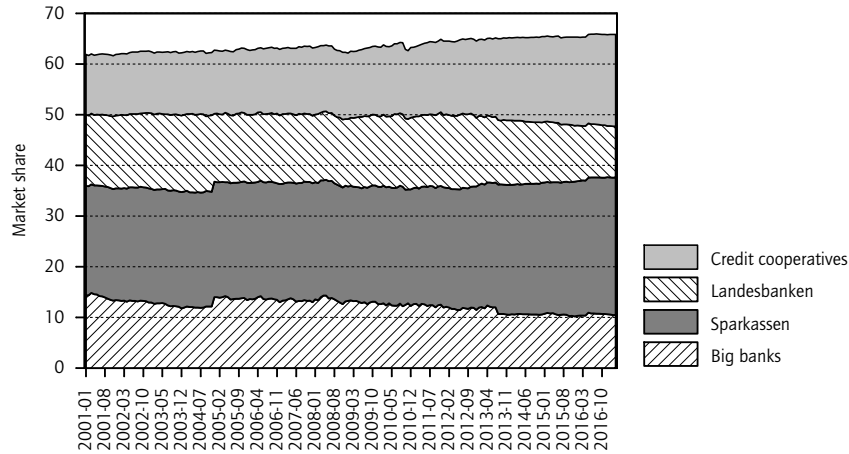
Furthermore, the vast majority of German banks consists of regionally operating retail institutions that are locally based and controlled: Sparkassen and credit unions.² Most are rather small with total assets significantly less than five billion Euro. Only the very large "commercial banks," especially the "big banks," and the Landesbanken engage in investment banking activities like mergers and acquisitions, wholesale operations, or derivative trading. Nevertheless, bank loans are by far the most important source of financing private corporate investments. The main customers belong to the very large group of small and medium-sized enterprises (SMEs), supplemented by craft businesses and tradesmen. Even internationally operating stock traded companies have rather limited access to institutional capital markets (Bendel et al. 2016: 45). Moreover, Germany is still an economy with a prominent share of cash payments, therefore financial intermediaries are essential providers of monetary transactions as well as operators of automated teller machines (ATMs). Since Sparkassen and credit unions regularly accept a wide range of deposits, they are private households' first stop for acquiring financial assets. The following graphs illustrate the quantitative conditions in Germany's finance sector.

1 Between 1933 and 1999 the Glass-Steagall Act remained in effect, hence historically grown the USA used to have a separate banking system for large parts of the 20th century.

2 See Gischer and Reichling (2010) for details.

Figure 1

Loans to non-financial borrowers

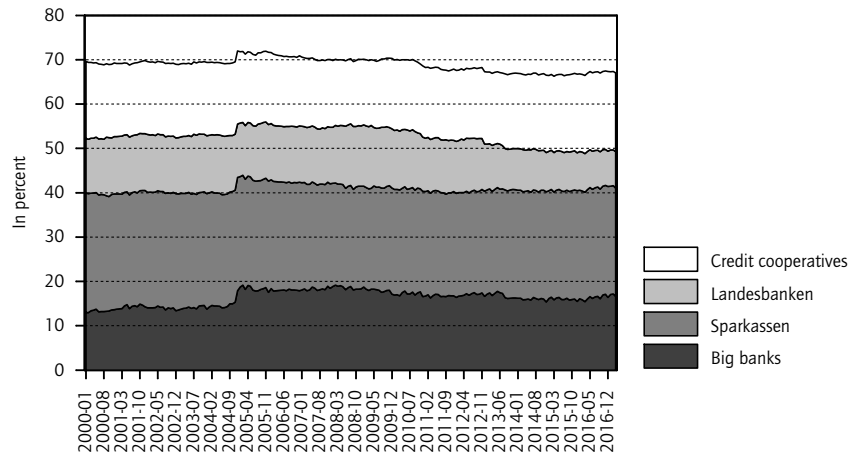


Source: Deutsche Bundesbank (2017), own calculations.

Figure 1 highlights that the four already mentioned bank groups provide almost 70 percent of all loans to non-financial borrowers. While the market shares of big banks and Landesbanken slightly decreased since the year 2000, the impact of Sparkassen and credit cooperatives improved during the period under observation.

Figure 2

Deposits from non-financial debt holders

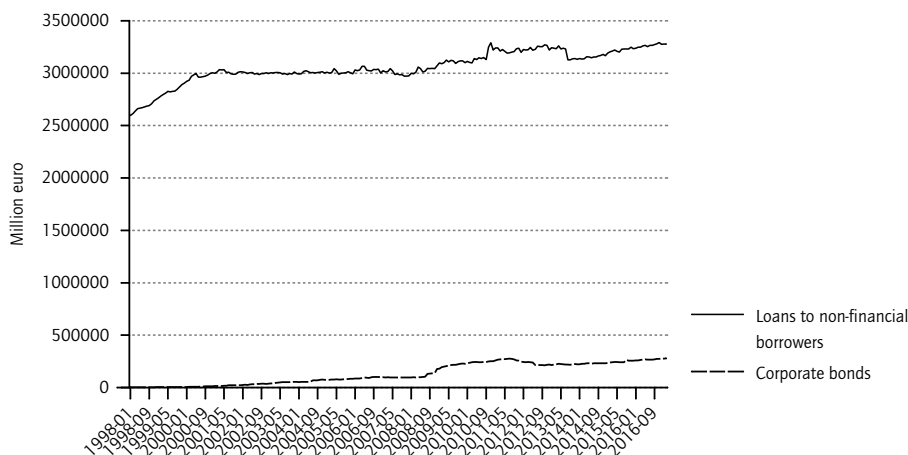


Source: Deutsche Bundesbank (2017); own calculations.

Figure 2 reveals a similar pattern of market shares for private deposits. Again, the four selected bank groups manage almost 30 percent of total deposits. During the last two decades, although the relative volumes maintained rather constant, both big banks and credit cooperatives registered slight increases.

Figure 3

Liabilities of non-financial borrowers



Source: Deutsche Bundesbank (2017).

Strong support for the overwhelming importance of loans rather than corporate bonds is given by Figure 3. Currently, the total volume of loans from financial intermediaries is ten times as high as firms' capital market obligations. Hence, the traditional structure of the German finance system most probably fully reflects the needs and requirements of private customers and a fundamental change seems neither necessary nor appropriate.³

Thus, a successful integration of foreign banks, as targeted by establishing a European Banking Union, has not yet taken place. The market shares of foreign competitors in the German banking sector are more or less negligible. In 2015, the total assets of foreign-controlled subsidiaries and branches amounted to only 300 billion Euro; less than five percent of total assets of domestic banking groups (European Central Bank 2016: 69).

3 This proposition is in line with similar findings of recent literature. See chapter 5 for further evidence.

3 Uniqueness of Germany's commercial infrastructure

Germany's economy is exceptionally fragmented. The Statistical Yearbook reports more than 3.8 million firms in manufacturing industry and service sector, with 3.4 million employ fewer than ten people (Statistisches Bundesamt 2017: 527). Only 13,000 enterprises have more than 250 employees each. Hence, SMEs dominate the German commercial infrastructure (Figure 4).

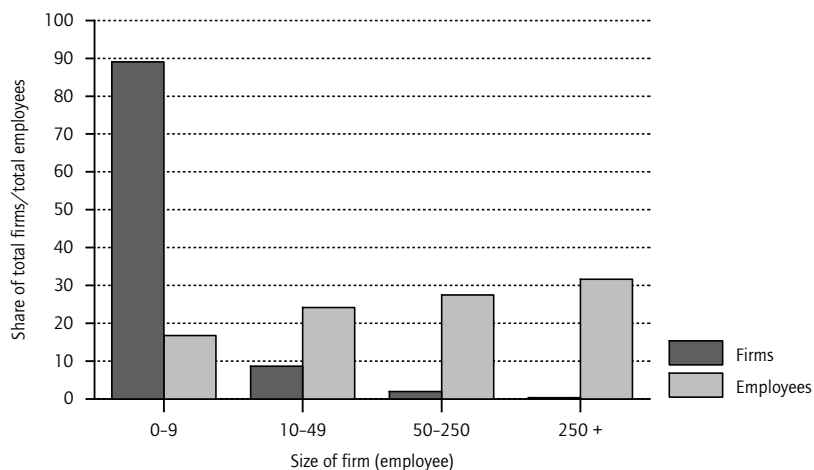
As regards total employment, facts change significantly. About 30 percent of total employees belong to the group of large firms; nearly 70 percent are working in SMEs. Note that in the group of the smallest firms, the average workforce is only 1.3 employees. Due to their size, SMEs predominately operate in a local area. It appears obvious that these firms will seek financial services support from regionally operating banks. The quality of the local match between potential customers and financial institutions will clearly benefit a region's economic development. The personal relationships between firm managers and loan officers are especially important foundations underlying successful cooperation.

A closer look at the credit demand of SMEs reveals rather small volumes requested (see Figure 5). On average, 75 percent of credit applications during the last decade sought less than 100,000 Euro. Hence, small banks can quite easily meet SMEs' capital requirements and, consequently, for this category of firms the potential benefits of a Capital Markets Union are more likely disputable.

In Germany, even larger enterprises are quite reluctant to issue tradeable obligations (so called *Mittelstandsanleihen*). This market segment consists of single-issue volumes in a range between 15 and 100 million euro, most with long maturity. Only 186 issues have been placed since 2010;

Figure 4

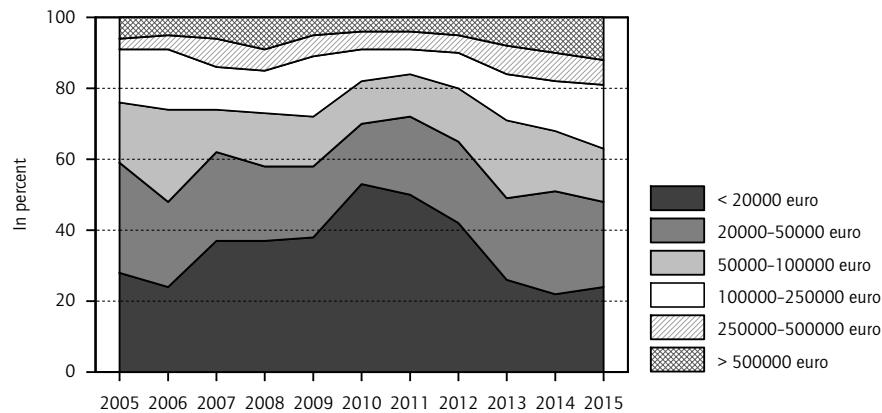
Commercial infrastructure



Source: Statistisches Bundesamt (2017), own calculations.

Figure 5

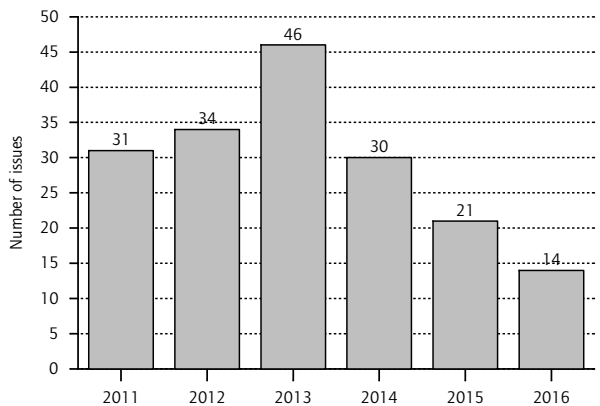
Structure of SMEs' credit applications



Source: Kreditanstalt für Wiederaufbau (2016).

Figure 6

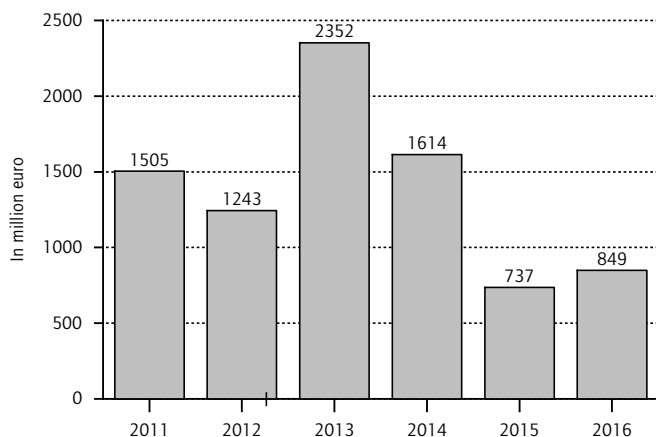
German *Mittelstandsanleihen*—number of issues



Source: Statista (2017).

a number falling since 2013 (see Figure 6). The total volume per year reached nearly 2.4 billion euro in 2013, but dropped to 850 million euro in 2016. All issues since 2010 add up to less than ten billion euro only (cf. Figure 7). Indeed, a possible reason could be the fragmentation of European capital markets. According to Frühauf and Hock (2017), it is, in fact, a problem of information asymmetry: Investments in *Mittelstandsanleihen* are rather risky, as only 30 percent

Figure 7

German *Mittelstandsanleihen*—total volume

Source: Statista (2017).

of the total volume have been served contractually. Neither investors nor issuers seem to be happy with their capital market experience, thus, at least in Germany, the importance of indirect finance via banks is obvious.

4 Can capital markets substitute intermediation by banks?

Originally starting as grain loaners in Assyria and Babylonia around 2000 BC, financial institutions, especially banks, still play a crucial role in modern economies. Adolph Wagner emphasized the importance of financial intermediation, the core business of banks, in 1857. Generally, banks accept deposits from individuals or institutions and allow borrowing of other economic subjects, such as firms and households, granting interest to deposit holders and charging interest from borrowers. The primary reason for the inception of banks is the existence of variant preferences between individuals. Especially preferences regarding maturity, volume and riskiness may differ between lenders and borrowers: While debtors request large-sized loans, for a long period and have a potential risk of defaulting in their repayment, savers, on the other hand, want to save small-sized amounts, over a short period and they are risk-neutral or even risk-averse. With their transformation function, banks bridge the gap between those different needs. Adolph Wagner (1857) again highlighted this tripartite transformation function involving size, maturity and risk:

- *Lot size transformation:* Banks collect and aggregate several small deposits from plenty of different lender-savers and issue few loans of large amounts to meet the needs of borrower-spenders. Respectively, splitting of large deposits is also possible.
- *Risk transformation:* Lender-savers are risk-neutral or even risk-averse and prefer their money to be safe. Borrowers, on the other hand, carry an individual risk of default.

Banks compensate different risks of different subjects via diversification, related to the lot size transformation. By lending to multiple borrowers, monitoring them and separating risks, they convert risky investments into (relatively) low-risk ones.

- *Maturity transformation:* Banks match different preferences regarding maturity. While lender-savers prefer (due to uncertainty over their consumption needs) short-term deposits, deficit units require medium- and long-term loans, e.g. mortgages are frequently repaid over 30 years.

Furthermore, Schmalenbach (1933: 112) and Büsselmann (1993:12) point out two additional transformation functions:

- *Spatial transformation:* Banks bridge regional disparities by transforming an excess supply of capital in one region into lending in a different region.
- *Liquidity transformation:* Related to the maturity transformation, banks issue securities (on the liability side) that can be sold easily, e.g. deposits collected from lender-savers, repayable at short notice or even on demand. On the other side, assets (e.g. loans lent to borrower-spenders) are mostly repayable in the medium or long term and therefore are relatively illiquid.

Due to the maturity and liquidity transformation, financial intermediaries face a funding liquidity risk. As banks' liabilities typically have shorter maturities in comparison to their assets, financial intermediaries are obliged to refinance their assets repeatedly (refinancing risk). Furthermore, financial intermediaries are exposed to an inherent risk of bank runs, in case of a sudden deterioration of its equity capital.

Bank runs can be triggered if, e.g., a bank announces a drop in profits or if a large borrower defaults and, hence, investors expect (or merely believe) the financial intermediary to also fail. By extension, a large number of lender-savers is likely to lose trust in the institution and, therefore, withdraw cash from their deposit accounts at the same time. This causes a negative externality by gaining its own momentum: as more people withdraw cash, the liquidity situation of the bank becomes even worse. This may destabilize the bank to the point where it runs dry of money in cash, thus cannot satisfy the whole demand. As costumers are likely to anticipate this dynamics, savers literally rush to withdraw their deposits. Yet, the hasted withdrawals can force the bank to liquidate many of its assets at a loss and hence to fail (Diamond and Dybvig 1983). Due to financial interconnectedness, a bank run is likely not to be restricted to only one specific bank rather than expand to a general, system wide bank run. If many banks are likely to fail a disruption of the monetary system and, lastly, a reduction in production seem probable. This knock-on effect is one of the reasons for the inception of banking regulation. In addition, several opportunities to prevent or mitigate bank runs, e.g. deposit insurance or central bank guarantees, are discussed in the literature.⁴

Taking the outlined problem and, furthermore, the general systemic risk of the banking sector into account, the question arises if corporations could be better off using direct finance instead

4 See Hartmann-Wendels et al. (2015:230f.) for an overview.

of finance via financial intermediaries (de Bandt and Hartmann 2002). Two possibilities arise: first, corporations and investors could conclude contracts directly. However, this is in fact barely possible as it makes necessary to negotiate rights and duties individually for every contract. Or second—and this is stressed in the position paper concerning the European Capital Market Union by the European Commission—corporations could be financed via (anonymous) capital markets. Corporations approaching capital markets issue negotiable instruments (e. g. shares or bonds) with specific characteristics. Capital markets accomplish transformation functions as well as financial intermediaries in the following way: lot size transformation is possible as large-volume investments may be split and distributed over a variety of investors, who can individually participate. Maturity transformation and liquidity transformation, respectively, are possible through secondary markets: investors might sell their shares in long-term investments to other market participants at short notice. Different investments may have—more or less—varying risks. Investors can control the individual risk by buying a variety of shares with different risks, thus diversifying their portfolio (risk transformation).

Although from this perspective, it seems as if financial intermediaries were not needed at a first glance, the majority of German SMEs (as outlined in the first paragraph) is bank-financed, particularly loan-funded. The ensuing question is why investors—instead of lending directly—lend to banks, which then lend to borrowers. A possible answer can be found in Diamond (1984): the non-existence of complete and perfectly competitive capital markets without neither frictions nor arbitrary, hence the existence of asymmetric information. Asymmetric information can be either *ex ante* or *ex post*. The first case describes a behavior prior to a contract formation. E. g. creditors might fail to assess the borrowers risk of default correctly (hidden characteristics). The second case, *ex post* moral hazard, refers to the behavior of an individual in the aftermath, e. g. the (non)-intended use of borrowed capital (hidden action). Assume a borrower has the choice of several projects with different risks but initially equal expected return and the creditor has only incomplete information over the cash return. As the debtor does not have to bear a loss, he is likely to choose the more risky project, as there is the possibility to gain higher profits in a positive case. This so-called moral hazard-problem substantiates the need for a monitoring the borrowers' behavior to reduce information asymmetries, but this, however, causes additional costs.

In that regard, financial intermediaries can prevail: due to their transformation function, they may reduce the number of contracts between suppliers and demanders of capital and simplify the search for potential contract partners. Thus, banks contribute to lower search- and more general to lower transaction costs (Santomero 1984). In comparison to individual capital market agents, financial intermediaries have expertise in monitoring debtors and may realize cost benefits in terms of information procurement and risk assessment (Diamond 1984).⁵

5 Similar benefits apply as well to venture capitalists, but their role in corporate finance is almost negligible: In 2014 the amount of venture capital was only one percent of newly issued bank loans. In addition, venture capitalists focus on (tech) start-ups and not on sustainable SME-financing (Metzger and Bauer 2015: 1).

5 Central ideas of a European Capital Markets Union and its shortcomings

In late 2015, the European Commission developed the Capital Markets Union Action Plan to “mobilise capital in Europe [and] channel it to all companies, including SMEs, and infrastructure projects that need it to expand and create jobs,” based on the perception that European capital markets are underdeveloped and fragmented (European Commission 2015:3). While European and U.S. economy are about the same size, the bond market in Europe is less than one-third the size, in comparison. Therefore, mid-sized companies in the EU would receive five times less funding from capital markets than in the U.S. To stimulate investment⁶ and furthermore strengthen the European economy, also in terms of resilience against asymmetric shocks, the Commission posits the “need to build a true single market for capital—a Capital Markets Union for all 28 Member States” (European Commission 2015: 3).

Reasons for the current situation, in the aftermath of the 2008 financial crisis, are stated as follows by the European Commission (European Commission 2017):

- Strong bank dependence in funding investment in Europe;
- Regional disparities in providing financing between EU countries;
- No uniform rules or market practices for securitized instruments or private placements;
- Regional focus of shareholders and buyers of corporate debt, as they rarely go beyond their national borders when investing;
- Limited access to finance for many SMEs. Mid-sized companies receive five times as much funding from capital markets in the U.S. than they do in the EU.

Further, the European Commission suggests counter-measures to strengthen the European Economy and promote investments (European Commission 2017):

- Develop a more diversified financial system complementing bank financing with deep and developed capital markets;
- unlock the capital around Europe, which is currently frozen and put it to work for the economy, giving savers more investment choices and offering businesses a greater choice of funding at lower costs;
- establish a genuine single capital market in the EU where investors are able to invest their funds without hindrance across borders, and businesses can raise the required funds from a diverse range of sources, irrespective of their location;

6 The European Investment Bank (EIB) predicted a need of up to two trillion euro in total infrastructure investments by 2020.

- ensuring an appropriate regulatory environment for long term and sustainable investment and financing of Europe's infrastructure;
- safely restarting securitization markets to just half of pre-crisis levels, equivalent to over 100 billion Euro of additional funding.

At a glance, it is obvious that the European Commission is ignoring demand side reasons for a decline in investments, focusing solely on the supply side. As stated in section 2, there is no obvious credit crunch in Germany, not even during the 2008 financial crisis.⁷ Moreover, it is obvious, that a variety of national austerity programs as well as the European Fiscal Compact from 2012 reduced the demand for investment funds (Gabrisch 2016: 4 f.). To remove these bottlenecks and raise the level of investment, it is necessary to stimulate both public and private demand. With regard to a comparatively low level of capital market financing in Europe, the Commission is likely to confuse cause and effect: According to Behr et al. (2013: 3473) the structure of a country's financial system develops and adapts efficiently to meet the real economy's requirements. Hence, there is no quantifiable relationship between bank- or capital market-based financial systems and economic growth (Levine 2002). Historically grown, Germany's Three-Pillar Banking System fits well to its specific economic structure, with a strong focus on SMEs, as they do not contemplate capital market-based financing due to its severe requirements (see Section 8). From an entrepreneurial perspective, bank-based financing is more reliable and sustainable than capital market-based financing with its fungible instruments that enable the withdrawal of capital on short notice. Therefore, an "underdeveloped" capital market is not the cause of financing problems, rather it is the effect of a well-developed banking sector.

The European Commission also accelerates the integration of European financial markets in order to improve financial and economic stability as they suppose that "well-integrated and deep capital markets can spread country and region-specific risk, thereby smoothing the impact of deep recessions on consumption and investment" (Verón and Wolff 2016: 16). Indeed, the reduction of borders in financial markets is a long-term project. It is important to note that it does not necessarily lead to risk sharing (Gabrisch 2016: 6).⁸ Moreover, the high integration of Spain, Portugal and Ireland into the European capital markets caused crucial negative economic impacts during the 2008 financial crises.

It is true that banking sector problems in some European countries had negative effects on access to finance. The strong relationship between financial intermediaries and corporations was stabilizing during the 2008 financial crisis, especially in Germany (Brämer et al. 2010:330). Instead of promoting the CMU with its suspect benefits, the European Commission should advocate a reasonable banking regulation that supports financial stability without hindering the lending business. To reinforce credit-based financing, it is necessary to maintain the SME Supporting Factor (Art. 501 CRR). Likewise, the Net Stable Funding Ratio (NSFR) should not harm long-term corporate finance. Furthermore, the promotion of regional structures should be enhanced:

7 Also see ifo Credit Constraint Indicator for further evidence.

8 The European Commission fails to distinguish between risk and uncertainty. Risk always refers to a (experience-based), quantifiable individual risk while uncertainty is unpredictable. By risk sharing the European Commission actually means socializing or even passing on individual risks. Furthermore *risk sharing* does not lead to the reduction of macroeconomic "risk" as it sets out incentives for individuals to extend their individual risk taking actions.

regionally operating retail institutions are preferred counterparts for local SMEs as they are aware of their specific characteristics. This enables an appropriate lending based on soft factors as well as standardized credit scoring. As SMEs constitute the backbone of the German economy, a proportionate banking regulation based on the principle of subsidiarity is much more appropriate than the promoted CMU.

In addition, the proposed restart of securitization markets will encourage the emergence of hybrid capital markets with highly complex, non-transparent financial instruments, which impede the risk calculation of portfolios. Moreover, the European Commission appears to forget that a major contributing factor to the 2008 financial crisis was the securitization of subprime mortgages into mortgage-backed securities and collateralized debt obligations (CDOs). The market for securitization should only be an additional opportunity alongside bank-based financial markets. Nonetheless, new market standards and quality criteria are inevitable, e.g. a restriction to high-class securitization with focus on real economy. Altogether, there should be a clear rulebook regarding the capital market regulation prior to the introduction of the CMU.

6 Conclusions

The German finance sector is traditionally bank-based, private lenders as well as private investors trust regionally operating financial intermediaries over institutional capital markets. At first glance, although German banks appear to be less profitable than their European rivals, they are resilient to a high degree despite having to deal with intense domestic competition. The CMU tries to establish structures that do not exactly fit with domestic requirements.

A CMU would not solve problems in Germany's financial industry; it would cause them. Instead, a consequent review of excessive regulations and supervision processes could even improve both resilience as well as profitability. The principles of subsidiarity and proportionality deserve particular attention, since German banks are smallish on average and suffer considerably from regulatory burden.

Furthermore, Germany's financial markets are currently lacking corporate demand due to missing investment opportunities and firms' internal financing capacities. Hence, additional or modified financial supply alternatives intended to be established via the CMU would most likely not close the existing demand gap. In addition, as securitization is considered an important pillar of bank lending, a well-known mistake of the last financial crisis might be replicated. In fact, the deeper integration of financial markets most likely promotes financial contagion and sets incentives for a higher individual risk taking. Therefore, the Capital Markets Union is not only a threat to the German banking sector; it is a threat to the financial (and subsequent economic) stability of the entire European Union.

References

- Behr, Patrick, Lars Norden, and Felix Noth (2013): Financial constraints of private firms and bank lending behavior. *Journal of Banking & Finance*, 37, 3472–3485.

- Bendel, Daniel, Markus Demary, and Michael Voigtländer (2016): Entwicklung der Unternehmensfinanzierung in Deutschland. *Vierteljahresschrift zur empirischen Wirtschaftsforschung*, 43, 37–54.
- Brämer, Patrick, Horst Gischer, and Toni Richter (2010): Das deutsche Bankensystem im Umfeld der internationalen Finanzkrise. *List Forum für Wirtschafts- und Finanzpolitik*, 36 (4), 318–334.
- Büsselmann, Elke (1993): Bankenaufsicht und marktbezogenes Eigenkapital. Wiesbaden, Gabler.
- De Bandt, Olivier, and Philipp Hartmann (2000): Systemic risk: a survey. In: C. Goodhart et al. (Ed.): *Financial Crises, Contagion, and the Lender of Last Resort. A Reader*. Oxford, 249–297.
- Diamond, Douglas W. (1984): Financial Intermediation and Delegated Monitoring. *Review of Economic Studies*, 51, 393–414.
- Diamond, Douglas W., and Philip H. Dybvig (1983): Bank runs, deposit insurance, and liquidity. *Journal of Political Economy*, 91 (3), 401–419.
- ECB – European Central Bank (2016): Report on financial structures, 2016. Frankfurt a. M.
- European Commission (2015): Action Plan on Building a Capital Markets Union, 2015. Brussels.
- European Commission (2017): Factsheet: Capital markets union. https://ec.europa.eu/info/system/files/icmu-factsheet_en.pdf (retrieved on 1st of June 2017).
- Frühauf, Markus, and Martin Hock (2017): Mittelstandsanleihen sterben aus. *Frankfurter Allgemeine Zeitung* vom 4. Februar 2017. www.faz.net/aktuell/finanzen/anleihen-zinsen/nach-aerger-um-woehrl-sanders-die-mittelstandsanleihen-sterben-aus-14835028.html (retrieved on 3rd of June 2017).
- Gabrisch, Hubert (2016): Zur Kritik der Kapitalmarktunion. *Wirtschaftsdienst*, 12, 1–9.
- Gischer, Horst, and Peter Reichling (2010): The German banking system and the financial crisis. In: B. Gup (Ed.): *The Financial and Economic Crisis: An International Perspective*. Cheltenham/Northampton, 69–78.
- Hartmann-Wendels, Thomas, Andreas Pfingsten, and Martin Weber (2015): *Bankbetriebslehre*. Heidelberg/ New York, Springer-Verlag.
- KfW – Kreditanstalt für Wiederaufbau (2016): KfW-Mittelstandspanel 2016 – Jährliche Analyse zur Struktur und Entwicklung des Mittelstands in Deutschland, Oktober 2016. Frankfurt a. M.
- Levine, Ross (2002): Bank-Based or Market-Based Financial Systems: Which Is Better? *Journal of Financial Intermediation*, 11, 398–428.
- Metzger, Georg, and Albrecht Bauer (2015): Beteiligungsmarkt in Deutschland – Lücke bei Venture Capital. *Fokus Volkswirtschaft*, 98.
- Santomero, Anthony M. (1984): Modeling the Banking Firm: A Survey. *Journal of Money, Credit, and Banking*, 16, 576–602.
- Schmalenbach, Eugen (1933): *Kapital, Kredit und Zins in betriebswirtschaftlicher Beleuchtung*. Leipzig, Westdeutscher Verlag.
- Statista (2017): Emittierte Mittelstandsanleihen in Deutschland von 2010 bis 2016. <https://de.statista.com/statistik/daten/studie/377713/umfrage/anzahl-der-emittierten-mittelstandsanleihen-in-deutschland> (retrieved on 26th of May 2017).
- Statistisches Bundesamt (2017): Statistisches Jahrbuch 2016. www.destatis.de/DE/Publikationen/StatistischesJahrbuch/StatistischesJahrbuch2016.pdf?__blob=publicationFile (retrieved on 26th of May 2017).

- Véron, Nicolas, and Guntram B. Wolff (2016): Capital Markets Union: A Vision for the Long Term. *Journal of Financial Regulation*, 2 (1), 130–153.
- Wagner, Adolph H. G. (1857): *Beiträge zur Lehre von den Banken*. Leipzig, Leopold Voss.