Changes in the Structure of Financial Intermediation – Eastern-Central European Developments in the Light of Global and European Trends

András Bethlendi[1]**, Katalin Mérő**[2]

Abstract

The article analyses the structural changes of the financial intermediary system of Eastern-Central European (ECE) countries, that joined the EU in 2004, namely the Czech Republic, Hungary, Poland, Slovakia and Slovenia (ECE5) in the light of global and European trends from 2004 to 2016. Its two main focuses are the characteristics of the structural shifts and interconnectedness between banks and financial markets, on the one hand, and the size and specificities of shadow banking systems, on the other. Despite the limited catching up of the region the ECE5 countries has a much less deep and more bank-based financial system than their European counterparts without the emergence of significant market-based banking and shadow banking. However, while in the developed countries the most important shadow banking institutions are the non-money market mutual funds, in ECE5 countries other non-bank financial institutions are those that potentially exposed to shadow banking risk.

Keywords

Shadow Banking, Non-bank Financial Intermediation, Financial Structures, Bank-Based Financial System, Market-Based Financial System, Eastern-Central Europe

I. Introduction

In the 1990s, the relevant literature identified and analysed two clearly distinguishable systems of financial intermediation: bank-based and market-based financial systems. In bank-based systems, the households' risk appetite is low, thus people prefer to keep their money in bank deposits. Accordingly, banks are the most important actors in the financing of companies, while the issuance of bonds and shares plays a minor role. In countries with a market-based financial system, the households' risk appetite is higher, people

[1] Budapest University of Technology and Economics, Műegyetem rkp. 3., 1111 Budapest, Hungary. E-mail: bethlendi@finance.bme.hu.

[2] Budapest Business School, Diosy Lajos u. 22–24, 1165 Budapest, Hungary. E-mail: mero.katalin@uni-bge.hu.

prefer investments that yield higher return. In such countries, securities play a greater role in the financing of companies, while banks are dominant actors in the financing of retail customers and small and medium-sized enterprises. Austria, Germany and Japan are textbook cases of the bank-based financial system, while the US and the United Kingdom are the best-known examples of the market-based system. During the 1990s several publications analysed this topic: some of them provided a comprehensive analysis and comparison of the two systems (Allen and Gale, 2000, Beck et al., 1999, Boot and Thakor, 1997, Demirguc-Kunt and Levine, 1999), while others focused on the impact of the structure of financial intermediation on the real sector (Thakor, 1996); the effect of the two systems on welfare (Allen and Gale, 1995); the differences between the two systems in terms of intertemporal risk management (Allen and Gale, 1997); or whether it is possible to affirm that one system is 'better' than the other, particularly in supporting economic growth (Levine et al., 2000, Levine, 2002).

The studies analysing the different types of financial intermediary systems usually examined and compared traditional banking models – lending and keeping loans in the bank's balance sheet until maturity – and forms of financing through capital markets. Allen and Santomero (2001), however, pointed out that the difference between the two systems in terms of the intertemporal risk management had become unsustainable by the 1980s due to the increased competition from non-bank financial intermediaries. As a consequence, the bank deposits to retail savings ratio showed a continuous decline both in the US and in Europe, particularly in France. This does not mean that the role of banks within the economy decreased but that banks obtained an increasing share of their funds from the markets, i.e. the chain of financial intermediation was lengthening: institutional investors were becoming increasingly dominant in collecting funds from households and used a part of such funds to purchase bonds issued by banks, thus they took a place on the liability side between the savers and the banks (Schmidt et al., 1999).

At the same time, the securitisation of loans also began, first in countries with market-based financial system. According to Allen and Santomero (2001, p. 277), in the US over 40 percent of mortgages was securitised and sold on the financial markets, typically to institutional investors, by the mid-1990s. This means that the chain of financial intermediation became even longer, as market investors started to buy not only the liabilities but also the assets of banks.

As the process continued to evolve, by the early 2000s a banking model based on securitisation had come into existence, the originate-to-distribute banking model. In this model, banks do not hold their loans until maturity but securitise them, and then sell the thus originated securities on financial markets. This process became a general business model mainly in the US mortgage market.

Although securitisation became a common practice on European financial markets as well, it remained far less widespread than in the US, since in continental Europe the financing of mortgages was historically different: it took place by covered bonds issued by banks. The issuance of covered bonds also constitutes a certain interconnectedness of banking and markets, but here the bonds are long term and loans remain in the banks' portfolio. That is, covered bonds are lower-risk, simpler and more transparent instruments than bonds originated by securitisation. In Europe, the issuance of covered bonds increased dynamically in the 2000s (European Commission, 2017). However, in a large number of European countries banks also use a significant amount of additional resources for financing mortgages. Such mortgage loans and other types of loans may also be subject to market-based financing of more complex constructions through securitisation or in other ways. One example is the foreign currency lending in Hungary and to a limited extent in Poland before the GFC, where banks used short term foreign exchange swaps to fund their long term foreign currency loans, first of all mortgages. All in all, by the 2000s the financial intermediary role of banks had undergone a transformation in terms of both the assets and liabilities of banks in the US and in Europe alike: on the asset side, the volume of loans that banks held until maturity was decreasing, while on the liability side, they relied increasingly on market funds instead of bank deposits.

In the originate-to-distribute model, the lending capacity of banks increased significantly, since the securitized and sold loans involved only limited capital requirements on the one hand, and because traditional bank funds (deposits) were replaced by funds available – in much larger quantities – on the financial markets, on the other. However, since bank deposits are not needed for financing securitised loans, the process was viable without banks as well: non-bank lending institutions also became capable of granting and selling loans. As a consequence, the so-called shadow banking system emerged, which integrated the complex process of lending, securitisation and loan selling, involving a large number of actors (Adrian and Shin, 2010, Pozsar et al., 2012).

The originate-to-distribute banking model and the shadow banking system substantially transformed the structure of financial intermediation. In the new system, the interconnectedness of banks and markets, as well as the non-bank entities of the shadow banking system became much stronger than previously. With the loan securitisation, the traditional deposit-taking and lending roles of banks were pushed into the background. Banks and the entities of the shadow banking system became actors in the market of banking products and securities at the same time, and bank-based and market-based financial intermediation – the basic types of financial intermediary structures – were becoming ever less separable. That is why according to Hardie et al. (2013), the distinction between bank-based and market-based systems for the purpose of analysing the current institutional framework of financial intermediation constitutes a false dichotomy, and the degree of the penetration of market-based banking is a better indicator of financial structures. According to Hardie et al. (2013), the concept of market-based banking covers both commercial banks and other financial intermediaries, also known as parallel banks, which do not hold the loans granted by them in their balance sheet but sell them on the market either by securitising them themselves or by selling them to shadow banks, which will then securitise the loans.

The expansion of the originate-to-distribute banking model and the shadow banking system allowed for the rapid expansion of subprime lending and formed the basis of the subprime crisis and related risks, which were the main factors leading to the Global Financial Crisis (GFC). (Bord and Santos, 2012, Fabozzi and Kothari, 2008, Purnanandam, 2011, de Larosiere Group, 2009; FSA, 2009). Therefore, the structural analysis of financial intermediation gained new impetus after the crisis. Reports on the shadow banking system, are published regularly by the Financial Stability Board (FSB) at a global level and by the European Systemic Risk Board (ESRB) at a European level. After the crisis, based on the lessons learnt from it, the renewal of banking- and financial markets regulation was aimed both at regulating the originate-to-distribute banking model and separating the traditional and market-based activities of banks. In terms of the first objective, the introduction of rules concerning securitisation and the operation of rating agencies in the EU can be regarded as a partial result, while the second objective was addressed by the proposals for the so-called structural reforms. These – also known as ring-fencing – aimed to ensure that banks do not assume capital market risks relying on the funds of their depositors. However, in 2018, the EU withdrew its proposals for a regulation on structural measures on the grounds that there had been no progress in reaching an agreement on the subject and that due to the regulatory measures taken in the meantime – in particular, the establishment of the Banking Union – the previously proposed structural rules were no longer needed.[3]

The literature on financial structures hardly addresses the Eastern-Central European (ECE) countries. Using the terms of the dichotomy of bank-based versus market-based financial systems, in the early 2000s the countries of the ECE region had clearly bank-based financial systems, while the level of development of both their banking systems and their capital markets was far below the average level of middle-income countries (Scholtens, 2000; Mérő, 2004).

In this article, we analyse the particular development of the ECE region in the light of global and European trends in relation to countries that joined the European Union in 2004 – i.e. Czech Republic, Hungary, Poland, Slovakia, and Slovenia (ECE5) – following their accession. We will try to answer the following questions: Is there any evidence of convergence with the EU in terms of the level and structure of financial intermediation in the five countries under review? Have their financial intermediary systems remained essentially bank-based? To what extent is there an interconnectedness of banks and markets in terms of assets (securitisation) and liabilities (funds other than deposits)? In the light of this, can it be affirmed that market-based banking exists in the region? Has the shadow banking system emerged? If so, in what form and to what extent, and what role does it play in the financial intermediary system of the countries concerned? Are there any particular trends that are specific to the region in these fields?

The structure of the article is as follows. In section II we will analyse the most characteristic trends of the structural changes of financial intermediation, i.e. the development of bank-based and market-based financial intermediary systems and the evolution of market-based banking, as well as the emergence and development of the shadow banking system. Then, in section III we will examine the structural changes in the financial intermediary system of the ECE5 countries and the shadow banking system of the region in section IV. The last part concludes and outlines some further research.

[3] See http://www.europarl.europa.eu/legislative-train/theme-deeper-and-fairer-internal-market-with-a-strengthened-industrial-base-financial-services/file-banking-structural-reform.

II. Changes in the Structure of Financial Intermediation

Developments of Bank-Based and Market-Based Financial Systems and the Emergence of Market-Based Banking

The expansion of market-based financial intermediation and the concurrent convergence of bank-based and market-based systems from 1980 to 2000 are clearly noticeable in several countries. The main feature of convergence was the fact that while market-based finance gained considerable ground at the expense of bank-based finance, the volume of banking activities also increased. Thus, capital markets – which were growing faster than banks – acquired an increasing share of the expanding market of financial intermediation. Accordingly, by the end of the 20th century, developed countries were characterized by continuously expanding and developed banking system and capital markets, as well (Beck et al., 1999; Levine, 2002). The main driver of the growth of market-based intermediation was the higher return compared to bank deposits, while the growth of banks was increasingly driven by a shift towards riskier activities and market-based financing, which was reflected in an increase in money and capital market funds on the liability side and in the securitisation of loans on the asset side (Allen and Gale, 1997; Allen and Santomero, 2001). However, irrespective of the type of institution that was prevalent in each country, banks continued to play an important role in lending to small and medium-sized enterprises and retail customers everywhere, since in these two segments it was impossible to replace bank loans with issuing securities. In other words, while the amount of savings deposited in banks was decreasing gradually, banks continued to be important in lending to these segments. In countries with a fundamentally market-based financial system, this dilemma was resolved by securitisation and the emergence and expansion of the originate-to-distribute banking model. The increasing interconnectedness of bank-based and market-based financing as well as the resulting non-transparent structures and risks, which were becoming increasingly difficult to follow, contributed significantly to the expansion of subprime lending.

The 1990s and the pre-crisis years of the 2000s were characterised by the general process of the deepening of financial intermediation. The GFC did not bring about a radical change in the ratio of bank-based to capital market-based financial intermediation. In many countries, by the mid-2010s, the extent and the relative share of bank-based and market-based intermediation were again similar to the levels of the early 2000s, i.e. prior to the pre-crisis upswing. Moreover, contrary to the expectations immediately following the crisis, the securitisation process did not come to a complete halt, but it gained renewed impetus after a few years of recession, although the value of securities issued remains significantly below the pre-crisis level. (AFME 2019).

However, in the background of the relatively stable ratio of bank-based to market-based intermediation, one can observe that banking is becoming increasingly market-based and non-bank entities are entering the market of traditional banking products; therefore, according to Hardie et al. (2013), by now the bank-based versus market-based approach seems to become a false dichotomy, and the difference between banking systems in terms of their structural characteristics in developed countries lies mainly in the extent of the banks' market activity. As highlighted by Hardie at al., banking as we know it today is very different from what was previously described as traditional, since the assessment, hedging and funding of loan portfolios are also linked to the markets, where loan portfolios can be bought or sold. From now on, not even lending can be considered an exclusively traditional banking activity, since not deposit-taking, 'parallel' banks can also grant loans.

The Concept and Size of the Shadow Banking System

According to the definition of the Financial Stability Board (FSB, 2011) the shadow banking system is 'the system of credit intermediation that involves entities and activities outside the regular banking system' (p. 2). This definition is centred on the institutional aspects, since it focuses on the risks generated by financial intermediaries that pursue activities similar to those of banks but are not banks and, accordingly, are subject to less stringent regulations. Within the institutional approach, the Financial Stability Board moved towards an activity-based approach when, in 2013, it established its assessment framework for monitoring the activities of the shadow banking system (FSB, 2013). This includes two definitions – one applicable to a narrower and the other one to a broader range of entities – as well as data collection and analysis on the basis thereof. The broad definition covers the entire universe of non-bank financial institutions, with the exception of insurance companies and pension funds. The narrower definition applies a functional restriction within the institutional approach by specifying the economic functions that non-bank financial intermediaries must perform. (FSB, 2013).

Within the European Union, this mixed institutional/activity-based approach is used only by those Member States that fall within the scope of the FSB and have the most developed financial markets[4]. The main reason for this is that such statistics are produced individually by central banks, which is a very labour-intensive task, requiring substantial expertise as well. In the rest of EU Member States – as well as the euro area and the EU as a whole – the EU body responsible for the supervision of systemic risks, i.e. the European Systemic Risk Board (ESRB), also uses an institutional approach to the analysis of the shadow banking system, similar to the broader definition of the Financial Stability Board. It includes assets managed by investment funds and assets held by non-bank financial institutions.

According to data of the FSB (2019), in the 29 countries having the most developed financial systems including 8 countries of the euro area, from 2008 to 2017, banks' share of total global financial assets decreased from 45 percent to 39 percent, while the share of other (non-bank) financial institutions increased from 26 percent to 31 percent, which means that in the most developed financial markets in the world, shadow banking continued to gain ground at the expense of banking even after the GFC. Regarding the shadow banking system, understood as per the definition used by the ESRB, similar trends can be observed: in the years of the GFC, starting from 2008, lending by banks decreased and it only started to increase again in 2016, while shadow banking increased significantly during this same period. In 2018, banks accounted for 39.6 percent of the assets of the EU's financial system, while shadow banking entities as defined by the ESRB accounted

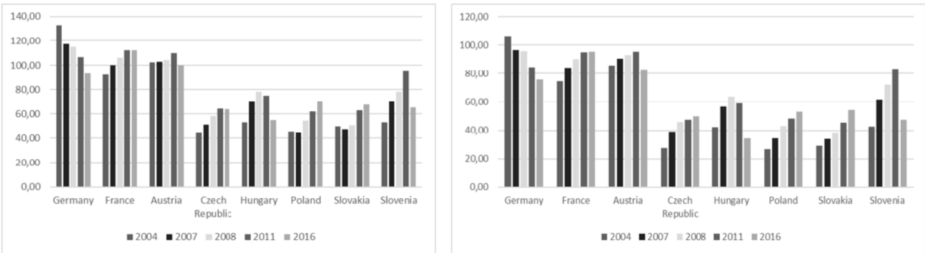
[4] Belgium, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, and Spain.

for 37.7 percent (ESRB, 2019), which means that the financial intermediary roles of the two systems had become very similar.

III. The Transformation of the Structure of Financial Intermediation in the ECE5 Countries Before and After the Crisis (2004–2016)

By the time of their accession to the EU in 2004, all five countries had already gone through the transformation recession (Kornai, 1994) and the related banking crises, and in their banking systems foreign ownership was dominant, except for Slovenia. In 2004, the banking system of the ECE5 countries was much less developed than the banking system of the EU countries.[5] While in the EU Member States with more developed banking systems, the balance sheet total of commercial banks usually exceeded the GDP of the countries concerned and the volume of bank loans ranged from 75 to 105 percent of GDP, in the ECE5 countries the banks' balance sheet total was between 44 and 54 percent of GDP and the volume of loans granted to the private sector ranged from 25 to 43 percent of GDP. In the subsequent period, the deepening of financial intermediation followed a different path in each country, but overall, the region demonstrated a partial convergence accompanied by the deepening of bank-based financial intermediation. The process of convergence continued in the Czech Republic, Poland and Slovakia, which had only been slightly affected by the crisis. In Hungary and Slovenia, however, by the end of 2016 the bank credit-to-GDP ratio fell back to almost the same level as in 2004 (Figure 1).

Figure 1: Banks' total assets (left) and private credit (right) to the GDP (2004–2016)

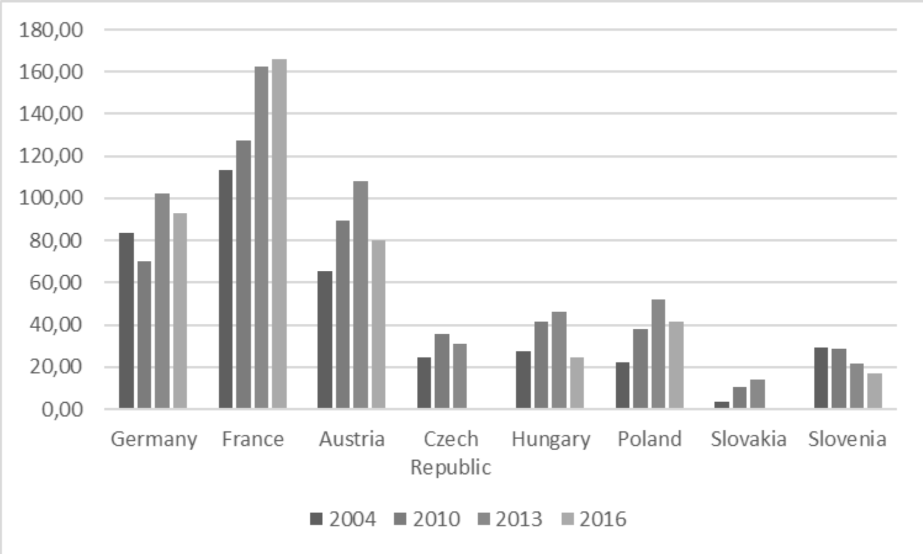


Source: The World Bank's Global Financial Development database

The level of development of capital markets shows a more differentiated picture. There are great differences in terms of capital market development even between the most developed countries in the EU. In the region, four countries have similar levels of market-based intermediation, while in Slovakia, the role of capital markets in the economy is even significantly smaller than in the ECE5 in general (Figure 2).

[5] For comparison we chose Germany and France, the two determinant European countries and Austria, which plays a key role in the financial system of the Eastern-Central European region. Unfortunately, for the majority of the data included in our analysis, there are no average data available at the level of the EU or the euro area.

Figure 2: Joined capitalisation of the stock market and the private debt market to GDP (2004–2016)*

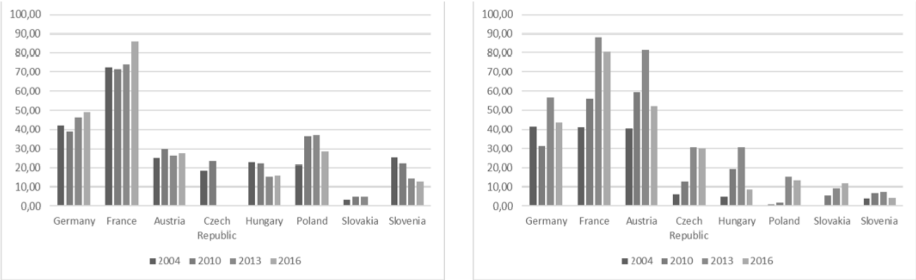


Sources: The World Bank's Global Financial Development database, the BIS' Debt securities statistics and the World Bank's World Development Indicators
** for the Czech Republic and Slovakia data are available only until 2013*

In 2004, in terms of stock market capitalisation, the values measured in the ECE5 countries – regarded as low in comparison with the developed part of the EU – were close to those of Austria. By 2016, the gap between the ECE region and the EU in general had increased significantly, except for Poland (Figure 3). In terms of the issuance of corporate bonds, the gap between this region and the more developed Members States of the EU is much larger than in terms of shares. It should also be noted that, according to BIS' Debt securities statistics, in all countries except for Poland and Slovenia, the majority of corporate bonds are bonds issued by financial corporations, particularly covered bonds. However, in Poland and Slovenia, since 2014, non-financial undertakings have issued nearly the same amount of bonds as financial institutions. But this trend has been observed at such a low level of corporate bond markets in the ECE5 countries that the reliance of banks on the debt market in this group of countries cannot be considered significant (Figure 3).

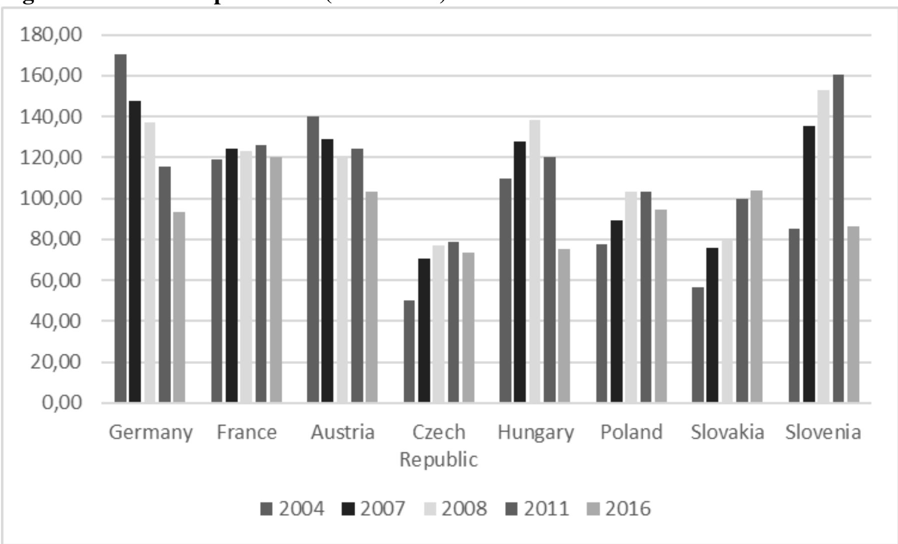
All in all, financial intermediation in the ECE5 countries remained essentially bank-based from 2004 to 2016. Its convergence with the EU's financial intermediary system in terms of their size as a percentage of GDP was more noticeable regarding bank-based than market-based intermediation. Within market-based intermediation, the region has been lagging behind particularly in terms of bond markets.

Figure 3: Stock market capitalisation (left) and corporate bond market capitalisation (right) to GDP (2004–2016)



Sources: The World Bank's Global Financial Development database, the BIS' Debt securities statistics and the World Bank's World Development Indicators

Figure 4: Loan-to-deposit ratio (2004–2016)



Source: The World Bank's Global Financial Development database

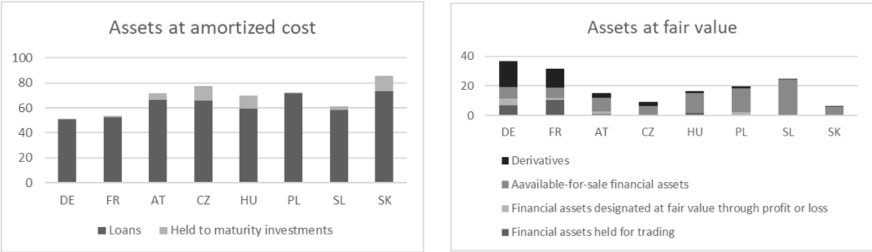
As in developed countries in general, the interconnectedness of banks and markets – primarily in terms of the composition of banks' liabilities – was also noticeable in the ECE5 countries in the pre-crisis years of 2000s. The loan-to-deposit ratio of banks shows that in the pre-crisis years – with the exception of the Czech Republic and, to a lesser extent, Slovakia – banks gradually reduced their use of deposits for financing their lending in the ECE region as well. However, while in countries with more developed money and capital markets, banks obtained the funds used for non-deposit financing from the markets, in the ECE region they usually obtained the necessary funds from their parent banks and, thus, indirectly from the markets of their parent banks. In several countries, the GFC brought about a significant fall in the loan-to-deposit ratio. This can be explained partly by the return to traditional banking at the expense of market-based banking and partly by the decline in the volume of lending. In the ECE5 countries, the same phenomenon occurred as a result of the decline in lending and the gradually decreasing role of the funds obtained from parent banks (Figure 4). This means that, as regards banks' liability structure, in the 2010s there was no expansion in market-based borrowing and no shift towards market-based banking.

The composition of banks' assets shows that, in the ECE5 countries, traditional banking has always been and continues to be dominant, as opposed to market-based banking. Loans carried at amortised cost and held-to-maturity investments account for 61 to 85 percent of banks' assets, as opposed to approximately 50 percent in countries with more developed capital markets and shifting towards market-based banking. Overall, the proportion of assets carried at fair value is, therefore, significantly lower in the ECE5 region and Austria. Available-for-sale financial assets are an exception to this, but the share of assets held for trading, derivatives, and financial assets accounted for at fair value through profit or loss is also significantly lower than in France and Germany (Figure 5). Securitised positions – common in market-based banking or internal shadow banking systems – are not or only marginally included in banks' assets.[6] Within the region, the volume of available-for-sale assets is outstandingly high in the Slovenian banking system, which does not indicate a higher level of securitised assets but can be explained by three other – independent – reasons: (1) in the context of the management of the banking crisis in Slovenia, sovereign bonds was also used for the recapitalisation of banks; (2) the low interest rates increased the real value of previously issued sovereign bonds; and (3) the decrease in the loan volume and the balance sheet total brought about by the Slovenian banking crisis led to an increase in the share of securities (Banka Slovenije, 2017). In Poland, which has the second highest volume of available-for-sale assets, the rise of the assets at fair value accounting was due to the increase in the volume of sovereign bonds due to the favourable tax treatment and not due to the securitisation of banks' assets (Narodowy Bank Polski, 2016). In Hungary, it was not the shift towards market-based banking but the decline in lending – which lasted until 2016 – that motivated banks to maintain a larger sovereign bond portfolio.

In the ECE5 countries, therefore, the prevalence of traditional loans carried at amortised cost within the assets of banks can be observed, and the volume of assets carried at fair value does not indicate a concentration of activity of banks and markets but a high level of sovereign debt. On the liability side, deposit taking is the largest liability item, while funding from the market (in the form of bonds and derivatives) has a marginal share, and there has been a major decline in funding from parent banks, which was common before the GFC, i.e. banks currently operate more under the traditional model of deposit taking and held-to-maturity loans (Impavido, Rudolph and Ruggerone, 2013).

[6] According to the accounting principles of the International Financial Reporting Standards (IFRS), securitised positions – with the exception of derivatives – may be classified in any fair value category, depending on the given bank's accounting policy.

Figure 5: The breakdown of banks' assets by valuation methods (2016 Q4)



Source: ESRB (2017 table 3.3.)

Unfortunately, we cannot reconstruct the data included in Figure 5 for a different date. However, in the light of the activities of banks, it can be stated that this traditional activity was disrupted before the crisis, and it temporarily shifted towards market-based banking in those ECE5 countries where lending in Swiss francs (CHF) was significant but banks had no traditional (on-balance sheet) funds in Swiss francs, i.e. primarily in Hungary and, to a smaller extent, in Poland. The reason for this is that banks had to fund their lending in Swiss francs by Swiss franc swaps in order to close currency gap in their balance sheet. In Hungary, the temporarily higher volume of derivatives – a consequence of the above-mentioned swaps – implied the concentration of banks and markets, i.e. the emergence of market-based banking, which, however, became unsustainable after the market dried up in autumn 2008. The crisis management measures taken by the state to phase out the loans denominated in Swiss francs have reduced the volume of such loans to a minimum, and thus the volume of banks' derivatives has also decreased significantly.[7]

IV. The Shadow Banking System and the ECE5 Countries

The structural analysis of ECE5 countries provided in the previous section has shown that, the structural changes that lead to the development of shadow banking systems did not take place. However, on the basis of the institutional approach of the FSB and the ESRB, it is clear that the entities that are covered by the definition of the shadow banking system and that pursue activities that could potentially serve as a basis for the development of the shadow banking system do exist in the CCE5 region as well. Therefore, in this section, we will briefly review the size and scope of the shadow banking system in these countries on the basis of the available data.

As the region-specific data that would be needed for applying the narrow, activity-based approach of the FSB are not available, we can only use the broader, institution-based approach. We can use the data available in the statistical system of the ESA 2010[8] and in the database of the European Central Bank to analyse the size of the sector. Therefore,

---

[7] The process of the expansion and subsequent decline of lending in Swiss francs and the related swaps goes far beyond the subject of this article. For more details, see Bethlendi (2015); Király and Simonovits (2017).

[8] European System of Accounts; see https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-02-13-269.

we will give an estimate for the size of the shadow banking system by summarising the following data (the ESA codes of the institution types concerned are added in brackets): (1) money market funds (S.123); (2) non-money market investment funds (S.124); (3) other financial intermediaries. This category includes SPVs (special purpose vehicle corporations, i.e. companies engaged in securitisation transactions), lending, leasing and factoring companies, investment firms, venture capital companies, etc. (S.125).

In 2004 – at the time of the accession of the ECE5 countries to the EU and at the height of the expansion of the shadow banking system in countries with a developed financial market – the ratio of those types of entities that could potentially act as shadow banks to GDP in the ECE5 countries was far below the level of the European countries with bank-based financial system. During the years of the pre-crisis upswing, both in Western Europe and in the ECE5 region, in line with the deepening of market-based intermediation, the entities fit for carrying out shadow banking activity grew considerably stronger by 2008, thus, there were no major differences between the growth rates relative to GDP of the two regions. Slovakia was the only country in which the size of the shadow banking system decreased during this period as a result of a radical decline in money market funds.[9] In the period under review, Hungary had the highest growth rate, but due to the low base of such growth, this does not mean that the country managed to catch up substantially with more developed countries. In the years following the GFC, the sector continued to grow, except for Slovenia. In this period, the Czech Republic and Poland had the highest growth rates, with their rates recorded in 2016 being more than twice the rates measured in 2008. Overall, in 2016 the size of the shadow banking system of the region was significantly smaller than in countries with more developed financial markets, despite the substantial restructuring that had taken place (Table 1). An important difference between the two regions in terms of institutions is that in the three developed countries, the key entities of the shadow banking system are non-money market investment funds, while in 2004 in all of the ECE5 countries, the homogeneous dominance of other financial intermediaries was evident. By 2016, non-money market investment funds had also acquired a bigger role in Hungary and Poland. In the ECE region, the risks inherent in the shadow banking system are more likely to be found in the sector of other financial intermediaries.

An activity-based examination of the shadow banking system of the Eastern-Central European region leads to the conclusion that, in this region, securitisation has practically not developed and continues to be marginal. The previously mentioned foreign currency lending financed by short-term swaps, however, is considered shadow banking. After the GFC, such lending also became marginal in terms of its volume. Another activity that can be largely regarded as a shadow banking activity is primarily the activity of non-bank financial institutions. Lending, leasing and factoring companies typically carry out non-bank lending activities, usually obtaining the necessary funds from markets and possibly from their parent entities. These entities are not subject to the banking regulations introduced after the GFC to address risks; thus, they have no sufficient capital to cover

[9] The country's accession to the euro area was possibly an important factor in this respect. When the Slovak koruna ceased to exist, the mainly foreign-owned fund managers switched to sell euro-denominated money market funds of parent companies.

their risks and heir liquidity can be considerably more volatile than that of banks. In other words, they should be considered as entities of the shadow banking system even under the narrowest activity-based definition. Claims management companies, which purchase and seek to recover banks' claims (typically non-performing loans), are also classified into this category. These entities – which are financed by market funds or by their owners – are also non-bank participants of the lending process. In the Eastern-Central European region, with the exception of Poland, the role of these entities in lending compared to banks is much more important than in the Western European countries of reference (Table 2). This means that, under the current institutional structure, the sector of non-bank financial institutions is the typical sector in the ECE5 region in which shadow banking activities and risks can emerge and develop.

Table 1: The size of the shadow banking system to GDP (%)

	2004				2008				2016			
	S123	S124	S125	Total	S123	S124	S125	Total	S123	S124	S125	Total
Austria	1	39	13	53	1	36	26	63	0	46	19	65
Germany	1	33	5	39	1	33	11	45	0	65	15	80
France	16	35	9	60	20	34	24	77	15	55	22	91
Slovakia	14	2	0	17	2	2	8	12	0	7	8	15
Hungary	1	3	8	12	3	6	14	22	2	12	9	23
Czech Republic	n.a.	1	9	10	n.a.	1	13	14	0	6	24	31
Slovenia*	n.a.	6	12	18	n.a.	5	19	24	n.a.	6	12	19
Poland*	n.a.	3	5	8	n.a.	6	6	11	n.a.	15	9	24

Source: ESA and ECB

** for S125 we have only data that includes the S126 and S127, as well, that is a bit wider set of institutions.*

Table 2: Non-bank financial institutions' (S125) loans to bank loans (%)

	2004	2006	2008	2010	2012	2014	2016
Austria	5	3	3	3	3	3	3
Gemany	3	3	4	4	5	5	77
France	2	2	3	4	6	6	6
Czech Republic	23	21	18	16	17	17	16
Hugnary	16	15	16	15	15	14	14
Poland	3	3	3	3	n.a.	n.a.	n.a.
Slovakia	n.a.	n.a.	15	11	11	10	11
Slovenia	12	17	15	13	10	n.a.	n.a.

Source: ECB

V. Conclusion

In this article, we examined the structural developments of the ECE region's financial intermediation in the light of global and European trends. We have seen that, after 2004, the ECE region started to catch up with the EU in terms of the depth of financial intermediation, although the gap between the two groups has remained significant. Convergence was stronger in the field of bank-based financial intermediation and weaker in the field of market-based intermediation. The biggest structural difference lies in the role of private (non-sovereign) bonds, since in the ECE5 countries, debt market capitalisation is far below that of developed countries. As a result of such changes, the strong prevalence of banks in the intermediary system of the ECE5 countries has not changed, and there has been no shift from the bank-based financial system towards the market-based one. Similarly, there are no indications of market-based banking gaining ground: on the asset side, banks continue to hold their loans until maturity, they do not securitise and sell them on the markets, and the ratio of market funds to total liabilities has not increased significantly either. The latter statement applies only to the post-crisis period, since before the GFC, the high loan-to-deposit ratio in the region revealed a high level of funding from the market (parent banks), and in countries where foreign currency lending took place, the interconnectedness of banks and markets was strong due to the foreign exchange swaps that were used for funding banks' lending. The size of the region's system that comprises the entities fit for carrying out shadow banking activities is far smaller than in developed European countries, however, it is not marginal in this group of countries either. We have managed to identify a group of entities among which shadow banking risks may emerge, even in comparison with developed European countries: it is the segment of non-bank financial institutions (lending, leasing and factoring companies, claims management companies). This segment is much more active in the field of lending in this region than in other countries; the ratio of the loans of these entities to the loans of the banking sector is several times as high as the same ratio in Austria, Germany or France.

Overall, we have seen that, although the ECE5 countries do not have a strong shadow banking system, which is significant in terms of volume, as defined by the Financial Stability Board and the European Systemic Risk Board, they do have an institutional segment whose activities are potentially capable of contributing to the emergence of similar risks by carrying out activities similar to those of shadow banks. In view of this, the analysis of non-bank financial intermediaries in the region is of paramount importance. Looking at the near future path of financial structures' development, we can identify two, somewhat contradicting factors. On the one hand, the history of the one-and-half decade that we have analysed shows that the structural changes are slow, and the inertias are strong. However, the structures are not wholly inflexible. On the other hand, there are several initiatives on the EU level to develop capital markets. The most important of these are the Capital Markets Union and the central banks' bond purchasing programs that aim to give a serious impetus to the capital markets development all over the EU. Consequently, even in the short run, we can expect a slow increase in market-based finance, including market-based banking, as well as the limited emergence of securitisation.

While preparing this article, we encountered several methodological challenges and unresolved problems, which require further research. The differences in definitions and the problems related to taking stock of the shadow banking system constitute a major obstacle to providing a reliable picture of this segment of the financial intermediary system and, thus, to analysing the inherent risks more deeply. Although there is consensus among international institutions in terms of the definitions at a theoretical level, when it comes to specific analyses, there are differences between the definitions of the Financial Stability Board and the European Systemic Risk Board, since at that point it is the practical availability of data that plays a key role instead of the theoretical content. A reliable analysis of the stability of the financial system would require a consensus-based framework covering the relevant concepts and the rules of taking stock of the system, as well as a related database per country, of the same solidity everywhere. Future research will have to find out how shadow banking entities/activities should be defined to ensure that the definition effectively cover non-classic commercial banking risks related to the lending process. Further open questions are whether an institutional or an activity-based approach would be more effective as well as the concrete method of measuring the shadow banking system in order to ensure that the entities/activities concerned cannot avoid being included in the relevant inventories of institutions responsible for financial stability.

References

Adrian, T. and Shin, H. S. (2010). *The Changing Nature of Financial Intermediation and the Financial Crisis of 2007–09*. Federal Reserve Bank of New York Staff Report, No. 439 Revised version.

AFME (Association for Financial Markets in Europe). *Data Snapshot Q3 2019*. Retrieved May 02, 2020, from https://www.afme.eu/Portals/0/DispatchFeaturedImages/AFME%20-Securitisation%20Data%20Snapshot%202019%20Q3.pdf.

Allen, F. and Gale, D. (1995). A welfare comparisons of intermediaries and financial markets in Germany and US. *European Economic Review*, 39(2), 179–209.

Allen, F. and Gale, D. (1997). Financial Markets, Intermediaries, and Intertemporal Smoothing. *Journal of Political Economy*, 15(3), 523–546.

Allen, F. and Gale, D. (2000). *Comparing Financial Systems*. Cambridge, Massachusetts, London, England: The MIT Press.

Allen, F. and Santomero, A. (2001). What do financial intermediaries do? *Journal of Banking & Finance*, 25(2), 271–294.

Banka Slovenije (2017). *Financial Stability Review*, June. Retrieved May 02, 2020, from https://bankaslovenije.blob.core.windows.net/publication-files/gdgeqgbyOjdQia_fsr_june_2017.pdf.

Beck, T., Demirguc-Kunt, A. and Levine, R. (1999). A New Database on Financial Development and Structure. *World Bank Working Papers*, No. 2146.

Bethlendi, A. (2015). Bad product development results in systemic market failure – Foreign currency mortgage loans to Hungarian households. *Financial and Economic Review*, 14(1), 5–30.

Boot, A. W. and Thakor, A. V. (1997). Financial System Architecture. *The Review of Financial Studies*, 10(3), 693–733.

Bord, V. and Santos, J. (2012). The Rise of the Originate-to-Distribute Model and the Role of Banks in Financial Intermediation. *Economic Policy Review*, 18(2), 21–34.

Demirguc-Kunt, A. and Levine, R. (1999). Bank-Based and Market-Based Financial Systems: Cross-Country Comparisons. *World Bank Policy Research Working Paper*, No. 2143.

European Commission (2017). Covered Bonds in the European Union: Harmonization of legal frameworks and market behaviours. Final report. Retrieved May 02, 2020, from http://publications.europa.eu/resource/cellar/8df6d9cd-8c65-11e7-b5c6-01aa75ed71a1.0001.01/DOC_1.

ESRB (European Systemic Risk Board) (2017). *Financial stability implications of IFRS*. 9 July.

ESRB (European Systemic Risk Board) (2019). *EU Non-bank Financial Intermediation Risk Monitor 2019*. No. 4., July.

Fabozzi, F. and Kothari, V. (2008). *Introduction to securitization*. Hoboken, New Yersey: John Wiley and Sons.

FSB (Financial Stability Board) (2011). *Shadow Banking: Scoping the Issues. A Background Note of the Financial Stability Board*. 12 April. Retrieved May 02, 2020, from https://www.fsb.org/2011/04/shadow-banking-scoping-the-issues/.

FSB (Financial Stability Board) (2013). *Strengthening Oversight and Regulation of Shadow Banking. Policy Framework for Strengthening Oversight and Regulation of Shadow Banking Entities*. 29 August. Retrieved May 02, 2020, from https://www.fsb.org/2013/08/r_130829c/.

FSB (Financial Stability Board) (2019). *Global Monitoring Report on Non-Bank Financial Intermediation 2018*. 4 February. Retrieved May 02, 2020, from https://www.fsb.org/2019/02/global-monitoring-report-on-non-bank-financial-intermediation-2018/.

FSA (2009). *The Turner Review, A regulatory response to the global financial crisis*. March. Retrieved May 02, 2020, from http://www.actuaries.org/CTTEES_TFRISKCRISIS/Documents/turner_review.pdf.

Hardie, I., Howarth, D., Maxfield, S. and Verdun, A. (2013). Banks and the False Dichotomy in the Comparative Political Economy of Finance. *World Politics*, 65(4), 691–728.

Impavido, G., Rudolph, H. and Ruggerone, L. (2013). *Bank Funding in Central, Eastern and South Eastern Europe post Lehman: a "New Normal"?* IMF Working Paper WP/13/148.

Király, J. and Simonovits, A. (2017). Mortgages denominated in domestic and foreign currencies: simple models. *Emerging Markets Finance and Trade*, 53(7), 1641–1653.

Kornai, J. (1994). Transformational Recession: The Main Causes. *Journal of Comparative Economics*, 19(1), 39–63.

de Larosiere Group. (2009). *The high-level group on financial supervision in the EU Report*. Brussels, 25 February.

Levine, R., Loayza, N. and Beck, T. (2000). Financial intermediation and growth: Causality and causes. *Journal of Monetary Economics*, 46(1), 31–77.

DOI: 10.2478/danb-2020-0017

Levine, R. (2002). Bank-based or market-based financial systems: Which is better? *NBER Working Paper*, No. 9138.
Mérő, K. (2004). Financial depth and economic growth – the case of Hungary, the Czech Republic and Poland. *Acta Oeconomica*, 54(3), 297–321.
Narodowy Bank Polski. (2016). *Financial System in Poland 2016*. Retrieved May 02, 2020, from https://www.nbp.pl/en/systemfinansowy/fsd_2016.pdf.
Pozsar, Z., Adrian, T., Ashcraft, A. and Boesky, H. (2012). *Shadow Banking*. Federal Reserve Bank of New York, Staff Report, No. 458. Revised version.
Purnanandam, A. (2011). Originate-to-distribute Model and the Subprime Mortgage Crisis. *The Review of Financial Studies*, 24(6), 1881–1995.
Schmidt, R. H., Hacketlal, A. and Tyrell, M. (1999). Disintermediation and the role of banks in Europe: An international comparision. *Journal of Financial Intermediation*, 8(2), 36–67.
Scholtens, B. (2000). Financial regulation and financial system architecture in Central Europe. *Journal of Banking and Finance*, 24, 525–553.
Thakor, A. V. (1996). The design of financial system: An overview. *Journal of Banking & Finance*, 20(5), 917–948.