
Recovery from crises and lending*

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During the recovery from the recent crisis, the general role of lending in economic growth, and particularly in the recovery from financial crises, has become an important issue. In this paper, we review the major differences between creditless recovery episodes and recoveries accompanied by growth of credit. Based on the literature, we find that creditless recoveries are relatively frequent phenomena: a quarter or one-fifth of all real economy recoveries take place without the growth of credit. The rate of economic growth is permanently lower during creditless recoveries than in episodes accompanied by credit expansion. Thus, lending activity of the financial intermediary system is usually necessary for fast recovery. When analysing the recovery from the current crisis, we find that a number of factors exist that predispose to creditless recovery. The current growth, the rate of which is lower than before the crisis, is taking place – both in the Member States of the European Union and in Hungary – with a decrease or stagnation of the credit stock. In the medium and long term, it is essential for the sustained growth of the real economy that loans granted by the financial intermediary system once again start to increase.

JEL-codes: E32, G01, O40

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1 Introduction

During the six years that have elapsed since the global financial crisis of 2007–2008, recovery has been slower than in previous crisis episodes and the economic growth rate is generally lagging behind the values experienced before the crisis. In order to understand and analyse the recovery period following the crisis, it is important to perceive the differences compared to former financial and real economy crisis episodes. The ongoing crisis resulted in a larger downturn than other episodes previously examined by the literature, it appeared in a synchronised manner, and it is followed by a slower recovery. The slower recovery may also be attributable to the fact that lending does not support economic growth in several countries, thus the recovery is creditless. According

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to international experiences, during creditless recoveries the rate of GDP growth is lower than episodes with credit (i.e. a creditless recovery is characterised by a loss of growth).

The recovery of the domestic economy from the crisis is accompanied with a low level of lending, and it may take a longer time to reach the turning point of lending, than in to former crisis episodes. In the pre-crisis years, the private sector significantly increased its indebtedness. The revaluation of the foreign currency loans, the increase of unemployment, the decline of external demand, the government's fiscal consolidation need and the deterioration of the external financing conditions during the crisis resulted in a material decline of both credit demand and credit supply. Deleveraging of the private sector is still in progress, with both households and corporations being net loan repayers. For this reason, it is important to examine the relationship between lending and growth during the recovery from the crisis, as well as the features characterising creditless recovery episodes. This paper seeks to identify factors that may support growth and the way in which economic growth may develop when the recovery continues with a low level of lending.

This article reviews the relationship between lending and economic growth, and also the literature on creditless recoveries. It provides a summary of the differences between creditless recoveries and recoveries that were accompanied by credit expansion. Based on the literature, it also describes factors that may be responsible for the fact that lending does not start to increase during the recovery as well as factors explaining the growth of GDP despite the decrease of the credit stock. An examination of the European Union Member States' recovery from the current crisis is followed by an analysis of the factors that may have led to a creditless recovery in Hungary. Finally, it presents the characteristics of the current economic growth.

2 Summary of literature

2.1 Relationship between lending and economic growth

Lending causes economic growth; the main channel of this is the reduction of information and transaction costs, and the linking of the savers and borrowers. There is a rich body of literature on the theoretical¹ and empirical relationship between financial development and economic growth. The presence of this relationship, as well as its direction (if it is financial development that causes economic growth or the relationship goes the other way), has long been a debated topic among economists. Empirical analyses have been able to prove a causal relationship from lending to economic growth (for example, see Rajan and Zingales, 1998; Beck et al., 2000). Levine (2005) differentiates five functions

1 For a detailed review of the theoretical literature, see Levine (2005).

of the financial system: 1) it produces information *ex ante* about possible investments and allocates capital, 2) it monitors investments and exerts corporate governance after providing finance, 3) it facilitates diversification and management of risk, 4) it mobilises savings, and 5) it facilitates the exchange of goods and services. By fulfilling these functions, the financial sector increases both the level and the efficiency of the investments, and thereby also economic growth (Cecchetti and Kharroubi, 2012).

Apart from the improvement of capital allocation, research has identified multiple channels between credit and economic growth (Beck, 2012):

- **Entrepreneurship increases as external financing becomes more easily available, more new companies are established and companies are more innovative.** For example, Klapper et al. (2006) find that the regulation that facilitates the development of financial systems also facilitates the establishment of new companies in the industries that depend on external financing.
- **Financial intermediation also contributes to helping companies reach a larger size, thereby capitalising on the economies of scale.** Beck et al. (2006) find that the existence of more advanced financial systems is the precondition of the appearance of large enterprises. Larger enterprise size may be the source of efficiency advantages, which may contribute to economic growth.
- **Lending also influences growth through exports.** Having examined the crisis of 2008–2009, Chor and Manova (2012) found that the credit channel had a significant role in the decrease in the volume of foreign trade. The external financing requirement of exporting sectors is higher than that of industries producing for the domestic market; pre-financing needs, as well as the risk thereof, may also be higher, and therefore the decline and the rising costs of financing restrain the volume of exports. Based on the findings of Amiti and Weinstein (2011), the impact of financing shocks on the volume of foreign trade may be substantial: as much as a fifth of the decline may be attributable to this.
- **A higher level of financial development contributes to the efficiency of economic policy** (IMF, 2012). The credit channel is one of the most important elements of the transmission of monetary policy, the efficient operation of which is conditional upon the development of the financial system. Thus, more developed financial systems enable monetary policy to manage macroeconomic shocks efficiently. In addition to this, financial development is correlated with the exchange-rate regime and the cyclical character of fiscal policy, both of which also influence economic growth.

The functioning of financial systems also impacts the volatility of economic growth. Financial systems facilitate intertemporal optimisation of consumption and investment, thereby decreasing the volatility of business cycles (Beck, 2012). For example, households may react to shocks that are seen as temporary by reducing their consumption to a lesser extent than justified by changes in income, and they may finance this by loans or already

accumulated domestic savings. By increasing borrowing and reducing savings, households are able to smooth their consumption. Similarly, corporations may soften the impacts of the short-term fluctuations of their incomes and profits through external financing, which may result in less volatile output and investment. At the same time, financial systems may also strengthen the swings of business cycles (Bethlendi and Bodnár, 2005). Based on empirical experience, in the rising phase of a business cycle, the increase of GDP affects lending: with decreasing unemployment and increasing corporate income and profit, both financial intermediaries and borrowers perceive the risks to be lower. Therefore, lending conditions may be eased, accompanied by a decrease of interest rates, resulting in higher lending. On the other hand, in the downward phase of a business cycle, due to rapidly deteriorating credit quality, both credit demand and credit supply may decrease to a larger extent than justified by the situation of the real economy. Financial intermediaries and actors in the private sector become overly cautious, which further deepens the downturn.

The link between credit developments and economic growth is not linear. In the long run, financial development increases potential growth; however, according to the latest research, this holds true only up to a certain level. When financial systems grow over a certain point, there are no more positive impacts, and the link to growth may even turn negative (for discussion of the inverted U-shape link, see Cecchetti and Kharroubi, 2012; Arcand et al., 2012). This may be attributable to several reasons:

1. The financial sector draws away resources from the rest of the economy. If it draws away too much resource, the efficiency of production may decline.
2. In economies that are close to the full utilisation of their efficiency limits, lending in larger volumes no longer generates any benefit. Credit growth may have positive growth impact in those economies that are farther from these limits.
3. In the larger financial systems, the weight of consumer credits – which do not support growth – is higher. Economic growth may be more tightly related to the investment loans.
4. A larger financial system is more likely to generate financial crises, after which economic growth becomes more moderate.

According to the literature, financial development may have a positive impact on the economy only up to a certain level. The relationship also depends on the level of development of the countries: Arcand et al. (2012) found that financial development supports economic growth particularly in low- and middle-income countries. Law and Singh (2014) evaluated several indicators of financial development and found that growth is impacted most of all by loans taken by the private sector, until their level reaches 90–100 per cent of GDP. At the same time, the strongest negative impact was experienced when the ratio of resident bank loans exceeded the threshold value (irrespective of the

fact whether or not those were taken by the private sector). However, the fact that the existence of a threshold value – under which a positive relationship was observed between the size of the financial sector or the credit stock and GDP-growth – was justified by several empirical works does not mean that the threshold value is to be reached as quickly as possible. An overly quick increase in indebtedness alone may carry risks (e.g. due to the deteriorating banking portfolio (Kiss, 2006), even if the credit portfolio to GDP ratio has not yet reached the threshold value.

After crises, the link between lending and recovery may weaken. As mentioned earlier, constraints may appear both in credit supply and credit demand after crises, which may slow down or postpone the expansion of credit. On the other hand, if the crisis was preceded by fast credit growth, the credit stock must decrease due to the debtors' need to deleverage. Due to these factors, the credit portfolio may permanently decrease or its increase may lag behind the expansion of the real economy. However, newly disbursed loans may even then still have a tighter relationship to GDP growth (Biggs et al., 2009).

2.2 Creditless recovery

Creditless recovery occurs when after a recession the real economy grows without a pick-up in credit. Lending is generally understood in terms of bank credit to the private sector. Recovery refers to the period when, after a downturn, GDP gets over its trough and approaches the pre-crisis level. In creditless recovery periods, GDP increases while real credit stock decreases or does not expand.

2.2.1 Frequency of creditless recovery

According to the empirical literature, about a quarter to a fifth of all recoveries take place without a rebound in credit (the ratio varies with the range of countries and the definition of creditless recovery; Table 1 presents the definitions appearing in the literature). It was Calvo et al. (2006) who first documented the phenomenon. Their study summarises the experiences of financially integrated, emerging countries that suffered a huge collapse in output (GDP fell by more than 4.4 per cent) upon the systemic sudden stop of external financing, and during the recovery they could achieve fast growth without the increase of credit, capital inflows or investments. Such episodes are also referred to as “Phoenix miracles”. Subsequent research has also examined the downturns and recoveries of business cycles, not only those that were preceded by a sudden stop of external funding. These researches found only a few episodes where after the downturn an economy could achieve extremely fast growth without recovery of lending (some of these episodes are presented in Subsection 2.2.4).

Table 1
Frequency of creditless recoveries under different definitions

Study	Definition of creditless recovery	Frequency
Abiad et al., 2011	The annual growth rate of real bank credit to the private sector is zero or negative in the first 3 years of the recovery	20%
Bijsterbosch and Dahlhaus, 2011	The average annual growth of the real credit is negative for 2 years after the trough of the crisis	22%
	The average annual growth of the real credit is negative for 3 years after the trough of the crisis	23%
	At the end of the 2nd year following the trough of the crisis, the level of the real credit is lower than at the trough	24%
	At the end of the 3rd year following the trough of the crisis, the level of the real credit portfolio is lower than at the trough	26%
Sugawara and Zaldueño, 2013	The average annual growth of the real bank credit is negative or zero for 8 quarters following the trough of the crisis	over 25%
UniCredit, 2012	The level of the real credit in the 3rd year following the trough of the crisis is lower than at the trough of the crisis	19%

Existence of creditless recoveries is denied by Biggs et al. (2009). Since GDP is a flow-type indicator, they compare it to the change of credit stock instead of its level. According to their results, following the crises studied by Calvo et al. (2006), the flow of credit – defined as a change of credit stock – started to increase simultaneously with GDP (Chart 1). Coricelli and Roland (2011) compared recoveries² based on the definitions of Calvo et al. (2006) and Biggs et al. (2009). They found that when credit stock fails to recover, economic growth is not hampered, while a decline in the flow of credit slows down economic recovery.

2.2.2 Determinants of the probability of creditless recoveries

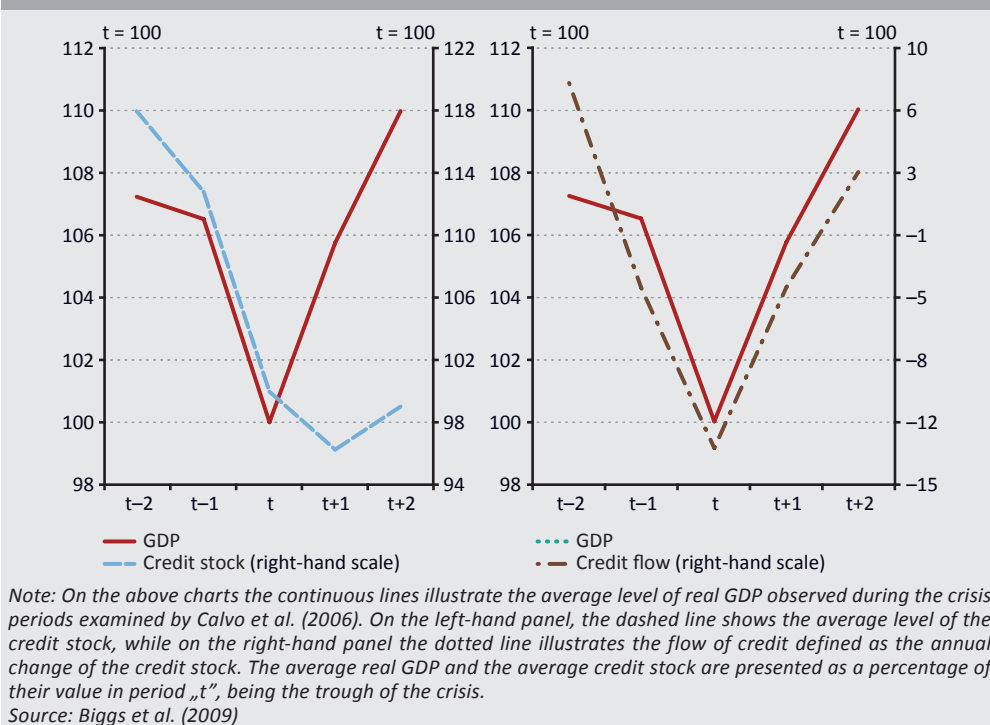
The international literature classifies as determinants of creditless recovery: 1) financial crises, 2) credit or real estate market imbalances preceding the recession, 3) large-scale decline in GDP during the crisis period, and 4) the current account deficit. In addition to this, the development of the economies may also influence the probability of creditless recovery.

Creditless recoveries can often be observed after recessions accompanied by financial crises (e.g. by banking or currency crises).³ Bijsterbosch and Dahlhaus (2011) show that in case of *banking crises*, the frequency of creditless recovery doubles: in their total

2 Coricelli and Roland (2011) identify economic recovery on the basis of the added value of certain manufacturing sub-sectors.

3 There are different types of financial crisis, including banking crisis, currency crisis, sovereign debt crisis or crisis accompanied by extremely high level of inflation. See Kiss-Szilágyi (2014).

Chart 1
Credit stock and flow of credit around crisis periods in emerging countries



sample, every fourth – and in their sub-sample restricted to banking crises,⁴ every second – recovery occurred without a rebound in credit. Similarly to this, following the crisis periods of OECD countries between 1960 and 2010, the growth rate of domestic credit stock decreased more markedly on average after banking crises than after other recessions (ECB, 2012). According to averages calculated from data of these countries, following recessions linked to banking crises the growth rate of credit stock was negative for two years (ECB, 2012), which may suggest the presence of creditless recovery. The link between banking crises and creditless recoveries may be attributable to the fact that banking crises increase the ratio of non-performing loans, weaken banks' capital position and decrease their profitability, thus hampering lending through a decline of the credit supply. Similarly to banking crises, *currency crises* also increase the probability of creditless recoveries. Based on descriptive statistical analysis of Bijsterbosch and Dahlhaus (2011), after currency crises every second – and according to Abiad et al. (2011), every third – recovery takes place without a pick-up in credit.⁵ A currency crisis may increase the probability of creditless

4 See the definition of bank crisis in Laeven and Valencia (2008: 5).

5 The relative frequency may differ in the two studies, as the sample examined by Abiad et al. (2011) contains not only the data of emerging economies, but also the advanced economies.

recoveries, because it can result in a decline of foreign funds, may have an unfavourable impact on the liquidity and capital position of the domestic banking system, and can also increase the credit risk of borrowers with outstanding foreign currency loans (Hudák, 2012).

Credit booms preceding the recession also double the relative frequency of creditless recoveries. According to the results of Abiad et al. (2011), the impact of a credit boom is greater if it coincides with a banking crisis: in this case, creditless recovery can be observed in about 80 per cent of episodes. Based on the estimation results of Bijsterbosch and Dahlhaus (2011), the credit-boom variable identified by the credit-to-GDP ratio is a significant explanatory variable of creditless recoveries. This may be attributable to the fact that after periods of build-up of excessive credit stock, there is a greater need for debt reduction, and the deleveraging might as well support economic growth. Such episodes are usually preceded by the fast build-up of a portfolio of bad loans, which no longer contributes to productive investments, and thus their reduction may have a positive impact on economic growth. The burst of a real estate market bubble may also increase the risk that the recovery takes place without the pick-up of credit. Such events, resulting in the decline of real estate prices, may force borrowers to deleverage. Having analysed the financial cycles of advanced economies, Claessens et al. (2011) found that when the downturn phase of the credit cycle took place simultaneously with a fall in real estate prices, the decrease of credit stock was larger and its recovery lasted longer.

Based on the literature,⁶ **a large-scale decline in GDP during recession may also increase the probability of creditless recoveries.** Abiad et al. (2011) identify the extent of a downturn as the percentage change in GDP from peak to trough, while Bijsterbosch and Dahlhaus (2011) identify real GDP growth rate as a significant explanatory variable of the phenomenon. The larger the downturn, the easier it is for the economy to expand even without any increase in credit stock, as firms can increase their production by utilising unused capacities without borrowing or investment. This is referred to as the rebound effect. At the same time, due to a sharp economic downturn, lending constraints may also become stronger at the beginning of the recovery period: the supply of bank credit may decrease due to their weaker lending capacity (e.g. deteriorating credit portfolio, more unfavourable capital position due to the recession), and their willingness to take risks may also decline.

A current account deficit preceding the crisis increases the probability of economic recovery without a rebound in credit. A permanent current account deficit may imply an increased dependency on foreign capital inflows and the presence of a credit boom (Bijsterbosch and Dahlhaus, 2011). A sudden stop of foreign funding following economic downturns can hamper lending. Economic growth can recover in spite of decreasing credit stock (for example, through export as a result of exchange-rate depreciation). During the recovery, this results in an improvement of the current account balance.

6 See Bijsterbosch and Dahlhaus (2011); Sugawara and Zalduendo (2013).

The determinant factors presented above may strengthen each other's impact and not fully independently of each other they increase the probability of creditless recovery. Having reviewed the results of the literature, Hudák (2012) submits that banking crises often occur after credit booms; in addition, fast credit growth and financial crisis episodes can also increase the degree of decline of GDP experienced during the recession.

Finally, according to the literature, the development of economies also influences the probability of creditless recoveries. The frequency of creditless recoveries is lower in developed countries: in the sample examined by Abiad et al. (2011), in developed countries only every tenth recovery took place without the expansion of credit stock, while according to the results of Darvas (2013) in high-income countries, every eighth recovery occurred without a pick-up in credit.

2.2.3 Development of the key macroeconomic indicators during creditless recoveries

The growth rate of output in creditless episodes is usually much lower than in the case of credit growth (Table 2). Abiad et al. (2011) find that average GDP growth in creditless recoveries is almost 2 percentage points lower than in recoveries with credit. A difference of over 5 percentage points in the year of the downturn can also significantly contribute to this. The extent of the difference may also depend on the development of the economies. Bijsterbosch and Dahlhaus (2011) found a difference of 8 percentage points between the growth rate of creditless recoveries and recoveries with credit in middle- and low-income countries. Based on the results of Darvas (2013), in lower-income countries economic growth is 1.6–1.7 percentage points lower in creditless recoveries compared to recoveries with credit, while the difference in growth rates in higher-income countries is not more than 0.9 percentage points. According to the findings of Cerra and Saxena (2008), the growth trend lags behind that observed before the crisis by 4 per cent after currency crises, by 8 per cent after banking crises and by 10 per cent after joint currency and banking crises. However, according to the findings of Takáts and Upper (2013), during recoveries from financial crises preceded by fast credit growth there is no significant difference in economic growth between recoveries with credit and without credit, as debt reduction in such cases may have a positive impact on growth and thus offset the impact of slow credit growth. According to Bech et al. (2012), deleveraging following financial crises increased GDP growth during recovery, rather than decreasing it (a 10 per cent decrease in the credit-to-GDP ratio increases the average of economic growth by 0.6 percentage points during recovery).

During creditless recoveries, a lower GDP growth rate may remain in the long run. Abiad et al. (2011) found that output returns to its pre-crisis trend in less than half of the creditless recovery episodes within three years after the downturn. Sugawara and Zaldueño (2013) also identified a permanent lag in growth in the case of creditless recoveries, both for developed and developing countries.

Investment growth rate is lower during creditless recoveries. According to Sugawara and Zaldueño (2013), during creditless recoveries the growth rate of investments is lower than in cases of recoveries with credit by about 10 per cent in the case of developed countries and by 27 per cent in the case of developing countries. In addition to this, the total factor productivity may also be lower, as more productive firms with high growth potential face difficulties when trying to obtain financing (Abiad et al., 2011).

Table 2
Average GDP growth rate in different recoveries

Study	Examined category of countries	Recovery with credit expansion	Creditless recovery	Difference in percentages
Abiad et al., 2011	Developing and developed countries	6,3 %	4,5 %	–29%
Bijsterbosch and Dahlhaus, 2011	Middle- and low-income countries	14,2 %	6,4 %	–55%
Darvas, 2013	Lower-income countries	6 %	4,5 %	–25%
Darvas, 2013	Higher-income countries	4,1 %	3,2 %	–22%

Creditless recoveries were usually also accompanied by considerable current account adjustment, as declines in external financing and weak internal lending activity resulted in an inevitable correction of the financing capacity of the various sectors in a previously over-indebted country.

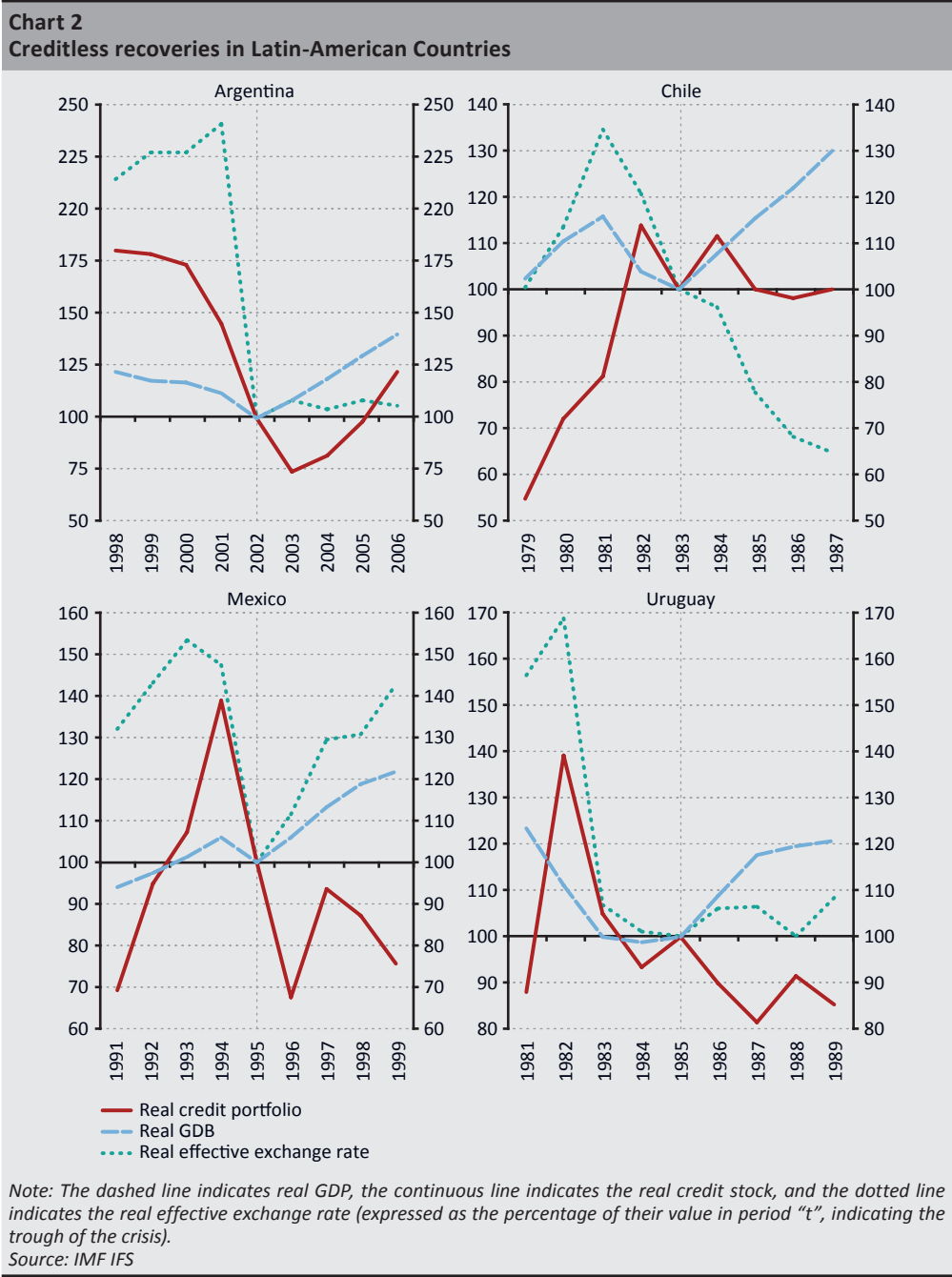
2.2.4 Individual episodes – high economic growth without lending

Creditless recoveries are rarely accompanied by fast economic growth. The literature uses the term “Phoenix miracle” to refer to episodes during which an extremely fast rebound occurs in economic performance without substantial credit expansion following the sudden stop of global capital flows.

In the last decades, truly unusual economic recoveries were observed in the case of four South American countries, which may be deemed as special cases. The said phenomena were experienced in the mid-1980s in Chile and Uruguay, at the end of the 1990s in Mexico, and in the first half of the 2000s in Argentina. In these Latin-American countries, the economies were hit by three negative shocks. Foreign interest rates increased quickly, which increased the interest expenses of the general government, having been indebted in foreign currency. In addition to this, significant deterioration in the terms of trade, as well as capital outflows, were experienced, which substantially contributed to an unsustainable increase in government debt.

In these countries, substantial downturns were followed by very strong economic growth without material cumulative credit growth. The weakening of the exchange rate, which

could improve the profitability of the exporting companies, was characteristic of the creditless recovery episodes in these low-income countries as well. Furthermore, creditless recoveries in these countries were also accompanied by considerable current account



adjustment, as the decline of external financing and poor internal lending activity resulted in an inevitable adjustment in the previously overindebted countries.

Presumably the phenomena referred to as a Phoenix miracle are primarily attributable to the rebound effect. One sees examples of abrupt and swift recoveries following a very deep crisis in such a clearly identifiable form only in these few countries. The fact that the rebound effect – usually following the crisis and explainable by the base effects – could play a significant role both in the rate and pace of the recovery, however, makes these episodes less miraculous.

2.2.5 What could be the cause of creditless recovery?

It is possible to examine the reasons behind creditless recoveries in terms of two aspects. One aspect is the cause for the credit portfolio not picking up during the recovery. The other one includes the factors that, in the absence of lending, still contribute to the growth of the economy, even if this represents a slower growth rate than in the case of credit expansion. The two aspects cannot be fully separated from each other, but still they are treated separately, as one contains the financing and the other the real economic explanations.

2.2.5.1 Why does credit not grow during the recovery?

During recoveries, the credit portfolio does not increase when the downturn was preceded by a fast build-up of the credit portfolio. The fast growth of credit portfolios is often accompanied by a quick increase of asset (e.g. real estate, shares) values (asset price bubble). During the crisis, the value of these assets decreases, while the debt value remains constant or increases. Due to the depreciation of assets, the economic agents reduce their outstanding debt. (The process is described in detail, broken down into sectors, by Kiss and Szilágyi (2014).) The reduction of outstanding debt (deleveraging) may explain why lending does not start to grow. However, creditless recovery may also occur in the case of downturns not attributable to financial crises. The magnitude of the decline of GDP also appears in the literature as one explanation for this: the higher the rate of the downturn, the greater the probability of a creditless recovery. Downturns of a higher degree significantly reduce both credit demand and credit supply. The credit quality and the collateral value considerably deteriorate, and financial intermediaries' willingness to take risk declines. In addition to this, write-downs also reduce the credit stock.

Lending expands less slowly after banking crises. This is also supported by the fact that – according to Gambacorta et al. (2014) – in the economies dominated by bank financing the soundness of the banks (e.g. credit portfolio quality or capital stock) influences the

response to crises. Financially sound banks are able to soften the impacts of shocks and provide support to the real economic agents to recover from the crisis (to a greater extent than the capital markets); however, if during the crisis the banks' shock-absorption capacity is compromised, economies depending on the banks suffer higher output losses and the banks themselves also deepen the crisis.

The low level of lending may be attributable to credit demand or credit supply reasons.

Following crisis episodes, the decrease in corporate investments may result in poor corporate credit demand, which may be attributable to a lower demand for products and services or to the need to improve liquidity situations (Calvo et al., 2006). The moderate credit demand of households may be attributable to lower income expectations and the strengthening of precautionary behaviour due to an unfavourable labour market environment, or deleveraging. The strengthening of credit supply constraints may be linked to lending capacity or the lending willingness of the financial intermediaries. Following the crisis, the lending capacity may become unfavourable due to the banks' deteriorating credit portfolio, and also due to the banks' weaker liquidity or capital position. The willingness to lend, which can be captured by the volume of credits an institution wishes to place, may decrease due to the banks' low risk appetite.

Based on the empirical literature, it is not straightforward whether during the recovery following the latest global crisis it is the credit demand or the credit supply that is more responsible for the credit contraction. In its analysis in 2012, UniCredit examined whether the probability of creditless recovery is increased primarily by credit demand or credit supply constraints. The output gap and the investment demand measured at the trough of the crisis were identified as credit demand factors, while the bank crisis before the downturn and the access of the banking system to external financing were identified as proxies of credit supply, and they found that all factors are significantly responsible for the occurrence of creditless recoveries. When examining creditless recoveries, Abiad et al. (2011) attributed a larger role to the credit supply restraints: according to their findings, the added value of industries depending more strongly on external financing increases at a rate that is 1.5 percentage point lower during creditless recoveries than during other recoveries. In the case of industries that are less dependent on bank financing, the growth difference between the two types of recovery is merely 0.4 percentage points (Abiad et al., 2011).

2.2.5.2 What factors facilitate economic growth when credit stock is declining?

In the case of creditless recoveries, varying growth rates are observed. Certain economies are capable of relatively fast growth, even in the absence of credit expansion, while others (particularly the developing countries) may have to face a low GDP growth rate in the long run.

According to the literature that examines large international panels, the sources of growth in terms of the real economy may be as follows:

- Due to the rebound effect, the higher the rate of the downturn is, the easier the economy can grow: in such a case, there is more unutilised capacity and companies can thus expand production, even without investments.
- Depreciation of the real exchange rate may improve the profitability of the exporting companies, thereby providing funds for their growth.
- Companies producing for external markets may be less impacted by the decrease of domestic bank loans.
- Companies may look for alternative financing sources, thus replacing bank loans with commercial loans, bond or share issuance, direct capital investment, intercompany loans and so forth (Hudák, 2012).
- If growth commences in industries that are less dependent on external financing, the structure of the economic growth changes. However, if the industries that are less dependent on external financing have lower productivity, it may lead to suboptimal growth.

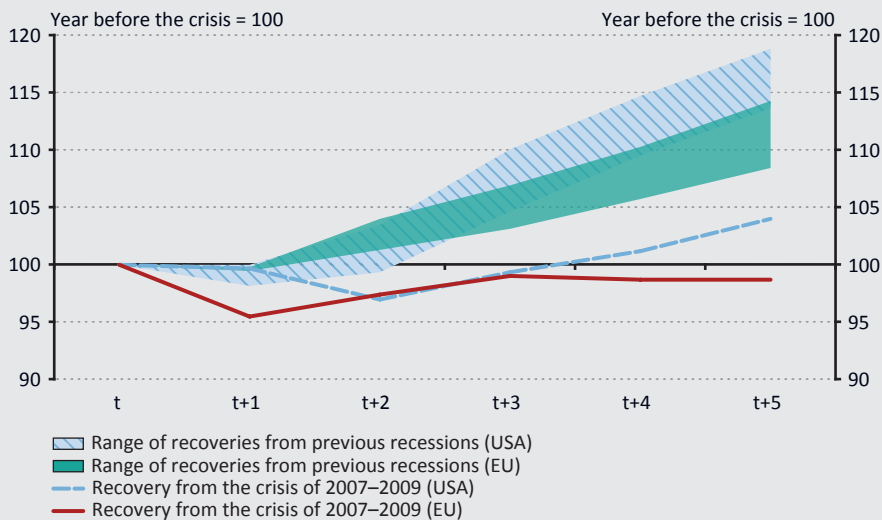
3 Why is this recovery different? recovery since the crisis of 2007– 2008

3.1 Crisis and recovery in the European Union and in the advanced economies

A synchronised crisis, hitting the advanced economies severely, commenced in 2007–2008; a slow recovery from this is still currently in progress. One of the deepest recessions of past decades was set off by the financial crisis of the advanced economies, and it has resulted in a temporary standstill of the entire global financial system and the collapse of world trade. The crisis pushed the majority of the advanced economies almost immediately into deep recession, and it also had a negative impact on the developing economies; however, its extent and nature materially varied among the individual regions and countries. Based on its financial and real economic aspects, in the global crisis of 2007, several preconditions of creditless recovery, described in detail earlier, could be regarded as

given before the crisis. The rate of recovery from the current crisis in the largest economies of the developed world, as well as in Hungary, is lagging behind those observed after former crisis episodes, and it is taking a longer time for the economies to recover. Based on a comparison of crises of the United States and the European Union, the current crisis is deeper and more prolonged than other downturns observed in previous decades (Chart 3). In developed economies, output generally exceeds pre-crisis levels; however, the growth rate significantly lags behind those, despite the extremely low level of interest rates (Teulings and Baldwin, 2014). In order to understand and analyse the crisis and the subsequent recovery period, it is important to investigate both the similarities and the differences compared to former financial and real economy crisis episodes.

Chart 3
Development of GDP during the current recovery period and former crisis episodes in the United States and in the European Union*



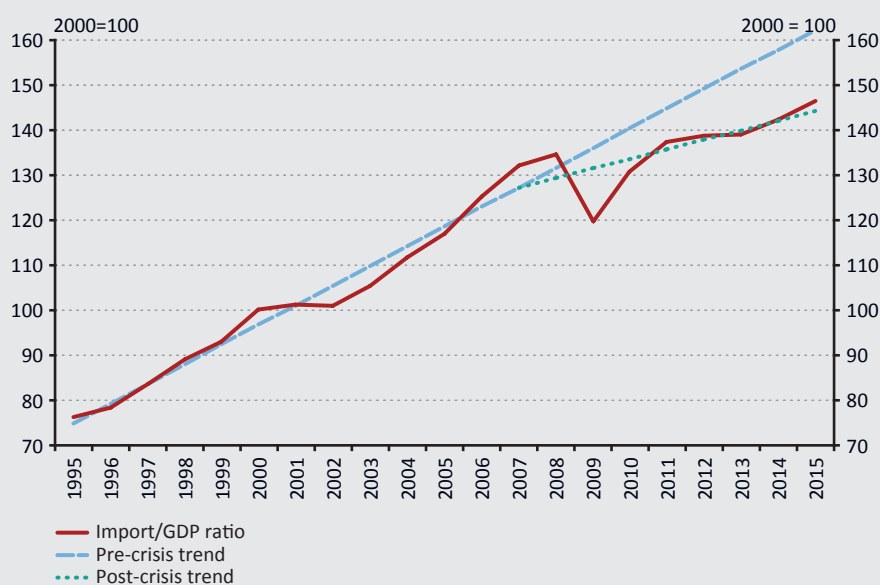
*Note: *The bands shown on the chart illustrate the range of the growth paths of the United States' and the European Union's recovery from the recession. The recovery paths show the change measured in comparison with the GDP level of the year preceding the current recession. The bands are the intervals created on the basis of the individual recovery paths.*

Source: WDI.

The present growth is hampered by the fact that the traditional recovery channels are not working. During the recovery period, there is less opportunity to rely on the tools that support economic performance, which were formerly used efficiently. The exchange-rate policy's room for manoeuvrability narrowed, and there is limited room for fast real depreciation, as the impacted European countries are either Member States of the euro area (and as such cannot pursue an independent exchange-rate policy) or they did not rely on this tool due to the considerable external exposure accumulated in the

pre-crisis period. Following the synchronised crisis, deleveraging started simultaneously in the indebted countries and, due to the budgetary adjustments, fiscal policy also acted towards the reduction of demand in several countries. Due to the global nature of the crisis, global demand declined and the growth rate of foreign trade may be permanently slower; therefore, exports cannot significantly support growth (Chart 4). Due to the endurance of the low-interest environment, the room for traditional monetary policy manoeuvrability also narrowed. For this reason, the central banks recently applied a number of unconventional methods, which mitigated the rate of output and credit contraction, but were unable to catalyse growth (Lehmann, 2012).

Chart 4
Change in the import-intensiveness of global growth

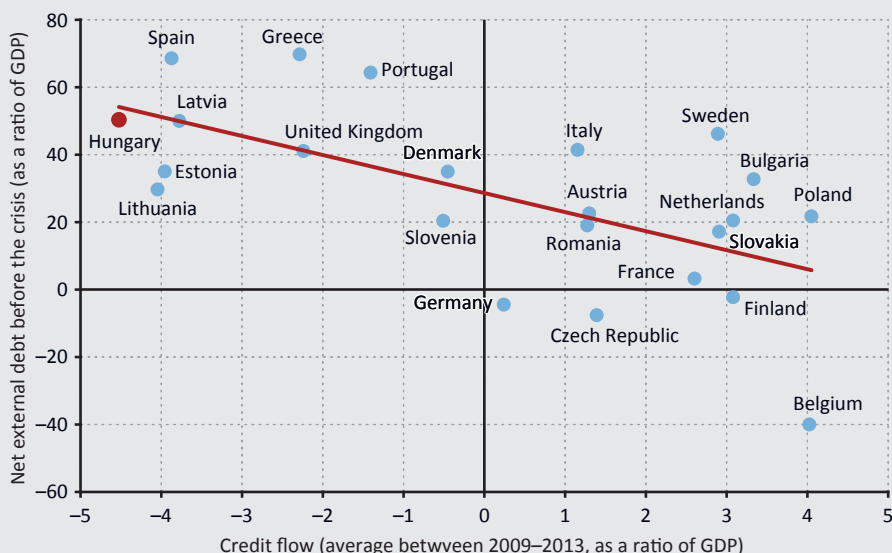


Source: WTO (2013).

The credit expansion is slower in economies that were significantly indebted before the crisis. Similarly to the previous financial crises, before the global economic crisis of 2008–2009 there was a credit and asset price bubble in several advanced economies. Within the European Union, indebtedness increased and external balance deteriorated, particularly in the peripheral countries (primarily Greece, Portugal and Spain). However, after the outbreak and the deepening of the crisis, the banks' balance sheets deteriorated, even in countries where over-indebtedness was not typical. However, the initial debt levels were determinant in the explanation of differences in the lending processes perceivable since the crisis. In the economies characterised by a high external debt ratio, the net new borrowing materially lags behind that of countries with a favourable external position (Chart 5).

Chart 5

Net credit disbursement (private sector), and pre-crisis external indebtedness



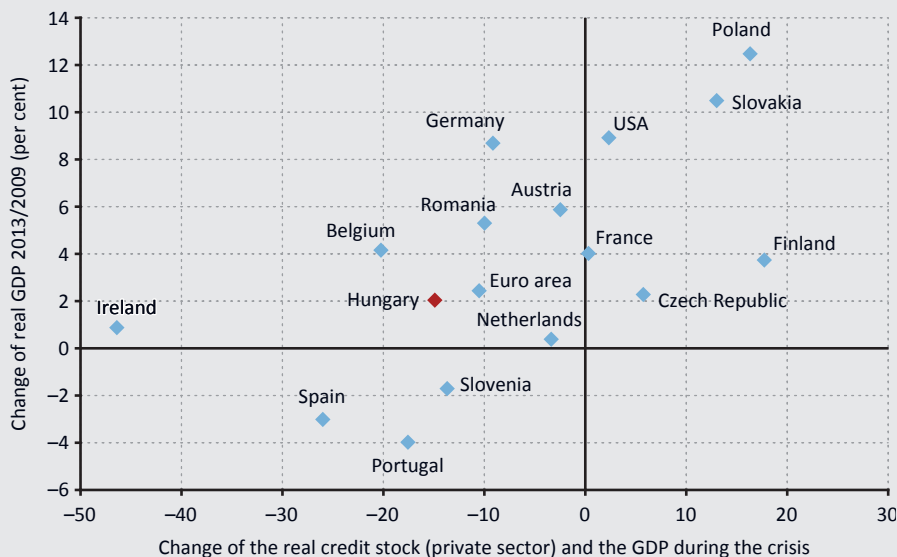
Source: Eurostat.

The growth of lending activity is hampered by real economy problems, the confidence crisis and the regulatory changes. During the crisis, the European banking systems suffered considerable losses and the banks' balance sheets were severely hit. In several countries, a bank crisis also occurred, and due to the banks' vulnerability that arose a confidence crisis also emerged. The banking and sovereign crises became phenomena that reinforced each other; this was generated by the banks' exposure to indebted states and the governments' bank rescue measures. Due to the need to remedy balance sheet problems, lending by the financial system is moderate and regulatory changes (the tasks related to the bank union) also point in this direction. The European Union is dominated by bank financing, and the opportunities for drawing in alternative funds are limited,⁷ thus the condition of the banking system determines the financing environment. In terms of the real economy, the high unemployment rate and lower demand in the corporate sector are hampering credit expansion. Based on the foregoing, the current recovery takes place in several countries under conditions that are more unfavourable than in previous crisis episodes. The low growth rate of the credit portfolio is accompanied by lower economic growth (Chart 6).

⁷ According to ECB (2012), companies in the euro area have increased loans taken from other companies and commercial loans since 2009. However, the volume of these is generally lower than that of loans taken from the banking system.

Chart 6

Change of the real credit stock (private sector) and GDP during the crisis



Source: Eurostat.

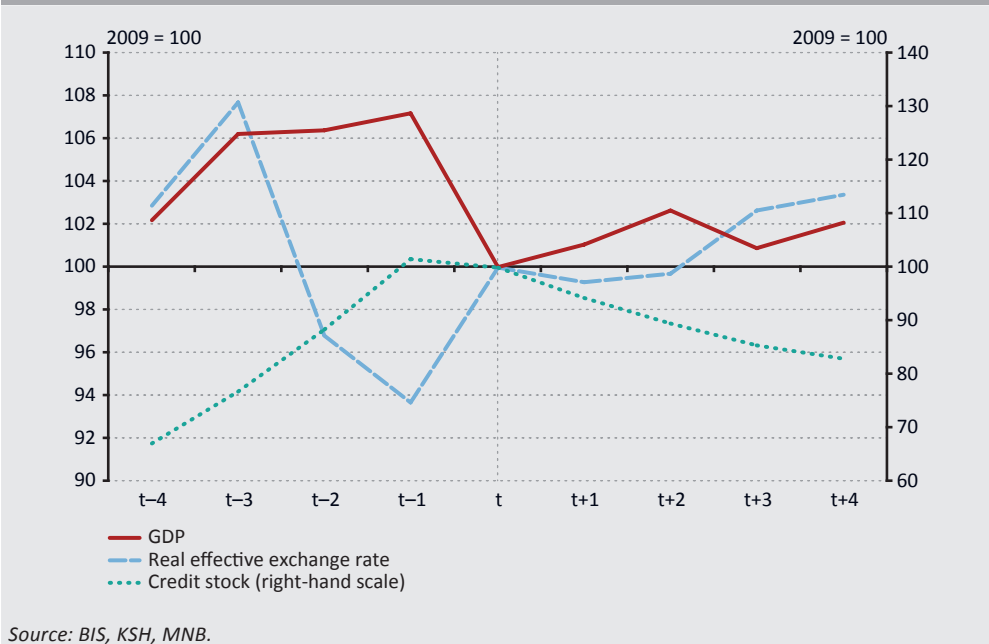
3.2 Recovery in Hungary

Several factors contributed to a creditless recovery in Hungary. Prior to the crisis, the actors of the domestic economy significantly increased their indebtedness. This led to the increase of external vulnerability, which was further raised by the high ratio of foreign currency debts. At the start of the crisis, the decline of external demand and the surfacing of the vulnerability resulted in a considerable decrease of GDP. Although there was no systemic bank crisis in Hungary, the quality of the banks' credit portfolio severely deteriorated which limited the credit supply. As a result of these factors, the expansion of the real economy started at the time of declining credit stock. The following paragraphs examine how the factors predisposing to creditless recovery emerged in Hungary and describe the characteristics of the recovery.

The pre-crisis period was characterised by excessive growth of lending. In the last couple of years before the crisis, the credit portfolio of the private sector increased at a fast pace. Both credit supply and credit demand were high. The spread of the foreign currency loans resulted in a significant easing of liquidity constraints, while the fast credit growth disguised the risks that were about to build up. In the beginning and middle of the 2000s, all three domestic sectors (i.e. households, corporations and the state) contributed to the increase

Chart 7

Development of GDP, the total credit stock and the real effective exchange rate compared to the trough of the crisis

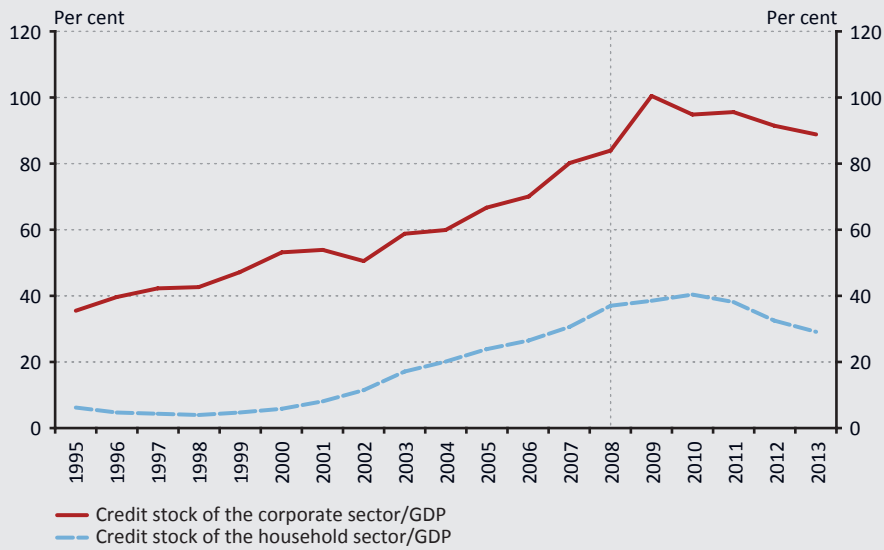


of outstanding debt. During the crisis, the indebtedness problem was further aggravated by indebtedness in foreign currency, as the depreciation of the exchange rate led to a revaluation of loans. In addition to this, the increase of the external risk premium further increased instalments through interest-rate burdens.

There was no real estate market bubble or bank crisis in Hungary; however, due to the material deterioration of credit quality the financial intermediary system suffered severe losses. In the pre-crisis years, there was no classic real estate price bubble; however, the material increase of real estate prices after the 2000s and the price decrease after the crisis were rather similar to the dynamics observed in the developed countries that went through a bank crisis (Chart 9). There was no systemic banking crisis accompanied by bankruptcies and a run on banks,⁸ either, but the quality of the credit portfolios deteriorated very quickly after the start of the crisis. As a result of the downturn of the real economy – accompanied by high unemployment, a weakening exchange rate and an increasing interest burden, as well as a rising corporate bankruptcy rate and worsening liquidity position – the ratio of non-performing loans was high after the crisis even in international comparison (Chart

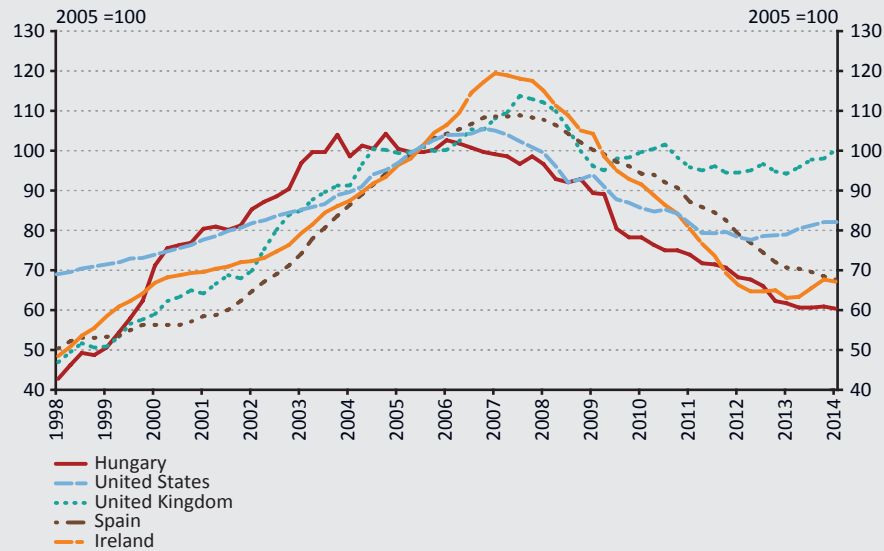
⁸ According to Laeven and Valencia (2008), a systemic banking crisis occurs when “a country’s corporate and financial sectors experience a large number of defaults and financial institutions and corporations face great difficulties repaying contracts on time.” (Laeven and Valencia, 2008: 5).

Chart 8
Credit stock of the corporate and household sectors in proportion to GDP



Source: MNB, financial accounts.

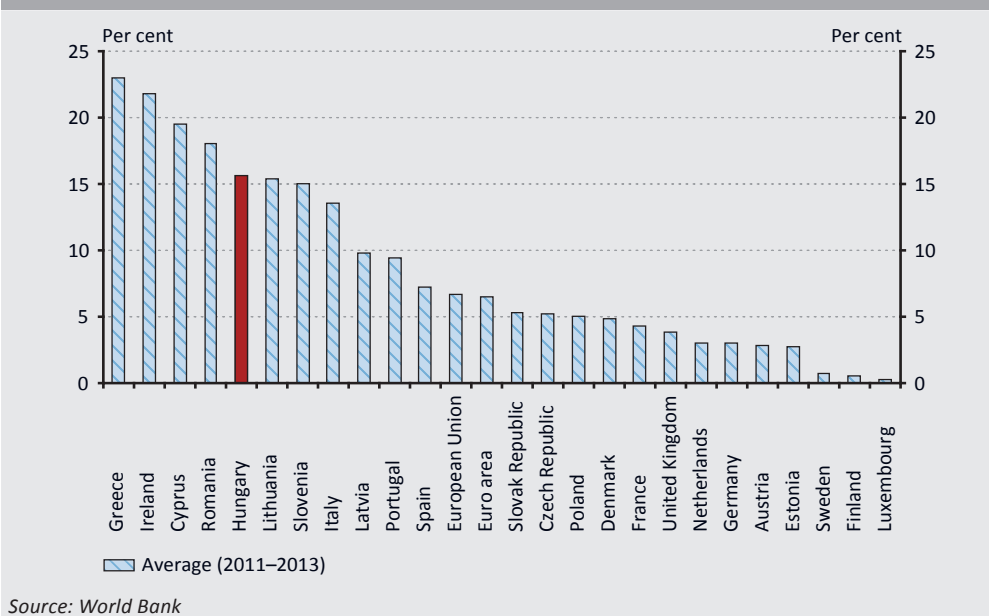
Chart 9
Development of real property prices in Hungary and in those countries where a banking crisis occurred after 2007
(2005 = 100)



Source: St. Louis FED, FHB.

Chart 10

Ratio of the banking system's non-performing credit portfolio after the crisis



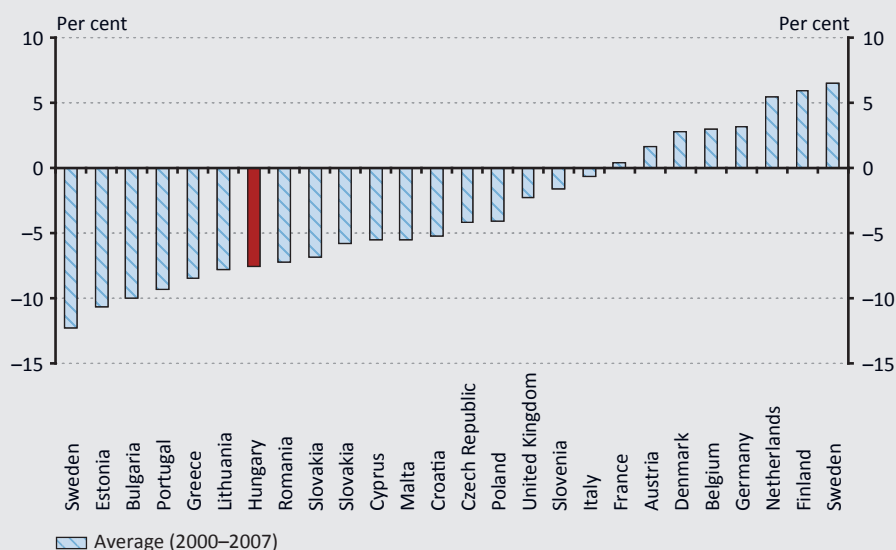
10). By the end of 2013, the non-performing loan ratio was close to 20 per cent both in the corporate and household segments (MNB, 2014); however, this ratio was lower than the NPL ratio observed after the former crisis episodes accompanied by the banking crisis, the maximum of which was 34 per cent on average (Laeven and Valencia, 2008). The banks' profitability decreased in parallel with the increase of the ratio of the loans past due over 90 days. The banking system further retrenched its credit supply when the foreign parent banks also faced problems due to the European real economic and sovereign crisis.

The current account deficit was material, but it started to improve already before the crisis. Emerging economies are usually characterised by a current account deficit. Until the beginning of the 2000s, this was financed by considerable capital inflow, which did not result in an increase of external debt. Prior to the crisis, between 2000 and 2007, the current account deficit in Hungary was 7.5 per cent of GDP (Chart 11). Financing was primarily provided by foreign loans, and the economy used the loans for consumption rather than for investments; thus, the growth rate of the economy exceeded the potential growth rate. At the start of the crisis, there was a sudden stop in the inflow of foreign funds due to higher aversion to risk and the increase of risk attached to the country. During the recovery – as a result of the financing and real economic processes – the current account started to improve and the net external debt began to fall (Hoffmann et al., 2013).

There was a huge drop in GDP at the start of the crisis. The global financial and economic crisis hit an ailing domestic economy. As a result of significant external imbalance,

Chart 11
Current account balance

(average of 2000–2007, as the percentage of GDP)



Source: IMF WEO.

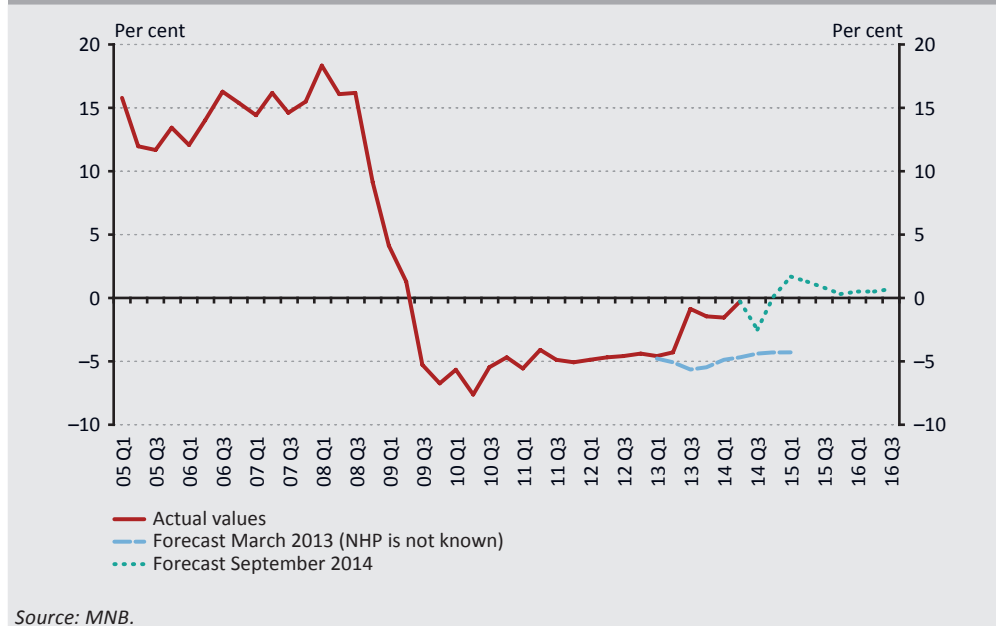
indebtedness and government measures, domestic processes were characterised by moderate household consumption and rather sluggish investment activity in the years preceding the onset of global recession. The global economic crises reached Hungary at the end of 2008, as a result of which Hungarian economic growth fell close to zero, and it considerably declined in 2009, by almost 6.3 per cent. During this period, the external demand declined by 4.5 per cent, while almost all components of the domestic demand suffered a material downturn. The dramatically deteriorating external demand conditions and the tightening lending environment generated further adjustment pressure for all economic agents, which was also revealed in the considerable decline of the whole-economy output.

The economic growth started at a low lending activity. As a result of the crisis in Hungary, parallel with severely declining economic growth, lending also decreased materially (Chart 8). After the end of 2009, primarily as a result of external demand, GDP already started to increase; however, the net loan placement remained permanently negative, and thus the credit portfolio of the private sector continued to decline materially. When examining the Hungarian figures, one sees that – in accordance with the episodes presented above – although output started to increase after the trough of the financial crisis, the credit portfolio did not recover. This meant that the turning point of lending was materially postponed compared to international experiences. This is explained by the fact that willingness of banks to take risks as well as their lending capacity remained low, explained

by problems in real economy, problems of parent banks and certain government measures affecting the banking sector. In terms of households' loan demand, the reason could be that due to foreign currency lending, the need for adjustment (i.e. deleveraging) was even stronger than usual. Thanks primarily to government investment, consumption and net export, the growth rate of the Hungarian economy has increased in the recent period and it already approximates the pre-crisis level. An uncertain global environment, continued high government debt, the high borrowing requirement and strong reliance on external funding still represent considerable risks. The banking system is still under the pressure of significant tax burdens and non-performing loans, and thus economic growth is accompanied by a low level of lending.

Net lending is negative due to credit demand and credit supply reasons. All of the credit demand and credit supply factors described before changed in Hungary as a result of the crisis. The corporations' credit demand fell in accordance with decreasing aggregate demand. The households' demand for credit fell at the start of the crisis due to the increased unemployment rate and debt reduction needs, while the precautionary savings motives strengthened. Since the start of the crisis, the banking system lent moderately. In certain sub-markets, the significance of the credit demand and credit supply factor could differ.

Chart 12
Net credit flow of the corporate sector
(exchange rate adjusted value)



Source: MNB.

In the case of corporate lending, the downturn after the start of the crisis was primarily explained by credit supply constraints; by the end of 2012, the decline of credit demand and the tightening of the credit supply were already equally responsible for the decrease of the credit portfolio. After the onset of the crisis, the credit contraction was primarily attributable to credit supply constraints; the contraction of the supply lasted until the third quarter of 2009 (Sóvágó, 2011). In 2009, parallel with the economic downturn, credit demand factors started to strengthen gradually, as a result of which at the beginning of 2010 the credit contraction was attributable 50/50 to demand and supply factors (Hosszú et al., 2013). Hosszú et al. (2013) found that in 2011, when credit demand started to increase, credit supply constraints once again played a more dominant role; however, corporate credit demand fell as a result of the GDP decline in 2012; thus, in aggregate, demand and supply were almost equally responsible for the credit contraction. In 2013 and 2014 – as a result of the improving real economic environment, the low interest-rate environment and the Funding for Growth Scheme – the continually declining trend of corporate lending is showing a slow turn (Chart 12).

In the household segment, low levels of lending are due mainly to credit demand constraints (MNB Inflation Report, June 2013). The moderate credit demand of households has been attributable to high unemployment and the strong deleveraging pressure governed by the outstanding debt accumulated before the crisis, mostly denominated in foreign currency. The previous factor resulted in a decline in households' income and an increase in uncertainty, while the latter resulted in an increase in expenditures (through higher monthly instalments). As a result of these, the precautionary behaviour of households has strengthened, leading to a further decrease of loan demand. At the same time, the high ratio of non-performing loans, as well as the regulatory environment, has resulted in a moderate loan supply.

Of the previously listed factors, recovery is led by the rebound effect, export expansion and one-off effects. Since the beginning of 2013, the growth of the domestic economy is accelerating, and it is close to pre-crisis rates. Due to the former significant downturn, there is considerable unutilised capacity in the economy, and thus it is possible to increase production without investments. The output of industries producing for the export markets already exceeds the pre-crisis level, but the performance of the industries producing for the domestic markets is moderate (although it increased in previous quarters and has already made a positive contribution to economic growth). Construction – mainly due to infrastructural investments financed from European Union funds – shows material expansion. The added value of market services is also increasing in line with the households' slowly increasing consumption.

Medium- and long-term growth requires expansion of the banking sector's credit supply. After the lapse of deterministic effects, medium-term growth is expected to be more moderate than the current rate of economic growth. Lending may be hampered in the

short term as the willingness of banks to take risks is normalising only slowly in the post-crisis period, the profitability of the banking sector is low, and there is need to improve capital adequacy in order to decrease vulnerability in vein of the debtor relief package. However, based on the empirical literature of creditless recoveries, with the lack of support from the financial system, growth may remain low permanently, thus, supporting credit supply may remain a priority of economic policy.

4 Conclusions

This article summarised the literature of creditless recoveries and reviewed the recovery from the crisis of 2007–2008. A sound financial system reduces information and transaction costs and eases the implementation of economic transactions, thereby facilitating the mobilisation of savings and making implementation possible of various objectives eligible for financing the more efficient and profitable investment opportunities. In this way, lending contributes to the growth of the economy. However, the financial crises highlighted the fact that the excessive growth of lending also carries risks; this partially explains the non-linearity of the link between lending and economic growth. Creditless recoveries are usually accompanied by lower economic growth, and the increase of investments also lags behind that of observed recoveries supported by lending.

At present, creditless recovery can be observed in several European countries. At the start of the crisis, there were also several factors in Hungary that predisposed to a creditless recovery. Until 2008, the fast-growing indebtedness, the high ratio of unhedged foreign-currency loans, external imbalance, and the significant decline of GDP all contributed to the fact that the net loan disbursement was negative at the start of the crisis. However, by now the growth rate of GDP is already close to the pre-crisis levels (i.e. a creditless recovery is taking place). The sources of the current growth include exports, the increasing utilisation of unused capacities, and one-off effects. However, the expansion of the domestic financial intermediary system's lending activity is essential for medium- and long-term growth.

References

- ABIAD, A., DELL'ARICCIA, G. AND LI, B. (2011): "Creditless Recoveries", *IMF Working Paper*, WP/11/58, March 2011.
- ARCAND, J-L., BERKES, E. AND PANIZZA, U. (2012): "Too Much Finance?", *IMF Working Paper* WP/12/161, June 2012.

AMITI, M. AND WEINSTEIN, D. E. (2011): “Exports and Financial Shocks”, *Quarterly Journal of Economics*, Vol. 126.

AYYAGARI, M., DEMIRGÜÇ-KUNT, A. AND MAKSIMOVIC, V. (2011): “Do Phoenix Miracles Exist? Firm-Level Evidence from Financial Crises”, World Bank, *Policy Research Working Paper* 5799.

BECH, M. L., GAMBACORTA, L. AND KHARROUBI, E. (2012): “Monetary policy in a downturn: Are financial crises special?”, *BIS Working Paper* No. 388, September 2012.

BECK, T., LEVINE, R. AND LOAYZA, N. (2000): “Finance and the sources of growth”, *Journal of Financial Economics*, Volume 58, Issues 1–2, pp. 261–300.

BECK, T., DEMIRGÜÇ-KUNT, A. AND MAKSIMOVIC, V. (2006): “The influence of financial and legal institutions on firm size”, *Journal of Banking and Finance*, Vol. 30, Issue 11, November 2006, pp. 2995–3015.

BECK, T. (2012): “Finance and Growth: Lessons from the literature and the recent crisis”, Prepared for the LSE Growth Commission, July 2012.

BETHLENDI, A. AND BODNÁR, K. (2005): “A hazai hitelpiac strukturális változásai” (“Structural changes of the national credit market”), *A hitelezési felmérés tapasztalatai (Lessons from the lending survey)*, *Hitelintézeti Szemle (Credit Institution Review)*, Volume 4, Issue 3.

BIJSTERBOSCH, M. AND DAHLHAUS, T. (2011): “Determinants of credit-less recoveries”, *ECB Working Paper*, June 2011.

BIGGS, M., MAYER, T. AND PICK, A. (2009): “Credit and economic recovery”, *DNB Working Paper*, No. 218.

CALVO, G. A., IZQUIERDO, A. AND TALVI, E. (2006): “Sudden Stops and Phoenix Miracles in Emerging Markets”, *American Economic Review*, Vol. 96(2), May 2006, pp. 405–410.

CECCHETTI, S. G. AND KHARROUBI, E. (2012): “Reassessing the impact of finance on growth”, *BIS Working Papers*, No. 381.

CERRA, V. AND SAXENA, S. (2008): “Growth Dynamics: The Myth of Economic Recovery”, *American Economic Review*, 98:1, pp. 439–457.

CHOR, D. AND MANOVA, K. (2012): “Off the Cliff and Back? Credit Conditions and International Trade during the Global Financial Crisis”, *Journal of International Economics*, Vol. 87.

CLAESSENS, S., KOSE, M. A. AND TERRONES, M. E. (2011): “Financial Cycles: What? How? When?”, *IMF Working Paper*, No. 11/76.

EUROPEAN CENTRAL BANK (2012): Monthly Bulletin. European Central Bank, February 2012.

DARVAS, Zs. (2013): “Can Europe recover without credit?” Bruegel Policy Contribution, February 2013.

GAMBACORTA, L., YANG, J. AND TSATSARONIS, K. (2014): “Financial structure and growth”, *BIS Quarterly Review*, March 2014.

HOFFMANN, M., KÓCZIÁN, B. AND KOROKNAI, P. (2013): “Developments in the external balance of the Hungarian economy: indebtedness and adjustment”, *MNB Bulletin Special Issue*, October 2013.

HOSSZÚ, Zs., KÖRMENDI, Gy., TAMÁSI, B. AND VILÁGI, B. (2013): “Impact of the credit supply on the Hungarian economy”, *MNB Bulletin Special Issue*, October 2013.

HUDÁK, E. (2012): *Hitelezés és gazdasági kilábalás (Credit and economic recovery)*, Thesis, Corvinus University of Budapest.

IMF (2012): “Enhancing Financial Sector Surveillance in Low Income Countries”. *IMF Background Paper*, April 2012.

JIMÉNEZ, G., ONGENA, S., PEYDRÓ, J.-L. AND SAURINA, J. (2012): “Credit Supply versus Demand: Bank and Firm Balance-Sheet Channels in Good and Crisis Times”, *European Banking Center Discussion Paper*, No. 2012-003.

KING, R. G. AND LEVINE, R. (1993): “Finance and Growth: Schumpeter Might be Right”, *The Quarterly Journal of Economics*, Vol. 108, No. 3, August 1993, pp. 717–737.

KISS, Á. AND SZILÁGYI, K. (2014): “Miért más ez a válság, mint a többi?” (“Why is this crisis different? The role of deleveraging in the great recession”), *Közgazdasági Szemle (Economic Review)*, Vol. LXI, September 2014.

KISS, G. (2006): “Fast credit growth: equilibrium convergence or risky indebtedness?”, *MNB Bulletin*, June 2006.

KLAPPER, L., LAEVEN, L. AND RAJAN, R. G. (2006): “Business Environment and Firm Entry: Evidence from International Data”, *CEPR Discussion Paper*, No. 4366.

LAW, S. H. AND SINGH, N. (2014): “Does Too Much Finance Harm Economic Growth?”, *Journal of Banking and Finance*, 41, April 2014, pp. 36–44.

LAEVEN, L. AND VALENCIA, F. (2008): “Systemic Banking Crises: A New Database”, *IMF Working Papers*, International Monetary Fund, 08/224.

LEHMANN, K. (2012): International experiences with unconventional central bank instruments, *MNB Bulletin*, June 2012.

LEVINE, R (2005): Finance and Growth: Theory and Evidence. Handbook of Economic Growth, in: Philippe Aghion & Steven Durlauf (ed.), Handbook of Economic Growth, edition 1, volume 1, chapter 12, pages 865-934 Elsevier.

MAGYAR NEMZETI BANK (2013): *Inflation Report*, June 2013.

MAGYAR NEMZETI BANK (2014): *Report on Financial Stability*, May 2014.

RAJAN, R. G. – ZINGALES, L. (1998): Financial Dependence and Growth, The American Economic Review, Vol. 88, No. 3, June 1998

SÓVÁGÓ, S. (2011): “Identifying supply and demand in the Hungarian corporate loan market”, *MNB Occasional Papers* 94.

SUGAWARA, N. AND ZALDUENDO, J. (2013): “Credit-less Recoveries, Neither a Rare nor an Insurmountable Challenge”. The World Bank, WPS6459.

TAKÁTS, E. AND UPPER, C. (2013): “Credit and growth after financial crises”, *BIS Working Papers*, No. 416, July 2013.

TEULINGS, C. AND BALDWIN, R. (ed.) (2014): *Secular Stagnation: Facts, Causes and Cures*. A VoxEU.org eBook, CEPR Press.

UNICREDIT (2012): *CEE Banking Outlook. Banking in CEE: The New ‘Normal’*, January 2012.

WTO (2013): World Trade Report. World Trade Organization.

Appendix

Table A1 Summary of the empirical literature					
Study	Sample period	Countries/ episodes included in the sample	Inspected credit indicator	Length of the reviewed period after the trough of the crisis	Other factors
Abiad et al., 2011	1970–2004	26 developing countries (MSCI EM Index), 23 developed countries (of the OECD members)	cumulative change of the loans to the private sector	maximum 3 years	industry data
Biggs et al., 2009	USA: 1929–1936 Emerging economies: 1982–2010 Developed economies: 1954–2010	USA, Finland, Japan, Norway, Spain, Sweden and 22 developing markets	loan portfolio granted by the banks to the private sector and credit impulse	maximum 2 years	the relationship not only between the levels, but also between the growth rates was analysed
Bijsterbosch and Dahlhaus, 2011	1970–2009	86 countries of middle and low income	outstanding lending of the banks to the private sector	maximum 4 years	
Darvas, 2013	1960–2012	135 countries	Real exchange rate, financial development	maximum 4 years	Transparency of trade, current account
Sugawara and Zalduendo, 2013	1965q1–2011q4	96 countries, developed and developing countries	annual growth of real bank loans	maximum 8 quarters	severity of the decline of GDP, real exchange rate and current account balance, external transparency, fiscal easing, easing of the monetary stance, participation in IMF programme, economic conditions at the trough
Takáts and Upper, 2013	1981–2008	39 financial crises, developed and developing countries	outstanding lending by the banks to the private sector at real value; loan/GDP ratio	maximum 4 years	change of the real exchange rate, government debt/GDP
UniCredit, 2012	1963–2010	183 developing and developed countries	real credit portfolio	maximum 3 years	output gap, investment demand, banking crisis, change of the domestic banks' external exposure