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THE MAGNITUDE OF FINANCIAL IMBALANCES CORRECTION AND THE PROBLEM OF RESTORING GROWTH

Abstract

EMU imbalances correction sparked active discussions on choosing the optimal policy for mitigating risks of divergence and restoring competitiveness. Concentration on balance of payments is within the framework of simultaneously solving the problem of external imbalance, capital outflow, restoring growth, and preventing the opposing vectors of trajectory of the real effective exchange rates. However, overcoming the crisis consequences requires a wider approach to how the imbalances correction contributes to the growth recovery. Theoretically, the rate of post-crisis growth recovery should correspond with the variables that constitute imbalances correction. Based on regression analysis, it is clear that such hypothesis is proved only partially. Growth is more likely to recover if there is a more substantial correction of current account and credit market cleaning-up, whereas the correction on real estate market is not as effective. At the same time, real disposable income correction is likely to negatively influence the growth recovery. Nevertheless, this doesn't mean that internal devaluation shouldn't be utilized as an option during macroeconomic adjustment. It should occur with credit market cleaning-up. Fiscal space is crucial here, as it determines the credibility of fiscal policy devoted to mitigation of accumulated household sector debt burden. The reaction to the financial cycle is a fundamentally important ele-

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ment of macroeconomic management in the monetary union in regards to the macroeconomic design of integration zone.

Key words:

EMU, financial imbalances, growth recovery, credit market, current account, real estate market, real income, internal devaluation.

JEL: F32, F41, F45.

Introduction

A relatively successful first decade of the euro area existence and profound macro-financial shocks, which followed the global financial crisis, continues to raise questions of how a threat to the integrity and viability of the monetary union came to be even in spite of the «correct» monetary policy. When looking for answers, the theory of optimum currency areas often offers a sceptical view of the consequences of sound judgments on the effects of heterogeneous economies memberships being dominated by policy initiatives in the field of monetary integration. Imbalances – the key word in this context – are often regarded as a consequence of non-compliance of the European Monetary Union with the criteria of optimal currency area. They showed the risks of divergence of the euro area. While not denying the fundamentality of the divergence problem, the search for answers on the causes, consequences and scenarios of correcting the imbalances is not always synonymous with end for the common European currency. If so, the correction of imbalances is an essential part of the radical reforms agenda in the European Union in general and in the euro area in particular.

Macroeconomic theory of monetary union, however, admits that when imbalances have emerged, their correction will entail ambiguous political and economic losses, the extent of which in some cases can reach the magnitude of benefits from future membership. This makes the correction of imbalances a highly politically sensitive issue. However, the biggest challenge is that the many options of mixed policy for correction of imbalances allow diverse interpretation. Thus, the thin line between the potentially correct and likely incorrect measures escalates the debate on which way the reforms at a national and EU-EMU level

should be carried out. The complexity of this issue is also caused by the lack of theoretical consensus on the reasons behind the unravelling and spreading of the internal European imbalances. This creates prerequisites for lack of unanimity in understanding which correction method is best. Interpretation of imbalances and their relevance in the case of asymmetric monetary union is a significant part of the one-sided view on the macroeconomic processes of monetary integration. On the one hand, reducing the issue of imbalances simply to the current account imbalance, resulting in discussions on the role of fiscal devaluation in the process of correction can be extremely politically and socially delicate. On the other hand, focusing exclusively on issues of real estate bubbles in countries that are at the catch-up stage of real convergence ignores the obvious problem of underestimating the balance of payments crisis in the monetary union. The quality of institutions and the imperfection of financial markets might be excluded when looking at the process of correction as something provided exclusively by the demand factors. There is currently a lack of comprehensive analysis on the effects of correcting both the balance of payments and the financial imbalances. Similarly, there is shortage of assessments on how the magnitude of correcting the imbalances (depending on their types) affected restoring growth. Such investigation would allow determining the aspect of economic policy, which is the most tolerant to this process.

Theoretically, more rapid and large-scale «cleaning-up» of the credit and real estate markets, as well as more rapid recovery of balance of payments equilibrium would have a positive effect on the rate of recovery and stability of the post-crisis growth. Confirmation of this hypothesis will allow better understanding of the optimal policy choice, especially in a situation when the difference in imbalances types involves the use of mutually exclusive tools. It will also allow us to better mitigate the current political and institutional constraints, due to which the theoretically optimal speed of correction process may not be reached in certain countries, threatening divergence of the monetary union. Research on the connection between the extent of the imbalances correction in the euro area and restoring growth is particularly relevant now, especially if we consider the long-term maintenance of a fixed exchange rate in Ukraine and the accumulation of imbalances, which at their core are not much different from the most drastic cases of the European South.

Imbalances in the Euro Area and Their Correction: Theoretical Discussions and Preliminary Empirical Evidence

The need to analyse the financial imbalances problems is proportional to the increased interest in macro-financial approach. When using this approach, the emphasized aspects are:

- low inflation is not a safeguard against financial instability;
- low interest rates do not guarantee economic growth based on investment acceleration;
- falling real interest rates encourage increasing risk exposure from financial intermediaries;
- productivity shocks and global integration generate positive deflationary shock, adjusting to which through efforts to maintain this level of positive inflation leads to the expansion of the liquidity;
- the credit cycle and real estate boom as a manifestation of internal financial imbalances rapidly transform into problems of the current account and, therefore, create external (balance) imbalances (Borio et al, 2003, p. 1–59; Borio et al, 2004, p. 1–51; Borio et al, 2006, p. 2–28; White, 2006, p. 1–20).

Despite the fact that some euro area countries have implemented this approach empirically, the analysis of ECU in terms of internal European imbalances was synchronous with the first effects of the global financial crisis, as well as the liquidity crisis, reverse in capital flows in the euro area and its further financial fragmentation.

However, the obvious divergence is undeniable when it comes to the approaches of explaining the nature of the imbalances. Along with discussions on imbalances, an obvious trend of narrowing the scope of investigation emerged, namely balance of payments imbalances. There are several approaches to explaining imbalances:

- dysfunction of the monetary union (Krugman, 2013, p. 1–35). Common interest rates lead to profound differences in the income trajectories in countries that do not constitute an optimal currency area. Asymmetric booms and recessions are a direct result of inflated rates for some countries and understated ones for others. The lack of exchange rate correction means removing the restrictions on the balance of payments; because of that the current accounts must undergo divergence

in terms of countries with different cyclical positions. Arguably, this is the classic argument against monetary union, supplemented by the lack of lending of last resort;

- «bad convergence» (Bini Smaghi, 2011). Unravelling and spreading of the imbalances is linked to the problem of real convergence in asymmetric monetary union. Lowering interest rates and evening-out exchange rate risks led to a boom in consumption and credit expansion combined with inflation of asset prices in countries with lower GDP per capita, thus cancelling out the benefits of low rates;

- divergence of real effective exchange rates and differences of labour costs trend per unit of GDP (Grauwe, 2008, p. 16; Barbosa, 2011, p. 1–32). In the case of multi-directional movement of labour costs, some countries face rising inflation (Balassa-Samuelson effect), while others – its decrease. Consequently, the difference in the development of real effective exchange rates leads to the fact that current accounts begin to move in opposite directions in the common currency area. In this case, the role of economic policy is impossible to ignore, so in the absence of supranational mechanisms of correcting the opportunist policies, the responsibility for the imbalances must rest with the national governments, not the dysfunctions of the monetary union (Mongelli, 2013, p. 1–41; Pisany-Ferry, 2012, p. 1–10; Davlas et al, 2011, p. 1–18);

- balance of payments imbalances was a reflection of the capital flows movement by vector «North-South» and recreated the global economy problem of limited exchange rate flexibility in the local dimensions (Eichengreen, 2012, p. 1–7; Merler et al, 2012, p. 1–14; Merler, 2015, p. 1–44). An early view on the benefits of the monetary union pointed out that balance of payments crisis is not possible in it. However, in the case of euro area, balance of payment deficits in the «South» quickly turned into capital flight to the «North», thus showing that the «sudden stop» crises are possible even within the area of monetary integration. In theory, this type of crisis was considered impossible in the monetary union, where the financial sector is «immune» from the risk of exchange rate changes. Nevertheless, the stop of capital inflows and their outflow was the cause of the financial sector collapse. Moreover, there has been a three-phase development of the «sudden stop» crisis in the euro area (Merler, Pisany-Ferry, 2012, p. 1–16). Given this fact, exogenous capital flows cannot be neglected when considering the problem of imbalances. On the other hand, the possibility of maintaining the higher non-equilibrium position is the benefit of membership in the monetary union. Capital flows assume part of the external adjustment, so imbalances can be considered equilibrium (Blanchard, Giavazzi, 2002). However, in the case of the euro area, financial inte-

gration factor played only an initial role in strengthening the differences in the changes of balance of payments positions, after which the national drivers became more important (Barnes, Lawson, Radziwill, 2010, p. 1–18). On the other hand, increased imbalances in the euro area are synchronous with the expansion of global liquidity, which dates back to 2002. (Lane, 2010, p. 1–16). Unalloyed, it means that the dysfunctions of the monetary union, if they indeed occurred, must be perceived in a wider context;

- absence of financial cycle safeguards and lack of adequate macroeconomic management. This approach to the problem emphasizes that the imbalances in the euro area developed through revaluation of the effectiveness of key design elements of the macroeconomic model of the EMU, namely market discipline, nominal limits as convergence criteria, and fiscal rules of the Stability and Growth Pact. Under the conditions of liquidity expansion, national financial systems and national macro policies have failed to neutralize the rising wave of the financial cycle and there were no appropriate regulators at the union level. This was the reason why imbalances did not merely develop, but developed asymmetrically and became susceptible to opportunistic behaviour of certain countries in the sphere of economic policy (Pisany-Ferry, 2012, p. 1–10; Davlas, pisany-Ferry, Sapir, 2011, p. 1–10; Grauwe, 2013, p. 1–40);
- overestimation of the benefits of membership in the integration area countries that are at lower levels of real convergence. This meant that the trend of wages and lack of current accounts correction in response to the expansion of demand enabled a rational choice in favour of a higher level of leverage (Koziuk, 2010, p. 49-64; Koziuk, 2011, p. 59-72). As part of this approach, it is emphasized that the accumulation of imbalances is not a dysfunction of the monetary union, but a of adequate macro controls shortage at supranational level, opportunistic policy in wages in some countries, and inadequate perception of macro-financial risks of low interest rates. Low rates combined with the perception of rising trajectory of future revenues as optimal generated a financial bubble and its companion in the form of balance of payments deficits, etc.

The debt crisis that emerged in reaction to the banking crisis and the collapse of real estate prices, somewhat pushed the issue of correcting the internal financial imbalances to the background. At least the analysis of literature supposedly shows that falling asset prices along with support programs for the banking sector have had a positive impact on «cleaning-up» of markets, so the most acute issue is to overcome the problem of capital flight from the «South», along with inspiring confidence in the rising debt trajectory. It is in this context that the debate about correcting the balance of payments imbalances comes to the fore-

front, as achieving the balance of payments equilibrium is expected to be a prerequisite for ridding of capital flight, restoring competitiveness and growth. The latter may also be considered as key determinants of confidence in the fiscal policy. At the same time, monetary union macroeconomics implies that there is a rather limited set of tools for correcting the balance of payments imbalances that in the absence of exchange rate are essentially equivalent to the restoration of competitiveness. A country may choose to: conduct fiscal devaluation (reduction in domestic prices and wages in conjunction with the corresponding adjustment of indirect taxes); reduce costs and achieve substantial primary surplus, which would become the basis of demand contraction in order to restore balance of payment equilibrium; stimulate exports through fiscal or structural instruments. Price and non-price instruments of external imbalances correction in the euro area equally require implementation of structural reforms (Tressel et al, 2014, p. 1–34; Country Adjustment in the Euro Area: Where Do WE Stand?, 2013, p. 85–102).

From the empirical analysis perspective, the literature indicates absence of a standard set of mix policy options, implemented in the member states of the euro area. A number of publications state that the fiscal contraction of demand factor is sufficiently effective. On the other hand, non-price structural measures also give good results, especially when the export is aimed at favourable global demand impulses (Country Adjustment in the Euro Area: Where Do WE Stand?, 2013, p. 85–102; Atoyan, Manning, Rahman, 2013, p. 1–29). While this does not solve the problem of reducing variations of balance of payment positions in the euro area as a whole, the focus on global demand makes it easier to adapt to new conditions of equilibrium, even if it changes the structure of internal European trade (Atoyan, Manning, Rahman, 2013, p. 1–29). At the same time, the price measures of internal devaluation and conservation programs may have negative Keynesian effects on demand. In case of a public debt surge and deleveraging in the private sector, domestic demand contraction allows correcting the balance of payments imbalances if there is doubt of chosen fiscal trajectory sustainability. In other words, the value of the debt burden significantly distorts macroeconomic adjustment, thereby complicating the process of overcoming the balance of payments deficits streak (Tressel et al, 2014, p. 1–34). It also remains up to discussion which of the factors in the correction of imbalances based on export stimulation is determining. This is because the internal devaluation immediately has a direct impact on reducing domestic prices, which positively affects the competitiveness and contraction of import demand. Increasing the flexibility of the economy through structural reforms also positively affects the recovery of competitiveness, which is particularly evident in Ireland, the Baltic States and Spain. Whereas tighter budget constraints affected the limited positive developments in Italy and Portugal. At the same time, in Greece the delay in structural changes affected the broadening of the scope of budgetary constraints. Through them conservation programs have begun to call into question the possibility of economic recovery, particularly because of the powerful social resistance to even

those changes, which are necessary and obvious (Tressel et al, 2014, p. 1–34). On the other hand, the comparison of correction processes in the «old» member states of the euro area and the «new» ones makes it possible to change the angle of interpreting the problem of the rate, at which the countries overcome the imbalances streak. The lack of expectations as to the assistance from the union is a direct factor in the thoroughness and swiftness of imbalances correction (Gros, Alcidi, 2014, p. 1–47). This means that political and economic factor is important, and the design of macroeconomic management in EMU is not invulnerable to the moral hazards of the individual party behaviour.

The introduction of a new approach to macroeconomic management in EMU (the so-called Macroeconomic Surveillance Framework) reflected a departure from the coordination of macroeconomic stability in the euro area with the Maastricht criteria. However, the focus on the balance of payments equilibrium (the new requirements of the payment system TARGET2) and, to some extent, on competitiveness, leave out the problem of a holistic view of the imbalances in a way that it was originally presented.

Given the sufficiently well studied issue of correcting the balance of payment imbalances in the euro area, the clarification of correction consequences remains an important point. Moreover, the examination of the imbalances should not be limited solely to the current accounts. It reflects only one aspect of EMU divergence, and therefore must be supplemented by correction in the credit market, real estate market and changes in household income, taking into account the fact that the trend of years preceding the crisis, and in some countries during it, was determined by opportunistic considerations and political business cycle. We can assume that the scale of correction (difference between the values of the relevant indicators before the crisis and after) must correspond to the rate of economic recovery. Otherwise, the pre-crisis imbalances would have to have been impervious to the pressure or the policy changes were not properly targeted at encouraging growth and, therefore, there is no need to resort to painful macrofinancial recovery procedures. The article aims to test the hypothesis on the correlation between the scale of correction and economic recovery and to continue the discussions on the channels of macroeconomic adaptation in a monetary union.

Imbalances and Divergence

In the literature, the issue of coordination between external and internal imbalances has several dimensions and, interestingly, the countries of the Eurozone are not an exclusive example. The peculiarities of the monetary union make such countries an unusual case. More often than not, the connection between internal and external imbalances in the euro area is based on the idea about the role of common interest rates in generating conditions for the differing trajectories

of real effective exchange rate. It is with them that we associate differences in the rate of domestic inflation, lack of synchronization of business cycles and, therefore, differences in financial markets conditions and trajectories of balance of payment positions. At the same time, the extent of liquidity expansion, the amplitude of the financial cycle and the divergence of current accounts indicate that the standard criticism of monetary union regarding the role of unified interest rates in the deepening of cyclical divergence is hardly relevant. Thus, even before the global financial crisis a new approach emerged. It proved that there is a more complex structural connection between internal and external imbalances, and that it has a macro-financial nature. The sensitivity of the financial sector to changes in global liquidity influences the fast multiplication of solvency units. The expansion of credit directly increases demand for imports, and increases it through the wealth effect as a result of growth in the assets value. Countries that are at the phase of the asset market expansion are subject to massive inflows of capital. This further encourages consumption and investment, deepening the current account deficit. In this case, gross capital flows generate increasing amplitude of the financial cycle regardless of the current account balance, thus detaching the financial stability from the net flows and correction of the current account through price factors (exchange rate changes) (Borio et al, 2003, p. 1–59; Merler, Pisany-Ferry, 2012, p. 1–14; Merler, 2015, p. 1–44; Atoyan et al, 2013, p. 1–29).

In case of the balance of payments positions and the credit expansion, as well as the inflation of asset prices, there is a structural connection that cannot be attributed to solely one of the factors that are found in theoretical discussions about the imbalances in the euro area. Rational expectations of better welfare due to membership in the monetary union makes it acceptable to set a higher level of leverage (such higher level is seen as equilibrium in light of the expected upward income trajectory). Whereas, the expansion of liquidity, low interest rates and competition in the financial sector allow meeting the demand for credit. Intensification of the asset markets makes this a two-way connection. A policy of increasing revenues enhances it, particularly through appropriate stoking of expectations. The absence of necessity in correcting the balance of payments is a part of such connection and results in overflow of internal imbalances into the external ones and vice versa, while also making them inseparable from each other.

During collapse the situation is reversed, but the need for a holistic view of the connection between internal and external financial imbalances remains. The rate of the financial system recovery and its ability to overcome the credit misallocation streak will depend on how the capital and credit market cleaning-up occurs. In other words, the incentives for economic recovery will be generated even at lower levels of financial intermediaries' assets growth if such growth is based on much better allocation quality. When it comes to the balance of payments, the situation is somewhat more complicated. On the one hand, its correction will reflect the emergence of opportunities for economic recovery through the increase in exports and reduction of imports. This correction involves changes in the dynamics of demand and the use of price mechanisms, which in the monetary un-

ion are available as internal devaluation. This means that the cooling of the financial system and the cleaning-up of credit markets should positively affect the «freezing» of the part of demand, which would provide non-productive demand for imports, while internal devaluation should restore export competitiveness, along with reduced demand for imports. Fiscal consolidation operates in the same direction. On the other hand, the transformation of the financial crisis into a mix of debt and banking crises led to capital flight from countries most affected by the problem of imbalances. As a result the balance of payments correction happens by the least desirable – crisis scenario, when a collapse in the financial sector hinders cleaning-up of the markets, unless there is active government participation. However, its capabilities are severely restricted by accessible fiscal space, the narrowing of which is secured through speculation against structural rigidities. In fact – this is speculation against the debt of the country, for which there are firm expectations of failure to restore growth and global competitiveness. It is conducted through socially unpopular structural reforms and internal devaluation (Koziuk, 2015, p. 3–25).

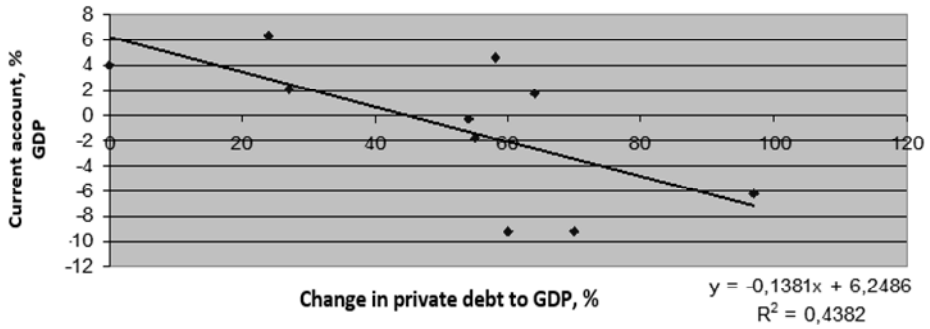
In the empirical terms the connection between internal and external imbalances in the euro area is quite obvious and can be specified in different ways. For example, the inverse connection between the real effective exchange rate and the current account is a way of reflecting how cyclical synchronism corresponds with the divergence of balance of payment positions. Inverse connection between real interest rates and debt accumulation by the private sector reflects the inner aspect of imbalances: the unification of interest rates with different inflation rates leads to the accumulation of debt, if the interest rates are relatively understated. Direct correspondence between the state of the current account and the private sector debt demonstrates a link between the internal and external imbalances. For example, Fig. 1 clearly shows that in the euro area before correction of imbalances, their internal and external aspects were in apparent connection. Thus, the approach, which views the problem of imbalances as being caused solely by the very fact of monetary integration, we must recognize as too biased.

As for the role of imbalances in generating the processes of divergence and their correction in the context of restoring synchronous macroeconomic behaviour of trajectories, we can see an ambivalent pattern (Table 1).

The data from Table 1 show that the divergence expressed through growing dispersion affected those indicators, which not only reflect the imbalances, but also the logic behind determining the leverage trajectory. Thus, before the crisis, there is a decline in dispersions of long-term interest rates, while there is simultaneously an increase in dispersions of real growth rate in property prices, growth in real disposable incomes and current accounts. After the crisis, the situation has changed, but the process of divergence has not been broken; rather, it changed its form, indicating deepening asymmetries in the process of imbalances correction and structural adjustment to new equilibrium conditions.

Figure 1

The connection between internal and external imbalances in EMU, 2000–2010



Annotation 1. Created using data: Cecchetti S., Mohantry M., Zampolli F. The Real Effects of Debt // Symposium for Achieving Maximum Long-Run Growth Sponsored by the Federal Reserve Bank of Kansas City, Jackson Hole, Wyoming, 25-27 August 2011, p. 23–25. And World Economic Outlook — Wash. (D.C.): IMF. 2010. – P. 181.

Annotation 2. Data is limited to the period of 2010, as afterwards the process of imbalances correction reached proportions that certify the change in trend.

Table 1

Macro-financial indicators of divergence in the euro area

Dispersion	2001	2007	2010	2015
Long-term interest rates	0,79	0,01	3,33	6,42
The real growth rate in property prices*	18,1	20,21	14,33	16,31
Growth in real disposable income of households	1,58	7,98	2,83	2,96**
Current account of balance of payments	28,15	54,11	30,93	12,28

Annotation. * Data for 2002, 2006 and 2009 ** – data for 2014.

Source: Calculated by the author based on data of Organization for Economic Cooperation and Development (www.oecd.org) and IMF (www.imf.org).

We can observe an unambiguous tendency of a decline in the current account balance dispersion in the countries of the euro area. This means that the correction of external imbalance is relatively consistent. Additionally, the dispersion of real growth rate of property prices and growth of real disposable household incomes dropped significantly after the crisis, but later began to grow. At the same time, the dispersion of long-term rates surged up after the crisis, and continued the same dynamics, indicating that the restriction of access to financing in terms of different countries is very uneven. In general, this pattern indicates that progress in the correction of external imbalances might not correspond with real benefits of creating conditions for more balanced growth in the future. Asymmetric correction of internal financial imbalances and lack of coordination in revenue policies will maintain prerequisites for the vulnerability of the Eurozone, despite the consistent improvement in the sphere of external imbalance. If the decline of dispersions of current accounts in the monetary union is achieved through asymmetric cleaning-up of financial markets, the divergence processes will transform into a lack of symmetry in getting access to financing. Restoring growth will require better financial environment, not a mechanical contraction of demand for the sake of correcting the balance of payments.

In other words, a more favourable way of creating conditions for restoring growth will involve correcting the external imbalances based on credit reallocation. As a result, recovery of global competitiveness will be accompanied by obtaining access to financing of those economy sectors, which generate the most added values. Naturally, the creation of such preconditions will involve combining a set of structural changes and corrective policies: the cleaning-up of the credit and real estate markets; internal devaluation; fiscal consolidation; increase in the flexibility of the economy, especially the labour markets, and rationalization of the correlation between wages and productivity trend; improvement in the quality of institutions and effectiveness of resource allocation. We can also naturally assume that because of political and economic circumstances, the implementation of these measures generally may be limited or stretched over time, or done inconsistently and not fully. Taking into account the significant differences in the social tolerance to reforms and correction of imbalances in different countries, it is important to identify how the correction processes correspond with the restoration of economic growth.

Correction of imbalances and restoring growth: empirical examination and theoretical conclusions

Since restoring growth is the goal of the policy for mitigation of imbalances and the scale of correction and the extent of growth are directly correlated, the empirical examination includes the following steps.

First, the data sample encompasses 19 member states of the Eurozone. Moreover, in order to lessen the margin of error of the analysis, an additional sample selected out of the already existing one was formed. It was composed of 10 countries that have faced systematically significant crisis developments (Italy, Spain, Portugal, Greece, Ireland, Slovenia, Cyprus, Estonia, Latvia, and Lithuania) to a varying extent. The inclusion of the Baltic States is an attempt to extend the set of «periphery» countries. Some researchers consider that this can significantly improve the understanding of the unravelling and spreading of imbalances and their correction, even though the aforementioned countries have not been members of the euro area prior to the crisis (Kang Shik, Shambaugh, 2013, p. 1–23). The fixation of the exchange rates against the euro and the macroeconomic circumstances showed that the inclusion of the countries-candidates to join the EMU in the analysis was based on the similarities of their processes to those countries, which had become the focal point of divergence of the monetary integration zone.

Second, the chosen evaluation indicators were: the growth of domestic credit to the private sector (% of GDP); current account balance (% of GDP); growth in real property prices (annual change in %); growth in real disposable income of households (annual change in %). The indicator of unit labour costs was rejected and the index of the real effective exchange rate was not taken into account, as its connection with the current account is well substantiated.

Third, regression of the imbalances indicators and real long-term interest rates (average for 2010–2015) was conducted to determine how the markets reacted to the changes in investment risks in any given country, taking into account the macroeconomic adjustment. The regression of imbalances indicators and the indicator of post-crisis economic growth (average for 2010–2015) was conducted as well. Long-term interest rates do not directly indicate a renewed growth, but we can assume they have an inverse correlation, signifying an amplified relevance of re-establishing access to financing. Naturally, in the circumstances of global low interest rates and deflation risks, long-term interest rates are determined by the activity in country spreads. Therefore, the value of the latter is, in fact, an access barrier to financing, symmetry with which is directly linked to

monetary union's ability of minimizing the divergence risks in conditions of shocks. Determining the swiftness of the correction results in a number of years before the first year of renewed growth was declined, as for a range of countries growth after 2008 was often intermittent, showing a lack of consistency in policy making and start-up of secondary effects of the crisis, lagged manifestation of which was the result of structural peculiarities.

Fourth, the correction of imbalances is expressed as the average indicator value (of the aforementioned criterion) for 2002–2007 subtracting the average of the same indicator for 2008–2015. The bigger the difference, the more pronounced was the correction of imbalances, expressed by these indicators (except for the variable of balance of payments, for which the connection is reversed).

Fifth, there is a hypothesis that the more the imbalances are corrected, the faster the GDP recovers. Empirical confirmation of this will occur if there is a direct correlation between these indicators (except for the variable of balance of payments) and an inverse correlation in the case of long-term interest rates (except for the variable of balance of payments).

The connection between long-term interest rates and the indicator confirming renewed growth, and variables that describe the correction of imbalances was evaluated based on multiple linear regressions:

$$Y = a + b * X1 + b * X2 + b * X3 + b * X4 \quad (1),$$

Where: Y – in regression 1 – the average long-term interest rates during 2008–2015, describing how quickly and whether our country overcame the streak of macro-financial risks assessed by the markets (source: data from OECD (www.oecd.org)); in regression 2 – the average economic growth rate for 2010–2015 (the period is determined based on the fact that the euro area has experienced repeated destabilization and therefore renewed growth could only occur after the first round of the Greek crisis resolution and of the reforms of the macroeconomic mechanism in the EU-EMU) (source: data of IMF (www.imf.org));

$X1$ – indicator of credit market correction, expressed as the difference between the average growth rate of domestic credit to GDP in 2002–2007 and the same indicator in 2008–2015 (source: data of the World Bank (www.worldbank.org));

$X2$ – indicator of the balance of payments correction, expressed as the difference between the average of the current account as % of the GDP in 2002–2007 and the same indicator in 2008–2015 (source: data of IMF (www.imf.org));

$X3$ – indicator of the real estate market correction, expressed as the difference between deflate consumer price index of apartment purchases (in %) in 2002–2007 and the same indicator in 2008–2015 (source: data of Eurostat (www.eurostat.org.eu));

*X*4 – indicator of the correction of the labour market/domestic income, expressed as the difference between the average annual growth in real disposable income of households (in %) in 2002–2007 and the same indicator in 2008–2015 (source: data of OECD (www.oecd.org)) .

The results of the regression analysis are compiled and presented in Table 2.

Table 2

Regression analysis results on the connection between renewed growth and indicators of financial imbalances correction

Regression 1				
Y – Long-term interest rates	*X*1	*X*2	*X*3	*X*4
	–0,001 (0,004)	–0,008 (0,09)	–0,006 (0,08)	0,73 (0,17)
t	–0,03	–0,09	–0,76	4,27
R^2 = 0,67	*F*(4,14) = 7,1941	*p* < 0,00230	Std. Er 1,2926	
Regression 2				
Y – Economic growth (the whole sample – 19 states)	*X*1	*X*2	*X*3	*X*4
	0,04 (0,058)	–0,18 (0,13)	0,012 (0,12	–0,446 (0,252)
t	0,668	–1,3998	0,106	–1,765
R^2 = 0,27	*F*(4,14) = 1,2785	*p* < 0,32489	Std. Er 1,9082	
Regression 3				
Y – economic growth (sample of 10 states, exposed to significant macro-financial destabilization)	*X*1	*X*2	*X*3	*X*4
	0,155 (0,072)	–0,242 (0,157)	–0,077 (0,182)	–0,384 (0,249)
t	2,13	–1,539	–0,421	–1,544
R^2 = 0,79	*F*(4,5) = 4,3854	*p* < 0,06825	Std. Er 1,5162	

Annotation 1. Retrieved using the STATISTICA software package.

Results of regression analysis presented in Table 2 show mixed conclusions, although overall, they empirically confirm the hypothesis. In the first approximation, we can state that there is a predictable connection between the scale of the financial imbalances correction and drop in long-term rates and the economic recovery, the exceptions being the real disposable incomes in all three regression equations and balance of payments adjustment indicator in equation 1. A more detailed analysis shows the following results.

The correction of imbalances in a milder form is associated with long-term rates, even in the case of credit and real estate market cleaning-up; the correlation has a theoretically predictable direction (regression 1). Low coefficients of elasticity are at odds with the relatively high value of the correlation density. There are instances when the direction of the connection between the adjustment of the balance of payments and long-term rates does not meet the theoretical assumption. This can be explained by assuming that the trend spreads do not include restoring external balance counting on the macro-financial assistance from the Union level. That is, the country risks are likely shaped by factors other than solely the balance of payments. For example, restoring global competitiveness may be accompanied by increased demand for investment imports, which together with a neutralized currency risk and expected capital inflows creates conditions for disregarding the magnitude of current account correction when determining the long-term interest rates. This phenomenon can be called a benefit of the monetary union.

The direct and decidedly tight connection between the correction of real disposable income and long-term rates also does not meet the theoretical assumptions, which provide that due to their correction the global competitiveness would be restored as a basis for the stabilization of spreads and, consequently, falling long-term rates. In addition, this variable is most closely linked to the value of interest rates; such a connection is statistically significant. This can be explained on the assumption of the opposite vector of the interconnection, that is when the value of rates requires correction in real disposable income, and not when the scale of correction in the labour market determines the value rates. Due to the statistical significance of such a connection, we can conclude that it is a problem of access to financing because of the jump spreads requires a radical reduction in real disposable income. This fully corresponds to the nature and the difficulties of implementing fiscal consolidation in countries where the fiscal space is saturated, and this also fits into a macroeconomic model of the debt burden in the monetary union. Since public debt cannot be reduced using monetary levers, the significant primary surpluses are the only available means of maintaining sovereign solvency. That is a classic case of the burden of monetary union being incompatible with the fiscal irresponsibility of its members. For this precise reason, discriminatory access to financing in countries with high public debt requires the implementation of unpopular steps to reduce real incomes in order to achieve a primary surplus. Moreover, the value government debt and the scope of public

sector are likewise related to the needs in reducing real incomes. Hence, in Greece the highest interest rates are directly connected to the highest public debt out of all EMU countries and the largest proportion of employees in the public sector.

The correlation between variables that characterize the correction of imbalances and an indicator of post-crisis economic growth (regression 2) has a number of nuances as well. Statistical properties of the model are not conclusive, but in all cases (except for the correction of real income) there is a theoretically predictable «line of communication» between the analysed variables. Contrary to the previous case, an indicator of balance of payments adjustment corresponds in a theoretically predictable manner to the indicator of renewed growth and density of such connection is sufficient. However it is inferior to the density of the connection with the real income variable, which is inverse. These results can be explained by the fact that the countries proved to be quite heterogeneous. Nature of the imbalances in some states reflected the increasing vulnerability of the system, whereas in others – difficulties in sustaining domestic demand while maintaining global competitiveness (e.g. large trade surpluses of Germany, the Netherlands, Austria, etc.) The balance of payments correction directly affects the post-crisis recovery, which is especially important for small open economies of the EU member-states. This adjustment displays the complex combination of price and non-price factors of restoring competitiveness, as well as the offsetting of the demand drivers, which encouraged imports. Here fiscal consolidation has a positive effect, as does the termination of unproductive domestic credit expansion in sectors unrelated to international trade.

Cleaning-up the credit and real estate markets are not statistically significant recovery of growth factors. Nonetheless these variables having a theoretically predictable relationship, signposts the importance of the financial sector allocation effectiveness and the validity of macro-financial approach to the problem of imbalances. The connection of the correction in real disposable income variable, as in the case of long-term rates, is not theoretically predictable, yet it is strongest. Consequently, we can make a clear conclusion that the internal devaluation, however necessary it may be for restoring global competitiveness and maintaining the sovereign solvency, has a negative impact on economic growth.

The possible channels for such influence include direct contraction of domestic demand and indirect contraction of demand through arising of leverage if the household sector is overloaded with debt. The latter assumption cannot be disregarded as the unravelling and spreading of imbalances entails increasing leverage. Furthermore, in the process of imbalances correction, the decline in income makes debt servicing burden even heavier. On the one hand, it confirms the reservations that renewed growth cannot reach pre-crisis level in the aftermath of rapid debt accumulation. Additionally, any change in real income will mean a drop of expected solvency and an increased uncertainty about future consumption and investment. On the other hand, it indicates the validity of

macro-financial approach to the issue of imbalances accumulation, according to which pre-emptive reaction to the expansion of the financial sector is more effective than the strategy of post-crisis liquidity support. In other words, cleaning-up the financial markets and solving the problem of debt burden should be supplemented with the income policy, which entails reducing income in accordance to the equilibrium trajectory of the labour cost in a competitive world.

In order to offset the problem of heterogeneous sample of 19 countries, we chose 10 of them that experienced the most significant macro-financial stress. Despite some differences – for example Italy has a problem of public debt and banking sector with a relative external balance – all of them entered the crisis because of overheating in the financial sector and parallel worsening balance of payments, together with the loss of global competitiveness. Also, all of them are in the catch-up stage of convergence, except for Italy and, to a lesser extent, Ireland.

The analysis results (regression 3) allow us to confirm the basic theoretical assumptions about the process of correcting imbalances (with above-mentioned reservations) as the statistical significance of the said results is significantly greater. As shown in the Table 2, the density of connections and the coefficients of the regression equation are highest overall, although the F-criterion value is lower than in the equation 1. It is noteworthy that the correction rates of the credit market and balance of payments are quite closely connected the indicator of growth recovery. The coefficients are the highest out of all three cases. This indicates the importance of articulated in literature problems of connection between internal and external imbalances for this group of countries. Meaning, credit expansion rapidly increases current account deficit, resulting in a positive correlation between the credit market correction, restoring external balance and post-crisis growth. In this case, the result for the real estate market correction is unexpected, as it does not meet the theoretical assumption, whereas for a sample of 19 countries (equation 2) the coefficient sign was predictable. The correction of real disposable income, as in the previous cases, is in an inverted and quite close connection with the growth recovery. However, the relevant coefficient is lower in this case than in the previous two. On the one hand, it may indicate that countries more affected by the crisis restored faster compared to the sample as a whole, being forced to resort to reduce real disposable income. On the other hand, it may indicate a clear fragmentation of the most affected countries on the basis of structural rigidities. For example, the Baltic States and Ireland were able to quickly rationalize income policy, while the Mediterranean countries were not, and Greece had to implement austerity policies under the pressure of the public debt burden.

Paradoxical insensitivity of growth renewal to the correction in the real estate market in the countries most affected by the crisis, led to further testing of the relationship between the analysed variables. Application of one-factor regression for the third case permitted to see much better and more theoretically

relevant assessment (but, again excluding the real disposable income variable). Thus, the relationship between cleaning-up the credit market and restoration of growth is described by the following equation: $Y = 0{,}1678x - 2{,}114$ ($R^2 = 0{,}58$); respectively, between the balance of payments correction and post-crisis growth: $Y = -0{,}3192\underline{x} - 0{,}8748$ ($R^2 = 0{,}397$); between the real estate market correction and restoration of growth: $Y = 0{,}2359x - 2{,}5351$ ($R^2 = 0{,}28$); between the changes in real disposable income and post-crisis growth: $Y = -0{,}0898x + 1{,}096$ ($R^2 = 0{,}008$).

Unlike multi-factor regression, one-factor regression shows a theoretically predictable pattern. All variables have a connection direction in accordance with the hypothesis, and its density in terms of cleaning-up the credit market is the highest. Considering the variable of income, if we exclude Greece, we return to the theoretically predictable role of income correction in restoring growth. This means that the internal devaluation is a valid tool for restoring balance in the monetary union. However, it is only effective if the country does not have a substantial burden of public debt. Otherwise, the internal devaluation turns from a competitiveness recovery tool into a determinant of domestic demand contraction on the scale that is irreconcilable with economic growth.

These considerations present an opportunity to soften the argument that the internal devaluation under conditions of high household sector debt is restrictive. The question should be posed differently. Let us consider the case where it is the most powerful method of restoring competitiveness and forming positive expectations in the financial markets. Even then, the consequences of its use will be favourable for the growth only when cleaning-up the credit market enables the deleverage process in such a way that the burden of the household sector loan debt is weakened without radical losses in the financial sector. It is clear that such large-scale operations require fiscal injections either to recapitalize banks, or to create a bank that buys bad debt. Under any circumstances, fiscal space determines how strongly the internal devaluation would generate non-Keynesian growth effects and whether cleaning-up the financial markets would cause doubts in sovereign solvency. Thus, the factor of initial household sector debt burden will be significantly weakened, if (a) domestic income reduction is perceived as a temporary phenomenon associated with the restoration of competitiveness, rather than savings programs, (b) increasing public debt – with stabilizing the financial sector, rather than prolonged avoidance of structural reforms and financing large and inefficient public sector. Therefore, the internal devaluation will not influence the connection between domestic demand and restoring growth as strongly. The example of Ireland and Spain, and to some extent the Baltic countries, is positively exemplary, while Greece – negatively characteristic.

At the same time, it should be recognized that the combination of all specified points simultaneously is a difficult political and economic challenge, the implementation of which even in the most optimistic scenario does not guarantee avoiding social conflict. This difficulty is associated with the systemic complexity

of constructing a mechanism of precarious coordination between the many components of economic policy. Choosing the right set of mix-policy tools and their shares is vital from the standpoint of maintaining intertemporal social welfare, rather than merely for reasons of establishing growth recovery. From this we can conclude that the quality of public institutions, the fundamental rationality of society as a whole, confidence in the politicians who have to choose the right strategy and adhere to it, are the essentially important parts of the puzzle. Without them, restoring balance in the monetary union sans damaging the growth and social welfare would be distorted. In this case, a more realistic option would be to restore growth thanks to the correction of imbalances, in tandem with significant redistribution conflicts and inferior social welfare, at least in the short term. However, whether or not such decline becomes a hysteresis effect, will depend on the afore-mentioned set of factors: quality of institutions, social rationality and trust in politicians.

Conclusions

EMU faced a global financial crisis in the state of asymmetric accumulation of internal and external imbalances by the member countries. The consequent debt crisis further exacerbated the problem of restoring balance and preventing divergence. In theory there are following approaches to explaining the asymmetric imbalances and the corresponding divergence: non-compliance of member states with the optimum currency area criteria and lack of a lender of last resort; «bad convergence», characterized by credit expansion and inflation of asset prices in countries with lower income in the conditions of unified interest rates; divergence of trends of real effective exchange rates, labour costs and income policies among different countries; capital inflow by the vector «North-South» and the unaccounted risk of the «sudden stop» crisis in the EMU; lack of adequate macroeconomic management, addressing the issue of imbalances and financial vulnerabilities; overestimated expectations of the benefits of the monetary union membership, accompanied by rational choice in favour of a higher level of leverage and more. Nevertheless, theoretical approaches to correcting imbalances largely focus on the issue of re-balancing the current account and ensuring said process through internal devaluation (correction of the real effective exchange rates and contraction of import demand), fiscal consolidation, and structural reforms aimed at creating non-price drivers of growth based on exports. Focusing exclusively on the balance of payments neglects the problem of structural connection between internal and external imbalances. The correction of internal imbalances is no less important than of the external ones. Thus, the return to growth after the crisis peak should correspond to all basic manifestations of imbalances. According to the problem theory, these include the credit market, the current account, the real estate market and the real income of the households.

The hypothesis that the post-crisis growth should correlate with indicators that characterize the magnitude of the imbalances correction is overall confirmed empirically based on regression analysis. The analysis was conducted on a sample of 19 countries and, additionally, the 10 countries that experienced the most profound macro-financial destabilization. Growth recovery corresponds most clearly with the magnitude of balance of payments adjustments, and in the case of the smaller sample – with the credit market cleaning-up. The correction in the real estate market corresponds in a mostly predictable way with the resumption of growth, but it is less statistically significant. Correction of real disposable income does not have an obvious positive impact on the growth recovery. Reduction of income negatively influences GDP growth through two channels: direct contraction of demand; contraction of demand due to the relative increase in the value of household sector debt burden. Thus, the fiscal space is one of the key factors of minimizing the destructive impact of reduced income (for the imbalances correction purpose) on growth. Combining the policy of credit market cleaning-up and internal devaluation in order to restore competitiveness can generate non-Keynesian effects. This is possible given sufficient fiscal space, in which the increase in public debt would be trusted. Application of this mix-policy is a complex political and economic challenge that relies on the quality of public institutions. However, a theoretically predictable relationship between the correction of imbalances and the growth recovery can be considered an unambiguous policy reference.

These results are important for the long-term functioning of the monetary union. First, asymmetrical accumulation of large private sector debt significantly increases the vulnerability of the monetary union to the risk of divergence. Substantial leverage at the beginning and a painful deleveraging process are accompanied by much slower economic recovery and widely differing trajectories of said recovery. Second, low interest rates unravel and spread the imbalances more than they encourage investment in the real economy. Third, the lack of fiscal discipline significantly complicates macroeconomic adaptation and admits that the correction of imbalances requires social losses, which may not be reconcilable with the resumption of growth. Fourth, restrictions of financial cycle's expansion, examination of the connection between labour costs, real effective exchange rates and the state of competitiveness, and stricter fiscal rules should neutralize the preconditions for crises similar to the one that happened in the EMU in 2009–2015.

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