Maryana Pyrch
National Ivan Franko University of L'viv

A problem of business cycle synchronization in the new European Union member states and the euro zone

An evident tendency of a modern economic world is synchronization of business cycles in different countries. Comovements of economic activities around the national economies can be caused by economic shocks, common for all the countries, by global spillovers of disturbances in one of the big economies and also by correlated shocks in separate countries. Dynamics of macroeconomic aggregates in an open national economy also is influenced by some regional factors, which cover common elements of cyclical fluctuations in the countries of a certain region, and by country-specific factors, common for the macroeconomic variables of an individual country.

According to the World Economic Outlook, made by the International Monetary Fund, common global disturbances have explained international economic fluctuations in a lesser extent since the mid 1980s[1]. Increasing importance of regional factors is being observed in the regions, where intra-regional trade and financial links enhance.

A number of scientists nowadays pay attention to the research of a degree of synchronization of business cycles in the new members of the European Union (EU) and the euro zone. This question is especially important in terms of these countries' intention to join the European Monetary Union (EMU) in the nearest future. In that case they will lose their independent monetary policy and therefore opportunity to react on their own to specific economic conditions. Theory of the optimal currency area stresses on the importance of business cycle synchronization for the members of a monetary union. In fact the higher is the correlation of business cycles, the lesser is probability of asymmetric shocks, and more easy is to make common stabilizing interventions. Stabilization costs of refusing a national monetary policy for the accession country are lesser in that case. If a business cycle in a national economy is not synchronized with the euro area business cycle because of asymmetric shocks or differences in extending common shocks, common monetary policy can be harmful for the economy.

[1] *Spillovers and Cycles in the Global Economy* // IMF World Economic Outlook. – April, 2007. – P.141-144.

The euro zone business cycle influences business cycles in Central and Eastern European Countries (CEECs)[2]. Thus economic growth is lower in most of them, when the euro zone economy moves more slowly but is higher, when it expands. There are a lot of empirical studies on the problem of business cycle synchronization inside the EU. It is hard to estimate it distinctly. Therefore the results are rather various. They depend on the data used, selected methodology of research and a time period duration. A lot of debates on statistical models and economic relations on the issue appear in the scientific literature. It is important to see some tendencies, while the results should be treated with caution.

Empirical results show in most cases considerable heterogeneity among the new EU members in terms of a degree in which their business cycles are synchronized with that of the euro zone. That means that for some countries joining the EMU would be less costly, than for others. Thus, say, Darvas Z. and Szapáry G. analysed quarterly series of GDP and its components in the CEECs in 1993-2002 and divided these countries into three groups[3]: Hungary, Poland and Slovenia, where economic fluctuations appeared to be the most synchronized with those of the euro zone; the Czech Republic and Slovakia, where they were lesser synchronized; and the Baltic States, where cycles of economic activity appeared not to be synchronized at that time.

Such difference can be explained by the features of economic transformation process in these countries and hence by some country-specific economic shocks. Thereafter higher level of synchronization of economic activities in the countries-leaders and the euro zone could be caused by relatively faster both production restructuring and re-orientation of export from the Eastern Block to the EU. Privatization and net foreign investment flows also took an important part in this process. In the Czech Republic and Slovakia smaller degree of synchronization probably resulted from the in-sufficient reforms and macroeconomic imbalances in the first half of the 90s, currency crises in these countries and following recessions. Lack of synchronization in the Baltic States could be caused by idiosyncratic shocks, connected with the Russian financial crisis of 1998, by more intensive economic relations with Russia, lesser share of intra-industry trade with the EU and also by important trade links with the Scandinavian states, where synchronization of economic cycles with those of the euro zone was not high.

[2] Aslanidis N., *Business Cycle Regimes in CEECs Production: a Threshhold Approach*. – Bank of Estonia. – WP No 1, 2006. – P.11.

[3] Darvas Z., Szapáry G., *Business Cycle Synchronization in the Enlarged EU: Comovements in the New and Old Members*. – February, 2004. – P.24-25.

Researches of other economists also show different degree of business cycle synchronization in the new EU members. For example, Lopes A. analysed key macroeconomic indicators for Poland, Hungary and the Czech Republic in 1991-2003. She revealed for Poland a significant positive correlation of production and investment with those of the euro zone and somewhat lower positive correlation for labour and consumption. Hungary had strong positive correlation of production and slightly less – of investment and labour. Consumption didn't appear to be correlated. For the Czech Republic all the correlations were negative[4]. It was also calculated, that the weight of a specific component comparatively to a common with the euro zone component in explaining business cycles was small in all three economies, particularly in Poland and Hungary.

When to take these results into considerations, it seemed that joining the EMU would be easy for these countries, especially for Poland and Hungary. Nevertheless Lopes A., using dynamic general-equilibrium model of an open economy, explored, that entrance of the mentioned countries to the EMU could lead to substantial worsening of their welfare[5]. To her opinion, consequences of giving up flexible national monetary policy depend, among other factors, on significance of technology shocks and fiscal and monetary policies shocks, share of import from the euro zone and risk-aversion of consumers. Thus, say, if technology shocks are significant, import shares with the euro zone are small and consumers are risk-averse to lose independent national monetary authority, then costs of joining the euro zone will be higher.

Experiments of Lopes A. revealed that technology shocks were more persistent in Poland than in other economies and they were the only variable of the mentioned, which evidently influenced changes of the welfare in the country. In the economies of The Czech Republic and Hungary demand shocks played more role because of bigger share of trade with the euro zone, decreases of which enhanced an exposure of the domestic economy to idiosyncratic shocks. Economic agents in these two countries were relatively risk-averse and preferred to live in a country with less variable economic aggregates. Hereto strong government consumption shocks, which caused price increases, were observed in the countries. Changes of correlations of monetary policy shocks also seemed to be important in the model. Under such circumstances though these economies became more convergent, preference at the

[4] Lopes A. F., *The Welfare Cost of the EMU for Transition Countries*. – ISEG, ISCTE, DINÂMIA. – February, 2007. – P.4-5.
[5] Ibid – P.18-19.

mentioned time still was giving to more autonomous flexible monetary policy, which could stabilize the national economy more actively.

According to the results of study of key macroeconomic variables of the euro zone and the new EU members in 1993-2003, made by Eickmeier S. and Breitung J., Hungary, Estonia, Slovenia and Poland appeared to be more appropriate candidates to join the EMU than the other CEECs[6]. These results for Hungary, Slovenia and Poland are consistent to some extent with the foregoing. Besides the scientists made an interesting conclusion that transference of common shocks of the euro zone to the new EU members wasn't substantially different from that throughout the EMU in most cases.

Particular research of correlations of demand and supply shocks is important in analysing interdependency of economic fluctuations. Thus, Firdmuc J. and Korhonen I. revealed, that correlation of the demand shocks was notably lower, than correlation of the supply shocks for the most new EU members as far back as at the stage of their preparation for the entrance to the EU – in 93/95-2002[7]. At that time the highest correlation of the supply shocks was observed for Poland. In the judgement of the scientists, correlation of the supply shocks is more important for defining degree of business cycle integration, as it displays similarities of the economies better. Whereas differences in the demand shocks usually decrease when economic policies become more similar inside the EU.

Another researches, made for the period of 1993-2005, show, that production and prices are more sensible to supply and demand shocks in the new EU members, than in the euro zone and adjustments to these disturbances occur more slowly there[8]. It can be explained by higher average rates of inflation, greater propensity to consume and, possibly, weaker effect of the automatic stabilizers in these countries. At the same time disturbances of demand and supply in the new EU members correspond to the euro zone shocks in different extent, being the evidence of heterogeneity among the countries in this aspect again. But still demand and supply shocks in some new EU members seem to be correlated with the euro zone shocks the same way as in case of some euro zone members.

While researching business cycle synchronization, it is interesting to know what economic sectors contribute to it mostly. This is important in the context of refusing independent monetary policy. Analysis of business cycle synchronization in section of sectors

[6] Eickmeier S., Breitung J., *How Synchronized are New EU Member States with the Euro Area? Evidence from a Structural Factor Model.* – January, 2006. – P.18-19.

[7] Fidrmuc J., Korhonen I., *The Euro goes East. Implications of the 2000-2002 economic slowdown for synchronization of business cycles between the euro area and CEECs.* – November, 2003. – P.11-12.

[8] Gilson N., *How to be Well Shod to Absorb Shocks? Shock Synchronization and Joining the Euro Zone.* – CESifo WP No 1878. – December, 2006. – P.15-20.

in the extended EU in 1980-2005 showed that the most significant contribution to general business cycle synchronization was made by industrial production, construction, agriculture, fish and forest industries. But for the sector of services, where the most part of additional value is produced, synchronization of relatively low level was observed[9]. This is connected with an insignificant correlation of private consumption in the CEECs, which however reflects an important part of general demand and consequently services, with the business cycle of the euro zone. But in the judgment of the scientists, lack of the correlation of consumption exists because of sudden shifts in consumers' behavior and weak risk-sharing and can be a temporary phenomenon[10]. Besides, consumption is traditionally less correlated then industrial production even in more developed economies.

An important aspect of the interdependence of economic fluctuations in different countries is that economic cycles, while even being well synchronized, can have different shapes. Common monetary policy would have various consequences depending on, say, the depth of recession in an individual country. That is why it's worthy to expand measures of business cycles similarities in different countries by analysis of their external features.

Camacho M. and Perez-Quiros G. analysed characteristics of business cycles in the European countries until 2004 and didn't reveal existence of the common European business cycle[11]. According to their results, the European countries were distributed among four clusters. The first cluster was formed by Cyprus, Estonia, Latvia, Lithuania and also Romania and Turkey, for which short duration of economic expansions and high amplitude of recessions were typical. The second group of countries consisted of the USA, Canada, some Nordic countries, Slovakia and the Czech Republic, where expansions were long and deep relatively to recessions. The third cluster was composed of a majority of the EU-15 economies with low amplitude of both expansions and recessions. The last cluster consisted of Ireland, Hungary and Poland, which showed more atypical business cycle characteristics – very long and wide expansions and very short recessions. The countries of the last group received large positive benefits from their expansions in the last years. Such distribution of the new EU members between four groups again is the evidence of high degree of heterogeneity among the business cycles of these countries.

[9] Afonso A., Furceri D., *Sectoral Business Cycle Synchronization in the European Union*. – January, 2007. – P.1.

[10] Darvas Z., Szapáry G., *Business Cycle Synchronization in the Enlarged EU: Comovements in the New and Old Members.* – February, 2004. – P.25.

[11] Camacho M., Perez-Quiros G., *Do European Business Cycles Look Like One*? - RePEc: Banco de España. – Working Paper No. 0518. – August, 2005. – P.16-19.

It should be mentioned that the scientists do mainly retrospective analyses of business cycle synchronization. It is necessary to remember that structural changes take place in the new economies continuously and the process of economic integration with the euro zone is still underway, so the relation of their economic fluctuations is also permanently changing. With market reforms quickening, a degree of business cycle synchronization with the euro zone increases. We can observe it particularly in the case of Slovakia.

The economists of the National Bank of Slovakia calculated that a symmetry of demand and supply shocks and, to some extent, a synchronization of a business cycle with that of the euro zone, have increased last years in the country[12]. In general synchronization of shocks with those of the euro zone in Slovakia is similar or even stronger then in the peripheral countries of the euro zone (Spain, Greece, Portugal). Such tendencies were specified by successful stabilization of Slovak economy, thereafter strong economic growth in 2001, and also by simultaneous slowing of economic growth in the euro zone.

Besides, interesting are the results of research of Woźniak P. and Paczyński W. on the issue. The scientists made a spectral analysis of the GDP growth in the new EU members and the euro zone in 92/95-2007[13]. They revealed relatively low interrelation if to take the period of three years and more. Nevertheless the relation turned out to be more substantial when to consider smaller periods. Thus in nearly all the countries under analysis maximally strong interrelation was defined for business cycles under the duration of 4-7 quarters. An important point is that these borders coincide with a typical horizon of a monetary policy. That is why these results give some support to the view that the new EU members have already achieved a considerable convergence with the euro zone in their economic activities. This is very important from the perspective of a possible common monetary policy in future.

In general, expected costs of joining the EMU can be bigger then actual. Some studies conclude that monetary unions can prosper also with varied regional business cycles[14]. According to the experience of some European countries (Ireland, Finland, Spain), insufficient alignment of economic shocks or cycles doesn't necessarily mean that the country will be economically unsuccessful. Asymmetric shocks can have not only negative but also positive influence on the economy. Sometimes it is enough for the new member to have economic fluctuations just not too much more idiosyncratic then those already in.

[12] Lalinský T., Šuster M., Zeman J., *Convergence, Synchronization of Cycles and Symmetry of Shocks* // National Bank of Slovakia. – Volume 15. – 2007. – N 7. – 9 p.

[13] Woźniak P., Paczyński W., *Business Cycle Coherence between the Euro Area and the EU New Member States: a Time-Frequency Analysis* // CASE. – July, 2007. – P.17-18.

[14] Darvas Z., Szapáry G., *Business Cycle Synchronization in the Enlarged EU: Comovements in the New and Old Members*. – February, 2004. – P.25-26.

Furthermore, it is necessary to bear in mind that a process of synchronization of economic fluctuations inside a monetary union to a great extent can be an endogenous variable. That means that accession of a country to the monetary union in itself can promote increasing synchronization of its business cycle with that of the euro zone. Thus, according to the research of Darvas Z. and Szapáry G., synchronization of business cycles had increased in all members of the EMU since the period of preparation to join the monetary union began[15]. Degree of synchronization is especially high in the core EMU countries (Austria, Belgium, France, Germany, Italy and the Netherlands) and in the peripheral countries (Finland, Ireland, Portugal, Spain) it is only approaching to that level. Inside the EMU synchronization increased even for traditionally less synchronised components of GDP, in particular private consumption and services. Though consumption remains to be less synchronised then GDP.

Joining the EMU is the next phase of economic integration for the new EU members. In a lot of empirical studies influence of a trade and financial integration on the business cycle synchronization appeared positive. Closer international economic integration tends to enhance covariance of the country-specific demand shocks (by propagation of changes in preferences), and also country-specific supply shocks (by extension of changes in productivity)[16].

Joining the euro zone possibly will promote increasing competition in the countries and also reduction of trade costs, in particular because of removing exchange rates fluctuations. These can contribute to increase in production and intra-industry trade and hence to comovements of macroeconomic aggregates. It is necessary also to note that exchange rate flexibility in small open economies like those of the CEECs can itself be source of macroeconomic disturbances. Constraints on monetary and fiscal policy in a monetary union may also reduce the risk of asymmetric shocks, which are policy-driven.

However it is necessary to note that the influence of economic integration on the process of business cycle synchronization is not simple and the economists don't have a consensus of opinion about it. In some papers economists assert that economic integration will reflect on lesser symmetric shocks (De Grauwe and Vanhaverbeke), in others – that the degree of an asymmetry won't change (Forni and Reichlin) or will cause more symmetric shocks (Frankel and Rose)[17].

[15] Ibid – P.23-24.

[16] Gilson N., *How to be Well Shod to Absorb Shocks? Shock Synchronization and Joining the Euro Zone.* – CESifo WP No 1878. – December, 2006. – P.17.

[17] Demyanyk Y., Volosovych V., *Asymmetry of Output Shocks in the European Union: The Difference Between Acceding and Current Members.* – University of Houston. – April 2004. – P.3.

On the one hand, foreign-trade links and financial integration influence changes of aggregate demand and supply in different countries, increasing synchronization of economic fluctuations. But these processes also enhance specialisation of production in these countries[18]. The impact of specialisation on economic fluctuations depends to a great extent on a specialisation pattern[19]. Thus, specialisation according to comparative advantages means that business cycles often can be caused by branch-specific disturbances and so synchronization of economic fluctuations among the countries can decrease. When trade between countries is mainly intra-branch or vertical specialisation on different stages of production takes place, than greater trade intensity possibly will lead to higher synchronization as a result of symmetric branch-specific shocks.

Strengthening economic integration after joining the monetary union also means appearance of the effective mechanisms of income insurance and consumption risk-sharing through the international capital markets. These help to neutralize asymmetric shocks[20]. But international risk-sharing also can enhance specialisation, making economic fluctuations less symmetric. On the other hand, monetary unification may foster processes of convergence in the composition of spending at the national level[21]. Convergence in spending patterns tends to make the policy stance which is optimal at a regional level more symmetric across different regions in the union, even if regional shocks are uncorrelated and local production is specialized.

Yet, talking about the international risk-sharing, it's worthy to note, that Afonso A. and Furceri D., having analysed economic series for the period of 1980-2005 in the EU countries, came to the conclusion that insurance mechanisms (international income transfers, capital depreciation, net international tax and transfers and total savings) acted more effectively in the actual EMU then in the EMU, if it would be extended to 25 members[22]. In other words, in the enlarged EMU ability to smooth country-specific shocks, as appeared, didn't rise. At the same time fiscal policy generally seemed to act better in this aspect in the EMU of 25 then in the actual one. In general, the influence of economic integration on business cycle

[18] Imbs J., *Trade, Finance, Specialization and Synchronization* // IMF Working Paper No 81. – 2003. – P.3-5.

[19] Akin Çiğdem. *Multiple Determinants of Business Cycle Synchronization*. – George Washington University. – September, 2007. – P.6.

[20] Demyanyk Y., Volosovych V., *Assymetry of Output Shocks in the European Union: The Difference Between Acceding and Current Members.* – University of Houston. – April 2004. – P.1.

[21] Corsetti G., *A Modern Reconsideration of the Theory of Optimal Currency Areas* // European Commission. – Economic Papers 308. – March 2008. – P. 36.

[22] Afonso A., Furceri D., *Business Cycle Synchronization and Insurance Mechanisms in the EU*. – European Central Bank. – WP No 844. – December, 2007. – P.21-22.

synchronization in different countries is ambiguous and requires complicated empirical researches.

Hence a problem of business cycle synchronization in the CEECs and the euro zone is very important according to the intention of the countries to join the EMU in the nearest future and to pursue a common monetary policy effectively. Results of a lot of empirical studies argue that the degree of synchronization of economic fluctuations increases in time, though the countries are rather heterogeneous in this process. Transitional economies are on their way of catching up more economically developed countries and continue to reform their economies. This is accompanied with the country-specific shocks, which can explain relatively slow convergence of their business cycles with that of the euro zone.

Nevertheless it can be expected that so significant structural changes as at the end of the former century, won't take place in these countries. This in turn means a possible tendency of increasing business cycle synchronization for them in the future. Deepening economic and financial integration of the new EU members after joining the EMU can itself enhance comovements of economic aggregates with the euro zone. Reforms should be done to make the national labour markets more mobile and wages more flexible. Price and wages flexibility and labour market mobility can help to adjust to idiosyncratic shocks and therefore offset partly the lack of synchronization between the business cycles. Goods and factor markets should be flexible enough to respond to shocks, reducing the need for adjustments in monetary policy. A policy of economic convergence with the euro zone plays an important role in the process of synchronization of business cycles. Since similarities in economic structures, macroeconomic fundamentals and policy coordination in separate countries and also their legal and institutional similarities are significant factors of comovements in their macroeconomic aggregates.

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