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Is the Euro the Optimum Currency for Croatia: An Assessment Using the Optimum Currency Area Theory

Mislav Brkić and Ana Šabić

Zagreb, January 2018



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Abstract

Using the optimum currency area theory, this paper analyses whether Croatia is ready for euro adoption. The theory proposes several criteria a country should meet to be able to function successfully in a setting of common monetary policy. Most of the criteria refer to the establishment of the degree of economic integration between a country and a monetary union in view of the fact that close economic integration implies lower risk of asymmetric shocks. The analysis shows that the Croatian economy is highly integrated with the euro area in terms of trade and finances, its business cycle is synchronised with the business cycles of the major euro area member states, while EU accession raised the degree of political integration between Croatia and other member states. Under these criteria, it may be concluded that Croatia will function efficiently in a setting of common monetary policy. By contrast, Croatia's performance regarding the economic diversification criterion is relatively poor. In addition to favourable results under most criteria of the optimum currency area theory, there are other important arguments in favour of euro adoption in Croatia. More specifically, the adoption of the euro would eliminate the problem of the high euroisation of the Croatian economy, as well as a number of other risks and constraints arising from that problem. By adopting the euro, Croatia would therefore make an important strategic step towards maintaining macroeconomic and financial stability in the long run.

Keywords:

optimum currency area theory, monetary policy, euro, Croatia

JEL:

E42, E52, F33, F45

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Contents

Abstract	v
1 Introduction	1
2 Optimum currency area theory – an overview of literature	2
2.1 Main assumptions of the optimum currency area theory	2
2.2 New directions of development of the optimum currency area theory	3
2.3 Weaknesses of the optimum currency area theory	3
3 Relevance of the optimum currency area theory for the EMU	4
3.1 The role of the optimum currency area theory in EMU establishment	4
3.2 Is the euro area an optimum currency area?	6
4 Assessment of the suitability of the euro for Croatia according to the optimum currency area theory	9
4.1 Trade and financial integration	9
4.2 Synchronisation of business cycles and economic shocks	11
4.3 Diversification of the economy	12
4.4 Labour mobility	13
4.5 Wage and price flexibility	14
4.6 Fiscal and political integration	14
4.7 Why the optimum currency area theory is not entirely relevant for Croatia	15
5 Conclusion	16
References	18

1 Introduction

Using the optimum currency area theory, this paper analyses whether Croatia is ready for euro adoption. The theory of optimum currency areas defines certain criteria any country should meet to be able to participate successfully in a monetary union with other countries. The criteria mostly refer to the level of economic integration achieved compared with that of member states of the monetary union. In particular, if a country is strongly integrated with members of the monetary union in terms of trade and finances and if it has a diversified economy, the structure of which is similar to that of other member states, its business cycle would probably be synchronised with that of the rest of the monetary union, so that the common monetary policy would generally be suitable for it. Furthermore, the theory highlights the importance of price and wage flexibility, labour mobility and fiscal and political integration as additional mechanisms that facilitate adjustments in situations when common monetary policy is not fully suitable for a member state's economy.

Several authors have so far assessed whether Croatia belongs to the same currency area as developed Western European countries (Šonje and Vrbanc, 2000; Bellulo, Šonje and Vrbanc, 2000; Broz, 2008; Kotarac, Kunovac and Ravnik, 2017). In these papers, the focus was on measuring the synchronisation of the business cycles of Croatia and developed European countries, while other criteria have not been considered in detail. The contribution of this paper is that it assesses Croatia's performance under all main criteria of the said theory on the basis of data through to the end of 2016. As the analysis covers the period following EU accession, performance under individual criteria was also influenced by structural changes that were due to Croatia's EU membership. For example, the inclusion of Croatia in the single EU market has led to the noticeable strengthening of foreign trade with other member states, so that Croatia's position is better today than in the pre-accession period with regard to the trade integration criteria. Furthermore, since its entry to the EU, Croatia has taken part in the European Semester – a mechanism for economic policy coordination, which has effectively raised the degree of political integration with the euro area. Finally, the greater openness of the Croatian labour market due to the abolishment of obstacles to the free movement of persons has had a positive effect on Croatia's performance under the labour mobility criterion.

The analysis shows that the Croatian economy is highly integrated with the euro area in terms of trade and finances and that its business cycle is synchronised with the business cycles of the major euro area member states, while EU accession raised the degree of political integration between Croatia and other member states. According to these criteria, it may

be concluded that Croatia will function efficiently in a setting of a common monetary policy. The criteria of price and wage flexibility and labour mobility have also been met, albeit not as fully as the previously mentioned criteria. By contrast, Croatia has performed poorly as regards the economic diversification criterion.

The optimum currency area theory has certain deficiencies and it cannot be considered a fully credible measure when assessing the economic justification of euro adoption in Croatia. Therefore, the incomplete satisfaction of all the criteria of the optimum currency area theory does not necessarily diminish the possibility that Croatia will profit from euro adoption. One of the theory's deficiencies is that its criteria often lead to opposite conclusions regarding the justification of a country's joining the currency area. For example, in the case of Croatia, the theory does not answer the question of whether a high degree of business cycle synchronisation and close trade and financial integration are sufficiently strong arguments in favour of euro adoption, so that the poorer performance regarding the diversification criterion can be disregarded. The other important deficiency of the theory is that it ignores currency risk, which, for countries like Croatia, is a crucial argument in favour of joining the monetary union. Finally, the theory of optimum currency areas does not take account of whether a monetary union has mechanisms to prevent the emergence of detrimental macroeconomic imbalances in its members and mechanisms that provide financial support in case one or more members face a fiscal or banking crisis. The reforms taken after 2008 have incorporated such mechanisms into the institutional framework of the EMU, which will guarantee much greater resilience to member states should there be another severe global crisis. In line with this, the adoption of the euro would ensure Croatia a higher degree of protection at times of financial distress. However, this potential benefit of membership in the monetary union is not at all taken into account in the theory of optimum currency areas.

The paper is structured as follows. An overview of the literature on optimum currency areas is presented in the second section, including the original theory and new contributions to this field, as well as its main shortcomings. The third section deals with the issue of whether the optimum currency area theory was a relevant benchmark at the time when EU leaders were setting up the economic and monetary union. The fourth section considers whether Croatia meets particular criteria and draws a conclusion on whether euro adoption in Croatia is supported by the optimum currency area theory. The main conclusions of the paper are given in the last, fifth section.

2 Optimum currency area theory – an overview of literature

When discussing the evolution of the literature on optimum currency areas, different phases at which the main contributions to this area were made can be observed. One of the approaches sees the evolution of literature in two phases. In the first phase, during the 1960s and 1970s, theoretical papers that defined the key criteria for setting the boundaries of currency areas were published, while in the second phase, after the 1970s, the literature focused on empirical studies of benefits and costs of participating in a currency area (Horwath and Komarek, 2002)¹.

2.1 Main assumptions of the optimum currency area theory

The purpose of the optimum currency area theory was to develop a set of criteria that would provide countries with an answer to the question of whether exchange rates should be permanently fixed.² The theory is based on the works of Mundell (1961), McKinnon (1963) and Kenen (1969), with contributions being also made by Friedman (1953), Ingram (1962) and Mintz (1970). These papers name a number of criteria that determine whether countries and regions would make an optimum currency area and whether a country would benefit from participating in a monetary union with other countries. The criteria proposed by the authors of the theory are as follows: a high degree of trade and financial integration, synchronisation of business cycles and economic shocks, labour mobility, price and wage flexibility, product diversification and fiscal and political integration. A comprehensive overview of the literature on the optimum currency area theory was given by Bellulo, Šonje and Vrbanc (2000), Mongelli (2002) and Broz (2005). The text below briefly explains the economic argumentation for the main criteria of the theory.

A high level of trade integration reduces the significance of monetary independence. McKinnon (1963) believed that trade integration plays a key role in defining optimum currency areas. He claimed that small, open economies would benefit from the establishment of a monetary union with the most important trading partners. In particular, as the share of tradables in the consumer basket is very high in such economies, exchange rate fluctuations are rapidly transmitted to domestic inflation through prices of tradable goods, which diminishes the efficiency of the exchange rate as an economic policy tool. By contrast, large economies benefit more from maintaining monetary independence. Large economies are usually relatively closed and thus have a much lower share of tradables in the consumer basket. In such conditions, the exchange rate may be actively used to smooth the business cycle.

Financial integration may contribute to the stability of a monetary union. Ingram (1962) held that financial integration may reduce the need for nominal exchange rate adjustment

because capital flows across member states may help close temporary imbalances. For example, if there are strong financial links between countries, a country hit by a negative shock may borrow from other countries and thus bridge a temporary financing gap. Such financial flows guarantee the resilience of the monetary union and contribute to the convergence of borrowing costs of member states.

A high degree of synchronisation of business cycles and economic shocks facilitates the pursuit of a common monetary policy. If there is a high degree of synchronisation of business cycles among the member states – which implicitly means that countries are exposed to similar shocks in aggregate demand and supply and that transmission of such shocks is approximately symmetric – a single monetary policy will be equally suitable for all member states. Some authors believe that the criterion of synchronisation of business cycles and economic shocks is a composite criterion, as its satisfaction requires prior meeting of at least some of the other criteria, above all the trade integration criterion (Mongelli, 2002).

If **labour mobility** is high, a monetary union adjusts more easily to asymmetric shocks as workers migrate from countries or regions hit by a recession to countries or regions in the expansionary phase. According to Mundell (1961), labour mobility is a key determinant of optimum currency areas. The greater the labour mobility, the lower the need for adjustments in exchange rates and wages, which facilitates the pursuit of a common monetary policy. Therefore, each region where labour mobility is high has a feature of an optimum currency area.

Price and wage flexibility is another criterion of the optimum currency area theory. Friedman (1953) claims that, in a setting of a common monetary policy, member states of a monetary union should have sufficient price and wage flexibility to buffer idiosyncratic shocks, i.e. shocks that hit individual countries. If there is a possibility of adjustment in nominal prices and wages, the member states hit by a shock may absorb it without facing high costs in the form of increased unemployment and output contraction. On the other hand, if price and wage rigidities are high, adjustment costs within the monetary union may be considerable, which points to the potential benefits of keeping one's own currency.

Diversified economic structure diminishes the importance of the exchange rate as an instrument of macroeconomic adjustment. This claim was first put forward by Kenen (1969). He believed that a diversified economic structure mitigates the aggregate impact of shocks that hit particular industries. In such conditions, it is less likely for turmoil in one sector to have a crucial impact on aggregate economic activity, which reduces the capacity of the exchange rate to act as a buffer against shocks.

Finally, some authors pointed to **fiscal and political integration** as the necessary preconditions for long-term sustainability of a monetary union. Kenen (1969) states that fiscal

¹ Alternatively, in an overview of the literature on the optimum currency area theory, Mongelli (2002) mentions four phases, which are marked by important contributions: the “pioneer phase” (1960 to early 1970s), the “reconciliation phase” (1970s), the “reassessment phase” (1980 to early 1990s) and the “empirical phase” (from the early 1990s).

² The papers that provide a basis for the optimum currency area theory actually contain discussions about the choice between a flexible and fixed exchange rate regime, in which monetary union is an ultimate form of the fixed exchange rate regime.

integration facilitates the functioning of a monetary union as it may lower the need for adjustments through nominal exchange rates. In particular, if a member state is hit by an asymmetric shock, it will better endure the shock if the union has an adequate mechanism for the provision of fiscal transfers to countries experiencing a crisis. On the other hand, Mintz (1970) believes that political integration, i.e. political will for integration, is the crucial precondition to be met before a common currency is set up. The rationale behind this is that a political will for integration will stimulate countries to respect common rules and enhance economic policy coordination, which strengthens institutional relationships. These two criteria are directly linked – a high degree of political integration, i.e. a political union that implies the readiness to share risks, is a direct and necessary precondition for the establishment of a fiscal union in terms of a supranational system of fiscal transfers that is activated in the event of an asymmetric shock.

2.2 New directions of development of the optimum currency area theory

The interest of researchers moved over time from theoretical works to empirical studies. Nevertheless, the optimum currency area theory was further developed over the years, mostly thanks to Frankel and Rose (1998). They claimed that there is a certain endogeneity of criteria of the optimum currency area theory, as evident in the fact that membership in a monetary union may help a country to meet the criteria even if it failed to do so before accession. In particular, variables such as economic integration (degree of trade openness) and income correlation (synchronisation of business cycles) are not irreversibly fixed, but change over time. For example, after a country's accession to a monetary union, foreign trade between that country and the rest of the union may intensify, which may in turn increase the synchronisation of business cycles of that country and the rest of the union. The presence of endogeneity is one of the main reasons why the optimum currency area theory cannot be considered a fully reliable framework for assessing the economic justification of accession to the monetary union. De Grauwe and Mongelli (2005) confirmed the relevance of endogeneity in the case of the euro area. In particular, with regard to the financial integration criterion, the authors notice that money markets in the euro area integrated almost momentarily after the establishment of the monetary union, with a high degree of integration being also achieved in the government debt market, as evident from the equalisation of yields on bonds of fundamentally very different member states. Several empirical research papers showed that the adoption of the single currency has also enhanced the synchronisation of business cycles among member states (Darvas and Szapary, 2008; Furceri and Karras, 2008; Gogas, 2013).

In addition to the theory of endogeneity of integration, a completely opposite theory may be found in the literature – the theory of specialisation. For example, Krugman (1993) points out that trade liberalisation promotes specialisation in line with specific comparative advantages of individual countries, which may lead to the divergence of business cycles, instead of the convergence suggested by the endogeneity theory. Taking into account the degree of specialisation of individual US states, Bayoumi and Eichengreen (1992) point out that the

completion of the single market project in the EU may stimulate member states to specialise production, which would render the future monetary union vulnerable to asymmetric shocks. Fidrmuc (2004) claims that the answer to the question of whether endogeneity or specialisation would prevail depends mostly on whether intra-industry or inter-industry trade among countries develops more intensively. In particular, based on data for OECD countries, the author finds that the synchronisation of cycles among countries increases together with foreign trade, provided that the growth in intra-industry trade exceeds the growth in inter-industry trade.

2.3 Weaknesses of the optimum currency area theory

The optimum currency area theory has certain weaknesses due to which cannot be a completely reliable basis for assessing the justification of a country's accession to the common currency area. Tavlas (1994) criticises the theory because decision-making is often impossible as various criteria may point to opposite conclusions. It may happen that one set of criteria suggests that a country should have a fixed exchange rate regime (i.e. join the monetary union), while another set of criteria simultaneously suggests that a flexible exchange rate (monetary independence) would be more suitable. For example, if a country has intensive trade relations with partner countries, it would be a good candidate for a monetary union with partner countries according to the criteria of trade openness and business cycle synchronisation. However, if cross-border labour mobility between the country and its partners is low, monetary autonomy would be more appropriate for that country according to the labour mobility criterion. According to Tavlas (1994), another important deficiency of the optimum currency area theory, is its inconsistency, best illustrated by the collision between the trade integration criterion and the product diversification criterion. The author recalls that small economies are usually more open, so that under the trade integration criterion they would benefit more if the exchange rate of their currency were fixed against the currencies of the major trading partners (i.e. accession to a monetary union). At the same time, small economies are usually less diversified, which would, according to the product diversification criterion, imply that a flexible exchange rate regime (monetary independence) would be more appropriate for them. Large economies are generally better diversified, but are also relatively less open, so that the two criteria again point to opposite conclusions.

Mongelli (2008) considers that an additional deficiency of the optimum currency area theory is that its creators failed to foresee the growing role of services in an economy. More specifically, when countries are evaluated according to the economic diversification criterion, the emphasis is put on industry structure analysis, while service activities are not taken into consideration. As the service sector is usually more diversified than the production sector, EU member states seem to be better candidates for a monetary union if one analyses the diversification of the overall economy, including the service sector.

Furthermore, the optimum currency area theory does not contain a criterion to identify whether there are mechanisms in the monetary union to suppress macroeconomic imbalances

and mitigate negative feedback loops between banks' balance sheets and public finances. It became evident during the recent crisis in the euro area that such mechanisms are a key to the long-term stability and optimality of a monetary union. In addition, the recent history of the euro area has shown that if some member states build up macroeconomic imbalances without any control, they would eventually be forced to correct excessive imbalances, which may indirectly create substantial costs for other, fundamentally sound member states. The deficiency of the (traditional) optimum currency area theory is also reflected in the fact that it actually overlooks specific issues associated with the banking sector and in its potential detrimental effect on government finances. Krugman (2012) compares the situation in the euro area with that in the US and suggests that the existence of mutual guarantees for bank deposits may be crucial to the stability of the monetary union. This was particularly evident during the recent financial crisis. While liabilities of the US banks are guaranteed at the federal level and any bail-out will not drain the budget of any state, the bail-out of euro area banks was made at the expense of government budgets, which added to the strong build-up of public debt in some countries, e.g. Ireland.³

Finally, the optimum currency area theory overestimates the efficiency of monetary and exchange rate policy in small open

economies. More precisely, the theory originated in the 1960s, when cross border mobility of capital was limited, which provided central banks a high degree of autonomy in the pursuit of monetary policy. Rey (2015) believes that today, in an environment of abundant international capital flows, a small country cannot actually pursue an active monetary policy, regardless of whether it follows a flexible or a fixed exchange rate regime. The only way a country can maintain its monetary autonomy is to use macroprudential measures and capital controls to isolate itself from the effect of monetary policies of major global economies. In addition, the original theory disregards currency risk which, in some countries, particularly emerging market economies, may be a valid argument in favour of joining the common currency area. As Bellulo, Šonje and Vrbanc (2000) pointed out, if there is currency substitution, i.e. if domestic sectors borrow in a foreign currency, monetary policy cannot be used actively to cushion shocks as in these circumstances the main objective of the central bank is to maintain exchange rate stability.⁴ According to Eichengreen et al. (2003), the phenomenon of currency substitution is attributable to the fact that emerging market economies have low credibility in financial markets, which often forces them to borrow in foreign currency.

3 Relevance of the optimum currency area theory for the EMU

When leaders of the then European Community discussed the possibility of establishing a monetary union, their motives were mostly political in nature, accompanied with a desire to use the economic advantages of a common currency. The purpose of creating a monetary union was to eliminate uncertainties regarding changes in nominal exchange rates and fully use the potential of the single market. The fact that several member states were not completely ready to join the monetary union according to the optimum currency area theory did not raise concerns among the European leaders at the time. Taking into account the financial crisis that hit the monetary union in 2010, it is obvious that the original EMU had some weaknesses.

3.1 The role of the optimum currency area theory in EMU establishment

The member states of the European Community made efforts to maintain the exchange rates of their currencies relatively stable for a large number of years, so that the introduction of the common currency was the logical next step. This was actually the only way to achieve credible currency stability

as all previous currency arrangements proved ineffective in the end. The reason was that under such arrangements one country – Germany – had a dominant role, which enabled it to pursue monetary policy in line with its needs, while all other countries had to adjust to maintain the stability of their own currencies against the German mark. It goes without saying that the monetary policy of the German central bank was not always suitable for other member states. As a result, the currencies of weaker countries were often exposed to speculative attacks, which in many instances resulted in devaluations. The introduction of the common currency eliminated these sources of problems: risk of speculative attacks on national currencies was entirely eliminated, while the monetary predominance of Germany mostly came to an end as all member states gained equal voting rights in the formulation of the common monetary policy.

The post-World War II global monetary system established at the Bretton Woods conference in 1944 was based on the gold-dollar standard, which implied the convertibility of the US dollar at a fixed parity, while other countries had to maintain the exchange rates of their currencies strictly fixed against the US dollar (Bordo, 1993). Because the US dollar was the common anchor for pegging, the national currencies

³ Only with a complete establishment of the banking union would the EU obtain this form of joint risk-sharing; a proposal to set up a European Deposit Insurance Scheme (EDIS) as the third and last pillar of the banking union was made in 2015. Negotiations among member states are still in process, and the relatively slow progress towards a final solution reflects divergent views of member states regarding this issue. The first two pillars of the banking union relate to the single supervisory mechanism and the single resolution mechanism, which became operational in 2014 and 2016, respectively.

⁴ Hausmann et al. (2001) find that emerging market economies maintain on average larger stocks of international reserves and intervene more frequently in foreign exchange markets than advanced economies because they seek to avoid strong exchange rate depreciation, which would hinder the servicing of foreign currency debt.

of European countries were also closely pegged together.⁵ The Bretton Woods system terminated in August 1971, when the US government decided to end the dollar's convertibility to gold. At the end of the same year it was agreed that the US dollar would be devalued and several other currencies would be revalued; also agreed was that other currencies would fluctuate within a range of $\pm 2.25\%$ against the US dollar. Such an arrangement was not beneficial to the European Community as it strongly increased the range of fluctuations among member states' currencies.⁶

In early 1972, member states decided to limit the maximum range of fluctuations among national currencies to avoid currency instability after the end of the gold-dollar standard, but this arrangement was soon dissolved under the influence of external shocks. Although this attempt ended in failure, member states continued to strive to attain currency stability, establishing the European monetary system in 1979. An important element of that system was the European currency unit (ECU), composed of a basket of currencies of all the member states. National currencies were included in the Exchange Rate Mechanism (ERM), and member states were obliged to maintain exchange rates stable against the ECU.

The ERM was exposed to severe pressures in 1992 and 1993, when the currencies of several participating countries came under speculative attacks (Buiter et al., 1998). As a result, the Italian lira and the pound sterling left the exchange rate mechanism, and several countries decided to depreciate their currencies. To mitigate the risk of speculative attacks in the future, the standard range of fluctuations in the ERM was broadened to $\pm 15\%$ in 1993. The literature agrees that one of the main causes of the ERM crisis was the unification of the West and East Germany in October 1990 (Higgins, 1993; Buiter et al., 1998; Eichengreen, 2000). In particular, the upsurge in public consumption to finance the reconstruction of eastern German regions created stronger inflationary pressures in Germany, to which the central bank responded by tightening the monetary policy. Due to the need to maintain exchange rate stability against the German mark, other member states were also forced to tighten monetary policy, although it was not beneficial for them in view of the phase of the business cycle. Divergent attitudes of the member states regarding the desirable direction of national monetary policies induced speculative attacks on currencies of the member states participating in the ERM, by which speculators tried to force member states to leave the exchange rate mechanism and devalue their currencies.

The efficient functioning of the European Monetary System in the 1980s encouraged member states to take further steps towards monetary unification. In this context, Jacques Delors, the President of the European Commission at the time, was entrusted to chair a committee set up to propose future steps for the establishment of the economic and monetary union. The Committee submitted its proposals in the so-called Delors Report, which later served as the basis for the Maastricht Treaty. The Delors Report (Committee for the Study of

Economic and Monetary Union, 1989) failed to answer the question of whether the European Community at the time was an optimum currency area. The decision to create an economic and monetary union was political, and the Delors Committee was set up with a mandate to prepare its implementation. Among key arguments in favour of the monetary union, the report mentions the elimination of risks of excessive exchange rate volatility, reduction of transaction costs, and increase in the resilience of the European Community to external shocks. While the report does not refer to the optimum currency area theory, some of its conclusions may be associated with the theory's criteria. For example, the report emphasises that in a setting of a common monetary policy, the coordination in the area of other economic policies, fiscal policy in particular, will be crucial for attaining sustainable growth, price stability and maintaining external balances of the economies. Also, the Delors Report mentions price stability and labour mobility as additional important factors for successful functioning of a monetary union. The authors of the report foresaw that macroeconomic imbalances might emerge within a monetary union, and assumed that they might arise from mismatches in the dynamics of labour costs or asymmetric reactions of member countries to external shocks. However, the Delors Committee did not differentiate member states in terms of their readiness to join the monetary union, but held the assumption that it would be equally beneficial for all countries.

In the study on possible economic effects of the monetary union, the European Commission (1990) assessed that potential benefits from monetary unification of the member states are much larger than could be expected based on the optimum currency area theory. It noted that monetary union among member states was necessary in order to maintain exchange rate stability after complete liberalisation of capital transactions. Among the main benefits of the monetary union listed were microeconomic savings due to the elimination of currency risk and reductions in transaction costs, as well as positive macroeconomic effects in the form of lower aggregate inflation and less volatile economic growth. The study explains that a reduction in aggregate inflation should arise from the fact that common monetary policy would be founded on strong discipline as exemplified by member states, such as Germany, that were the most successful in preserving price stability before EMU establishment. The credibility of common monetary policy should also contribute to the suppression of inflationary expectations in those countries that were likely to have high inflation rates before joining the monetary union. The document correctly predicted that the elimination of the currency risk premium and reduction of the inflation risk premium due to the establishment of the monetary union would provide more favourable borrowing terms for peripheral member states.

With regard to negative aspects of the monetary union, the European Commission (1990) mentions that the loss of monetary and exchange rate policy as instruments of macroeconomic adjustment would be a key cost from the perspective of member states. However, it was pointed out that the

5 It should be noted that revisions of central parities of national currencies against the dollar were possible. The most notable examples of central parity adjustments took place in the late 1960s, when the German mark had to appreciate due to pressures in foreign currency markets, while the French franc depreciated under the impact of domestic political turmoil (Garber, 1993).

6 For example, if the exchange rate of the Italian lira against the US dollar grew from the lower bound of -2.25% to the upper bound of $+2.25\%$, while the exchange rate of the German mark against the US dollar simultaneously dropped from $+2.25\%$ to the -2.25% floor, the Italian lira would depreciate against the German mark by 9%.

cost should not play a decisive role as member states within the EMS had already abandoned the nominal exchange rate as a stabilisation instrument. The study also mentions that countries would continue to have at their disposal both fiscal and income policies to absorb asymmetric shocks while participating in the monetary union.

Finally, it may be concluded that economic integration and particularly the introduction of the common currency were approached as a process that would be useful in its encouragement of political integration and maintenance of (political) stability. Krugman (2012) summarises expectations at the time of EMU establishment and mentions that two important features – mobility of production factors, in particular labour mobility, and fiscal integration – although at a low level at the time of EMU formation – would enable adjustments to asymmetric shocks in the future. It was believed that member states would pursue prudential fiscal policies, among other things, by consistently implementing the rules, which would reduce the frequency of asymmetric shocks. On the other hand, it was believed that member states would undertake the necessary structural reforms to provide for enhanced flexibility of the labour market and wages, which would help if asymmetric shocks were to arise.

3.2 Is the euro area an optimum currency area?

The optimum currency area theory may help detect deficiencies of the original euro area (EMU-12) that have almost led to its break-up. In the period following the euro adoption, several member states experienced excessive economic expansion accompanied by the rise in harmful macroeconomic imbalances. After the outbreak of the global crisis in late 2008, these countries were forced to correct the existing imbalances and slid into deep recession, followed by the debt crisis, which put into question the sustainability of the euro as the common currency. The text below provides an analysis of whether the EMU-12 was an optimum currency area. Particular emphasis is put on the criteria important to understand the roots of the deep debt crisis that hit peripheral euro area member states in 2010. Then described are the reforms taken during and after the crisis, which were to reduce the susceptibility of the euro area to financial and economic crisis in the future.

3.2.1 Results of the original EMU-12 according to the optimum currency area theory

The trade integration criterion suggests that there is a strong economic argumentation for the existence of a monetary union of European countries. In particular, the volume of foreign trade among the original EMU member states is very large, which, according to the optimum currency area theory, may be a valid incentive to the establishment of a monetary union and an important factor in its efficiency. In the year of EMU establishment, trade with the rest of the monetary union accounted for more than half of the total trade in goods for most of the original member states. Trade with the rest of EMU-12 as percentage of the total trade in goods of the first twelve member states decreased by 2016 – in part due to the strengthening of their trade with new EU member states – but remained high (Table 1).

The financial integration criterion was largely met by the

Table 1 Trade in goods with core euro area countries, 1999 and 2016

	1999		2016	
	Share in total trade (%)	Share in GDP (%)	Share in total trade (%)	Share in GDP (%)
Luxembourg	77.3	70.3	73.1	51.0
Portugal	68.8	34.7	64.9	39.8
Austria	62.5	39.5	52.5	43.2
Belgium	61.0	77.8	54.0	92.1
Spain	59.4	22.4	48.7	24.1
Netherlands	53.3	51.5	45.3	64.7
Greece	53.1	13.7	35.2	13.9
France	52.7	22.4	51.4	22.4
Italy	51.0	18.6	40.9	19.6
Germany	43.3	19.7	38.0	26.3
Finland	35.7	19.7	36.4	18.8
Ireland	31.7	38.3	33.8	23.4

Sources: IMF and authors' calculations.

member states, but financial integration led to substantial macroeconomic imbalances. The establishment of the EMU encouraged financial integration among member states, which particularly refers to money markets and government debt markets, where yields converged completely soon after euro area formation (De Grauwe and Mongelli, 2005). However, intensive financial flows within the euro area did not have a stabilisation effect but heated up unsustainable cyclical expansion in some member states. Figure 1 shows the dynamics of current account balances of core countries – Germany, France, Belgium, the Netherlands, Austria and Luxembourg – relative to the dynamics of current account balances of peripheral member states – Greece, Ireland, Spain and Portugal. It is evident that peripheral countries persistently recorded deficits, while core countries recorded current account surpluses in the period from the establishment of the EMU to the global financial crisis. The deterioration in current account positions of peripheral countries is directly associated with stronger cross-border capital flows after the establishment of the EMU. The adoption of the common currency eliminated the risk of depreciation of national currencies, anchored inflationary expectations and considerably reduced the sovereign risk premiums, which led to a noticeable decline in borrowing costs for peripheral member states (Ehrmann et al., 2007; Buiter and Sibert, 2005). Interest rates on bank loans in peripheral countries also dropped considerably, which, against the background of high business and consumer optimism, triggered an upsurge in household and corporate demand for loans. Banks met the high loan demand by borrowing abroad, their creditors most often being banks from core countries like Germany, France and the Netherlands (Hale and Obstfeld, 2014). It was initially believed that the imbalances in peripheral countries were a natural phenomenon associated with the process of real convergence and not representing a risk for the euro area as a whole (Blanchard and Giavazzi, 2002; Campa and Gavilan, 2006; Ahearne et al., 2007; Ca'Zorzi and Rubaszek, 2008). However, after the onset of the global financial crisis, it became clear that the large imbalances in peripheral countries in the past were actually a reflection of the serious overheating of their economies. For this reason, they were hit particularly hard by the global turmoil (Gros, 2012; Holinski et al., 2012; Wyplosz, 2013).

Figure 1 Current account balance

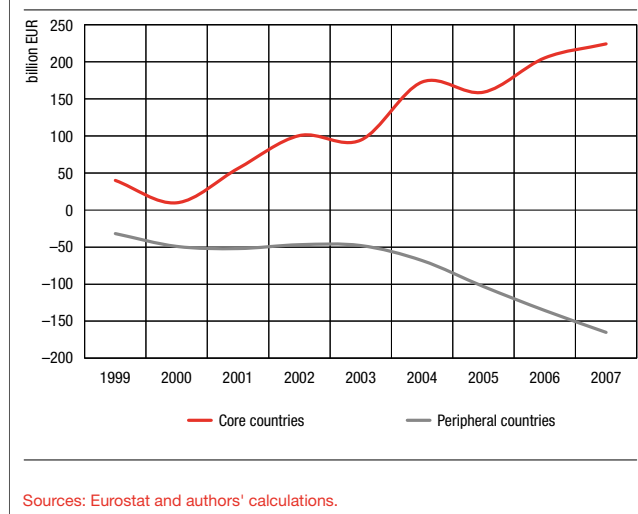
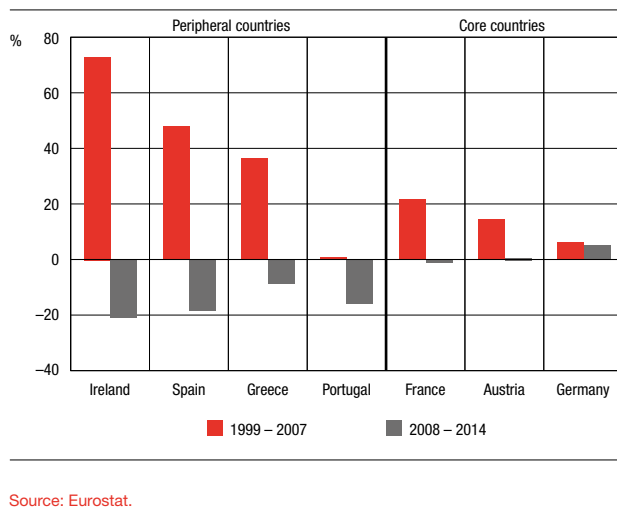


Figure 2 Total change in GVA in construction and real estate activities



The macroeconomic imbalances that piled up in peripheral countries as a result of abundant capital flows increased the vulnerability of these countries to negative demand shocks. The fact is that the foreign capital received by peripheral member states after the establishment of the EMU was not absorbed by productive activities. The foreign capital that then flowed into peripheral countries was mostly associated with foreign borrowing by banks, which used it to extend consumer loans to households and investment loans for residential construction (Gros, 2012). In such conditions, peripheral member states went through unfavourable structural changes, with an expansion in activities oriented towards the domestic market, such as construction, real estate activities and trade (Figure 2). As a result of excessive dependence on foreign capital inflows and robust domestic demand, peripheral member states were much more vulnerable to deterioration in financing conditions than other euro area members. The gradual tightening of financing conditions and domestic demand in peripheral countries started in 2007 under the influence of tighter monetary policy of the European Central Bank (Central Bank of Ireland, 2007; Banco de Espana, 2010). Macroeconomic conditions deteriorated even more when the global financial crisis intensified in September 2008. The deep recession in peripheral countries to a large extent reflected the correction of excess capacity in activities that had recorded unsustainable expansion before the crisis. In Spain and Ireland, for instance, construction accounted for about half of the overall drop in gross value added and employment during the recession⁷.

The unchecked increase in imbalances in peripheral countries may be partly due to the fact that euro area member states failed to

attain a satisfactory level of **political integration** in terms of readiness to implement common rules and transfer additional powers to common supranational authorities. In particular, with the adoption of the euro, member states abandoned their own currencies and independent monetary policies, but retained almost complete autonomy with regard to fiscal and structural policies. Although common rules in the fiscal policy area formally existed, member states did not respect them for the most part. More precisely, the Stability and Growth Pact obliged member states to achieve a balanced budget or a positive balance in the medium term, but most of them recorded large budget deficits despite favourable macroeconomic conditions. Furthermore, there was no supervisory mechanism at the euro area level to register other macroeconomic vulnerabilities – such as balance of payments imbalances or excessive loan growth – and encourage national authorities to implement measures to eliminate these vulnerabilities. However, even if there had been such a mechanism, it is questionable whether it would have ensured a timely removal of macroeconomic imbalances as at that time there was no awareness in the euro area about economic costs that may arise from high imbalances at the level of individual members.⁸

Finally, the supervision and resolution of financial institutions were also under the exclusive competence of member states, which created room for a negative feedback loop between balance sheets of banks and public finances. In particular, as national supervisory authorities alone were responsible for financial stability concerns, systemic risks that were at the same time present in a large number of countries – such as the risks associated with overheating of the real estate market and intensive foreign borrowing by banks

⁷ Authors' calculations based on Eurostat data.

⁸ In addition, it is often impossible to establish in real time whether an economy is going through excessive expansion or sustainable economic growth. As a result, it is sometimes not easy to determine how strong the countercyclical measures needed to restrain expansion should be. For example, Spain and Ireland ran budget surpluses from 2005 to 2007, which led to a noticeable drop in the public debt-to-GDP ratio in conditions of robust economic growth. Many people believed that fiscal policy at the time was reasonable and contributory to their macroeconomic resilience. Spain pursued a countercyclical macroprudential policy during the expansion phase, using the measure of dynamic provisioning that obliged banks in periods of credit growth to set aside reserves for losses that might arise in the downward phase of the cycle (IMF, 2006). Irish banks were also relatively well capitalised in the pre-crisis period. However, it came to light later on that neither the public finances nor the banking systems of the two countries were ready to endure the deep and long-lasting recession. More precisely, the deepening of the recession resulted in a substantial deterioration of fiscal indicators, which revealed that previous fiscal consolidation was based on the cyclically extremely favourable performance of nominal GDP and budget balance. As regards banking systems, substantial loan losses – largely related to correction in the real estate market – exhausted the capital buffers of banks so that both countries ultimately faced a banking crisis.

– were not detected and mitigated in time. When these risks materialised, banks faced large losses, and their recapitalisation was generally financed from government budgets. In some countries – Ireland and Spain in particular – the fiscal cost of resolving distressed banks was so high that it threatened public debt sustainability. However, it should be noted that in some countries the negative feedback between banks and public finances was not driven by the turmoil in the banking system, but rather by large fiscal imbalances. In countries like Greece, Portugal and Italy, banks' liquidity problems were due to the great increase in the country risk premium in conditions of the rapid accumulation of public debt and generally weak macroeconomic fundamentals. Therefore, it may be said that the absence of protective mechanisms to limit the negative interaction between the balance sheets of banks and the government also confirms the conclusion that the EMU-12 was not an optimum currency area.

The fiscal integration criterion was also not met in the original euro area. Generally, the existence of fiscal protective mechanisms that imply a certain degree of risk sharing, both on the national and the monetary union level, enables demand smoothing in the case of a negative shock, which in turn helps protect other monetary union members from negative spillover effects (Allard et al., 2013). In contrast to other large currency areas, there is no system of fiscal transfers in the euro area intended for regions or countries faced with a negative macroeconomic shock. While EU member states do have a common budget at their disposal, it is relatively small and lacks instruments for short-term assistance in the case of recession. Furthermore, the EU legal framework explicitly forbids the European Union and member states from assuming other members' debts (the so-called no bail-out provision).

However, the unpleasant experience of the recent financial crisis revealed that this restriction is not credible since in cases of strong asymmetric shocks the burden of the crisis has to be shared across members if the monetary union is to be preserved as a whole. Therefore, although mutual financing was formally forbidden, euro area member states implicitly took over some of the burden of fiscal adjustment in peripheral member states after the onset of the debt crisis. For example, in the first half of 2010, member states secured for Greece substantial funds in the form of bilateral loans to finance its macroeconomic adjustment program. Soon afterwards, formal crisis funds were established – first two temporary funds and then the permanent fund – European Stability Mechanism (ESM). All euro area member states are shareholders of the ESM and are therefore obliged to fund its capital and extend guarantees that secure the highest credit rating for the ESM. ESM placements are granted at lower interest rates and are of much longer maturities than IMF loans, which provides significant budget savings for beneficiary countries (European Stability Mechanism, 2016). However, it should be noted that the ESM was not designed as a fiscal transfer system that would be constantly available to

member states. The ESM was to provide support only in cases of deep economic and financial crisis, where the payment of funds depends on the consistent implementation of macroeconomic adjustment programs and/or financial sector restructuring programs. Only if the macroeconomic stabilisation function for the euro area were established (in the form of a common unemployment benefits scheme, a common investment protection program or a contingency fund), which is currently being discussed in the EU, or some other alternative instrument of redistribution, could we speak of closer fiscal integration among member states (Beblavy et al., 2015).

With regard to the **labour mobility criterion**, the euro area lags significantly behind the US. Eichengreen (1991) established that mobility of workers within the US is two to three times higher than mobility among European countries.⁹ While the figures should be taken with caution in view of various definitions of regional units in different countries, in the case of European countries they indicate the strong presence of obstacles to labour mobility on the one hand and the lack of motivation on the other hand. Among the main barriers to labour mobility between member states are linguistic and cultural differences and legal constraints, while at the time of EMU establishment, there were also border controls and various national currencies (before implementation of the Schengen Agreement and euro adoption). The existence of these constraints explains only part of the difference between Europe and the US, while the other part is attributable to the fact that American society is traditionally mobile, while Europeans are traditionally related to certain locations, which then affects the behaviour of the population.¹⁰

3.2.2 Reform of the EMU's institutional framework after 2008

Some institutional deficiencies of the monetary union were corrected after the global financial crisis. The major progress was made with regard to further economic and political integration at the EU level, at which member states agreed to transfer some national responsibilities – mostly in the area of financial system supervision – to the common level. One group of reforms related to the strengthening of the framework for economic policy coordination in order to eliminate institutional weaknesses of national economies¹¹ on the one hand and, on the other hand, to reduce risks arising from irresponsible policies at a national level. Both the preventive and the corrective arm of the Stability and Growth Pact have been strengthened. The concept of a medium-term fiscal objective has been introduced to the preventive arm, where member states commit to maintaining their structural budget positions close to balance. Limitations on public consumption growth have also been imposed. The most important change within the corrective arm was that the public debt criterion and the budget

9 The author mentions that the data on labour mobility between regions were hardly available at the time and that the figures given were the only indicator of labour mobility providing a systemic comparison between the US and European countries.

10 The situation is slightly better in Europe today. According to the European Commission (2014), 7 million people lived and worked outside their country in 2013, which is around 3.3% of total employment in the EU. The outflow of people from crisis-hit countries to other member states and non-EU countries grew substantially during the crisis. Out of the total number of workers mobile within the EU, the majority comes from Central and Eastern European member states. As regards mobility readiness, results of a 2013 survey indicate that on average 25% of workers would consider the option of working in another member state in the next ten years.

11 Detected were institutional deficiencies of member states themselves as they failed to ensure that capital inflows were directed to productive sectors, which can also be influenced at the EU level. On the example of Italy, Gros (2011) addresses the "lost decade" phenomenon in that country, notwithstanding the improvement in growth factors, and attributes it to the low quality of institutions and overall governance in the country and the need to take efforts to combat corruption, foster adherence to the rule of law and improve the efficiency of public administration.

deficit criterion were made equally important. As a result, the excessive deficit procedure can now be initiated even when the deficit threshold is not breached, provided that public debt exceeds the benchmark. Among institutional reforms of the EMU, particularly noteworthy is the initiation of the European Semester. Within the annual cycle of the European Semester, EU institutions assess the quality of fiscal and structural policies in member states and issue recommendations to national authorities. An important new element in the coordination of EU economic policies is the macroeconomic imbalances procedure, which aims at raising the awareness of member states about the importance of avoiding macroeconomic imbalances and addressing them in a timely manner. The purpose is to reduce the probability that member states accumulate excessive imbalances in the future, as was the case in peripheral member states in the 2000s (Brkić and Šabić, 2014).

The other group of reforms focused on strengthening the resilience of financial institutions and raising the capacity of regulators to mitigate risks on time. The key reform in this area was the establishment of a banking union, which, among other things, implies the transfer of powers for prudential supervision of banks in the euro area to the joint supervisor, the European Central Bank. This eliminated the deficiency of the EMU institutional framework under which bank supervision remained the sole responsibility of national authorities, despite the existence of a common monetary policy. In addition, the establishment of the banking union helped harmonise national regulatory frameworks for bank resolution, where the Single Resolution Board (SRB) was set up, which is to be supported

by the fully capitalised Single Resolution Fund (SRF) starting from 2024. Member States have not yet agreed on the third pillar of the banking union – a joint deposit insurance scheme. In addition, awareness of the meaning of systemic risks, as well as of the importance of macroprudential instruments as tools for their mitigation, increased in the post-crisis period. To formalise supervision of systemic risks, the European Systemic Risk Board (ESRB) was established at the EU level with a mandate to monitor systemic risks and vulnerabilities and coordinate national macroprudential authorities (European Systemic Risk Board, 2014a). It should be noted that after the global financial crisis banking regulations in the EU were complemented by a series of new instruments by which the causes of systemic risks may be directly controlled. Regulators may now impose and release capital buffers to enhance banks' resilience to shocks and reduce the procyclicality of lending activities, and increase risk weights to slow down the rise in exposure to specific sectors. Stricter liquidity standards that should reduce maturity mismatches in bank balance sheets (European Systemic Risk Board, 2014b) have also been introduced.

Assuming that new coordination mechanisms would tighten the discipline of economic policy makers and that macroprudential policy would effectively curb financial risks, the probability of another deep economic and financial crisis in the euro area should be lower than in the past. In such conditions, the risk of divergent macroeconomic developments should be reduced, which might contribute to the resilience and long-term sustainability of the monetary union.

4 Assessment of the suitability of the euro for Croatia according to the optimum currency area theory

Several earlier studies examined whether Croatia is sufficiently compatible with developed EU/euro area member states to function successfully in the monetary union. Particularly noteworthy are the papers by Šonje and Vrbanc (2000), Belullo, Šonje and Vrbanc (2000), Broz (2008) and Kotarac, Kunovac and Ravnik (2017). These papers focused on assessing the synchronisation between the business cycles of Croatia and selected euro area core countries. While the criterion of the synchronisation of business cycles is rightfully mentioned as the most important criterion – because the high degree of synchronisation of the cycles is necessary for common monetary policy to be equally suitable to all members – other criteria can also provide important insights into whether a country would benefit from joining a monetary union. Therefore, the text below analyses Croatia's performance according to all key criteria of the optimum currency area theory. It also recalls specific features of the Croatian economy because of which that theory cannot be the only benchmark in deciding on the suitability of the euro for Croatia.

4.1 Trade and financial integration

In terms of trade, Croatia is firmly integrated with euro area member states, so that the stability of the exchange rate of the kuna against the euro is beneficial for the Croatian economy. Excessive exchange rate volatility is not beneficial for small open economies as frequent changes in trading terms can threaten price stability. For example, if the kuna were to weaken considerably against the euro, imported products, which account for a large share in the consumer price index basket, would become more expensive, which would trigger an increase in the overall inflation rate in Croatia. In addition, exchange rate depreciation would also fuel an increase in imported raw materials and intermediate goods, which would in turn raise production costs for domestic enterprises. In conditions of the high import dependence of the Croatian economy – due to which changes in prices of imported goods strongly affect the overall inflation rate¹² – stability of the nominal exchange rate of the kuna against the euro is an important anchor for

12 There have been several research papers about the determinants of the inflation rate in Croatia. They established that prices of imported goods are an important factor in the aggregate inflation rate, which is not surprising bearing in mind the high degree of the openness of the Croatian economy (Krznar and Kunovac, 2010; Krznar, 2011; Jovičić and Kunovac, 2017). For this reason, indicators of economic activity and labour costs in the domestic economy cannot explain the inflation rate dynamics to a sufficient extent, so that inflation modelling also needs to include a variable that reflects prices of intermediate and capital goods imported from abroad.

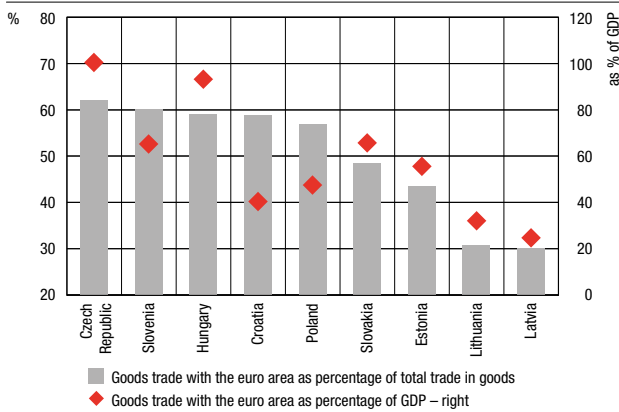
inflationary expectations of domestic economic entities.

Trade in goods with euro area member states traditionally accounts for more than half of Croatia's total foreign trade (Figure 3). Since Croatia's accession to the EU in 2013, foreign trade with euro area member states has further strengthened, so that its share now stands at almost 60% (Figure 4). In terms of this indicator alone, Croatia appears to be connected equally as firmly to the euro area as other Central and Eastern European countries and it is, relatively, connected even tighter than the Baltic countries were at the time of joining the exchange rate mechanism in the mid-2000s. However, as the degree of openness of the Croatian economy is lower than that of the other new member states, the volume of trade with the euro area in terms of GDP has remained much lower than, for

example, in the Czech Republic and Hungary (Figure 3). Nevertheless, even if the intensity of foreign trade relations with the euro area is measured in terms of GDP, Croatia is much more tightly integrated than Finland, Greece and Ireland, which joined the euro area more than 15 years ago¹³.

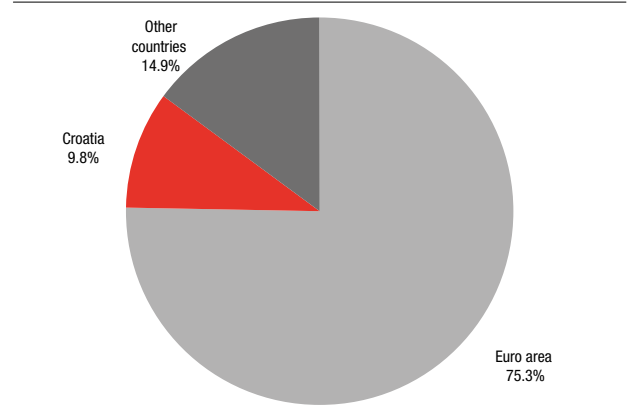
As key foreign trade partners use the euro as the national currency, it is very unlikely that, following euro adoption, Croatia might face a decrease in competitiveness due to currency depreciation in an important foreign trade partner. In this context, it should also be noted that important non-EU foreign trade partners of Croatia – Bosnia and Herzegovina and Serbia – maintain the stability of their exchange rates against the euro¹⁴. It follows that around 70% of Croatia's foreign trade is accounted for by countries that either use the euro or link the

Figure 3 Share of trade with the euro area in total trade in goods at the time of joining the ERM II



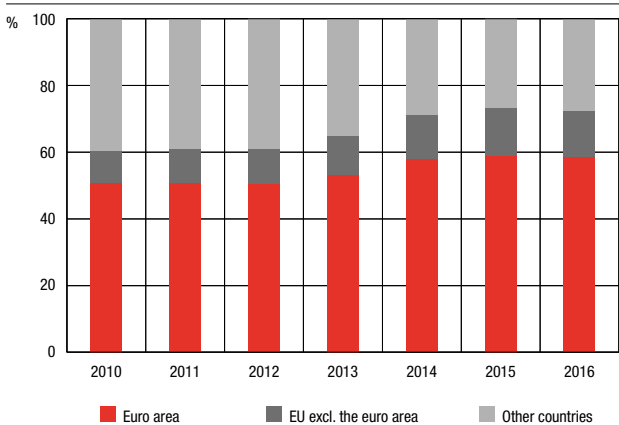
Note: Data refer to 2016 for countries that have not yet joined the exchange rate mechanism. The countries that have not yet joined the exchange rate mechanism are the Czech Republic, Hungary, Croatia and Poland.
Sources: IMF Direction of Trade Statistics and Eurostat.

Figure 5 Structure of the Croatian banking system, by country of owners' head office



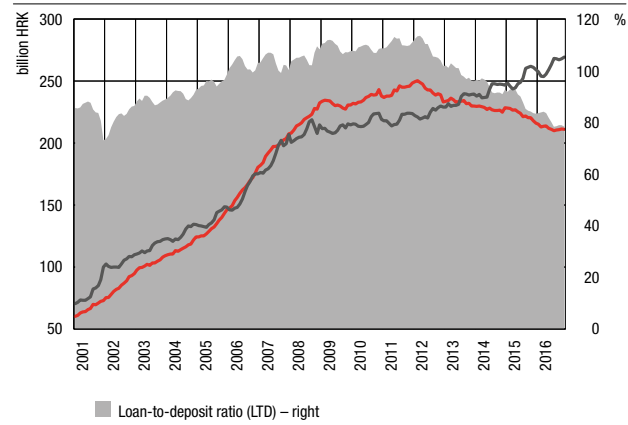
Sources: CNB and authors' calculations.

Figure 4 Geographic structure of goods trade of the Republic of Croatia, 2010 – 2016



Sources: IMF Direction of Trade Statistics and authors' calculations.

Figure 6 Bank loans to the private sector and private sector deposits



Sources: CNB and authors' calculations.

13 According to IMF data, foreign trade of Ireland, Finland and Greece with the euro area accounted for 23%, 19% and 14% respectively of their GDP in 2015.

14 From the time of its establishment in 1997, the central bank of Bosnia and Herzegovina has operated a currency board regime, with the currency being initially linked to the German mark and then to the euro. The central bank of Serbia operates an inflation targeting regime, but with frequent foreign exchange interventions aimed at limiting the fluctuations of the exchange rate of the dinar against the euro.

exchange rates of their currencies to the euro. Furthermore, euro area member states and the mentioned neighbouring countries are also key outbound markets for tourism as a strategic service activity¹⁵, with Mediterranean euro area countries also being the main competitors of Croatia in that activity.

Croatia is characterised not only by trade integration, but also by a high degree of financial integration with euro area member states. The large presence of euro area banks in the Croatian banking system is the main form of this integration. According to the data for the end of 2016, banks owned by euro area financial institutions owned approximately three-quarters of the total assets of the Croatian banking system (Figure 5). Financial flows between foreign parent banks and their subsidiaries in Croatia proved to be an important channel of the spillover of monetary impulses from the euro area to the Croatian economy. As mentioned by Rohatinski (2015), in the first half of the 2000s, foreign parent banks borrowed in the euro area at low interest rates and placed these funds to subsidiaries in Croatia, where the return on assets was much higher. The data shown in Figure 6 confirm that domestic banks used foreign capital to finance credit expansion in the years preceding the global financial crisis. In particular, in the mid-2000s lending to the private sector grew faster than the domestic deposit base, i.e. the loan-to-deposit-ratio increased, which suggests that banks imported foreign capital to attain the desired growth rates of loans. After the onset of the crisis, foreign-owned banks decided to slow down lending activity significantly and reduce the use of foreign sources of finance, which led to a gradual fall in the loan-to-deposit ratio at the banking system level (Figure 5). Therefore, it may be concluded that tight financial integration with the euro area did not have a beneficial impact on the Croatian economy in terms of enabling the smoothing of consumption and income during the business cycle. On the contrary, in the phase of the economic upturn, capital flows between parent banks in the euro area and their Croatian subsidiaries additionally heated the expansion of domestic demand in Croatia, while in the recession phase subsidiaries intensively deleveraged in relation to their parents, which had negative implications for the availability of loans to the Croatian economy.¹⁶

Financial interconnectedness between Croatia and the euro area is also reflected in the high share of the euro area in total inflows of foreign direct investment in Croatia. In particular, euro area residents were issuers of almost three quarters of total foreign direct investment to Croatia in the period from 1993 to 2016. It should be noted that the largest individual share of these investments is related to the acquisition of ownership of domestic banks and their recapitalisation. Also recorded were investments in other, mostly service, activities, such as wholesale and retail trade, real estate activities and post and telecommunications. Direct investments in manufacturing industry accounted for less than 20% of total investments. Financial relations between Croatia and the euro area are considerably weaker in the area of securities transactions. As the Croatian capital market is very shallow and low in liquidity, it

is unattractive to foreign investors. At the same time, investments in shares and stakes in investment funds are not an important form of financial investment of Croatian households, which in turn prevents any very dynamic development of the domestic capital market. The poor development of the domestic market is reflected in low levels of foreign assets and foreign liabilities of Croatia on the basis of portfolio investments. According to data for the end of 2016, the sum of assets and liabilities of domestic sectors based on portfolio investments in shares and stakes in investment funds amounted to only 5% of GDP. For the sake of comparison, in developed core countries of the euro area, the sum of foreign assets and foreign liabilities on the same basis is much higher, from 44% of GDP in Austria to a high 209% of GDP in the Netherlands.¹⁷

Taking into account the high intensity of foreign trade and financial relations between Croatia and euro area countries, it may be concluded that accession to the monetary union might have positive effects on the Croatian economy. While the exchange rate of the kuna against the euro has been relatively stable so far, the adoption of the euro would completely eliminate currency risk, as well as all costs associated with currency conversion and hedging against currency risk. This could raise the cost effectiveness and international competitiveness of Croatian exporters. Accession to the monetary union may also have a favourable impact on tourism revenues as Croatia would become an even more attractive destination for euro area residents, primarily due to enhanced price transparency and elimination of currency exchange costs. At the same time, after the adoption of the euro, Croatia's competitiveness would not be threatened by movements in exchange rates of the currencies of the major trading partners. As already mentioned, the bulk of foreign trade is related to the euro area and countries that maintain the stability of their currencies against the euro, which is why the risk of a foreign currency shock for Croatia is very low.

4.2 Synchronisation of business cycles and economic shocks

Under the criterion of the synchronisation of business cycles and economic shocks, Croatia appears to be a good candidate for euro adoption. Based on the data for the period from 1998 to 2016, Kotarac, Kunovac and Ravnik (2017) find that the synchronisation between the business cycles of Croatia and the largest euro area member states has increased over time and is currently at a high level. In contrast with most empirical papers on the synchronisation of cycles, which mostly use simple correlations, this research observes the synchronisation of business cycles as a composite indicator containing two elements – a measure of synchronisation of the cycle sign and a measure of the cycle amplitude. In addition to establishing a relatively high synchronisation of cycles, the authors find that Croatia and the euro area are exposed to similar demand and supply shocks, with reactions of economies to such shocks

15 According to volume indicators for 2015, guests from euro area member states, Serbia and Bosnia and Herzegovina accounted for around two-thirds of total arrivals and nights stayed in Croatia in that year.

16 In late December 2016, banks' net foreign assets were positive, standing at HRK 11.8bn, compared with HRK -50.4bn in late 2011. The major improvement in the net foreign assets of banks in recent years was almost entirely due to the deleveraging vis-à-vis their euro area parent banks.

17 Authors' calculations based on Eurostat data.

being approximately symmetric. Based on this, the authors conclude that following euro adoption Croatia should not be exposed to asymmetric shocks that would hinder the pursuit of economic policy.

In earlier works, Šonje and Vrbanc (2000) and Belullo, Šonje and Vrbanc (2000) assessed the synchronisation of the business cycles of Croatia and several Central European countries relative to the business cycle of Germany on the basis of data on unemployment rates for the period from 1992 to 1999. They conclude that real economic developments in Croatia and other countries in the region follow the trends of the German business cycle to a large extent, with shocks arising in the German economy being an important factor of cyclical fluctuations in observed countries. On the other hand, Broz (2008) does not find a high degree of the synchronisation of the business cycles of Croatia and developed euro area members on the basis of data for the period from 1995 to 2006. However, while the estimated correlation of cycles is relatively low if the entire period is observed, the author finds that it has gradually increased over time in line with the intensified economic integration between Croatia and euro area member states.

4.3 Diversification of the economy

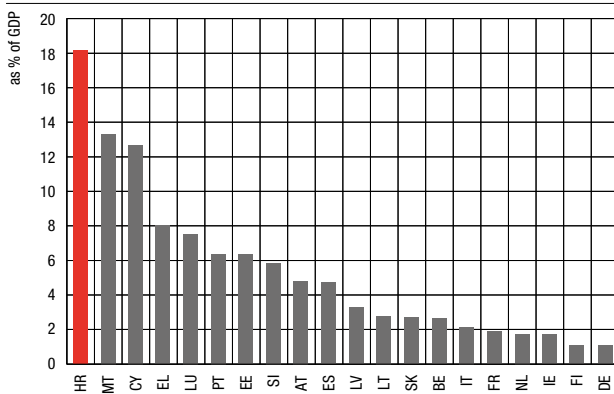
The economic diversification criterion is the most problematic criterion for Croatia. Insufficient diversification of the Croatian economy is best seen in excessive dependence on the tourism sector. In terms of the relative size of tourism revenues (in terms of GDP), Croatia stands out even among other Mediterranean tourist countries such as Greece, Portugal and Spain (Figure 7). The strong reliance on tourism is a source of macroeconomic vulnerability as this sector is subject to strong volatility, particularly if geopolitical conditions in the region deteriorate. Figure 8 shows that Croatia has persistently recorded a trade deficit, which reflects the structure of the Croatian economy. The structural deficit in foreign trade

is more than covered by a surplus in services trade – which relates almost entirely to revenues from the tourism sector in the second and third quarters – so that Croatia has lately recorded a positive current account balance on an annual basis. Such a current account structure is a major source of vulnerability. More precisely, if a strong negative shock were noticeably to reduce tourism revenues, the current account balance would certainly deteriorate, which would trigger disturbances in the foreign exchange market, with possible depreciation pressures on the domestic currency.

The other structural weakness of the Croatian economy is associated with the unfavourable structure of manufacturing industry, where a high percentage of total value added is accounted for by production of technologically less-intensive products (Table 2). The dominant role in Croatia is played by production of food and beverages, non-metallic mineral products, wood products and clothing. In that sense, Croatia is very different from core euro area countries, where a much larger share goes to products with a high technological component, such as motor vehicles and machinery and equipment. In countries like the Czech Republic and Hungary, the structure of industry is much better aligned with that in the euro area, which reflects the close integration of these countries into the value chains of enterprises from developed euro area countries, especially Germany (Stehrer and Stöllinger, 2015). Croatia is not so much included in the value chains of European enterprises, as evident from a relatively low intensity of intra-industry trade with the euro area. However, the degree of intra-industry trade has started to grow rapidly since Croatia's accession to the EU, particularly the trade in higher value-added products.¹⁸

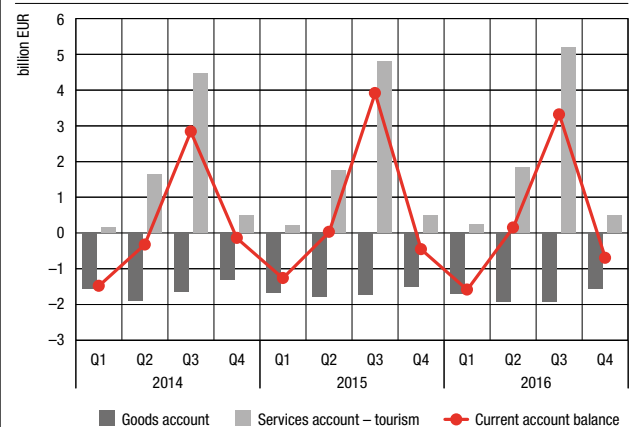
If the decision were to be made solely on the basis of the economic diversification criterion, the conclusion would probably be that Croatia is not fully ready for euro adoption. However, even though reforms to remove obstacles to the development of manufacturing industry and reduce the relative importance of the tourism sector in the national economy are necessary and desirable, such adjustments should not be

Figure 7 Croatia – foreign exchange revenues from tourism services, 2015



Source: Eurostat.

Figure 8 Croatia – structure of the current account balance



Source: CNB.

18 For more details see CNB (2016), Bulletin 226, Box 4 Changes in the dynamics and structure of Croatian goods exports since entry into the EU.

Table 2 Structure of manufacturing industry by NACE divisions, 2014, in %

	Motor vehicles, trailers and semi-trailers	Machinery and equipment	Computer, electronic and optical products	Food products, beverages and tobacco products	Wood, paper, printing and reproduction of recorded media	Textiles, clothing, leather and footwear	Other non-metallic mineral products	Metal and fabricated metal products	Basic pharmaceutical products and preparations	Other
Germany	19.1	15.5	5.7	6.9	4.1	1.3	2.8	12.3	4.0	28.2
Austria	7.2	14.2	5.3	9.5	9.0	1.9	4.6	16.5	3.8	28.0
Belgium	5.5	7.2	2.6	15.6	5.6	2.8	4.5	12.2	12.1	31.9
France	4.6	5.9	4.7	20.8	5.1	2.3	3.4	11.8	5.4	36.0
Netherlands	2.8	13.0	5.7	20.4	5.5	1.6	2.5	12.5	2.2	33.9
EA-5 average	7.8	11.2	4.8	14.6	5.9	2.0	3.6	13.0	5.5	31.6
Croatia	0.7	4.8	3.4	28.0	9.1	6.6	6.1	12.1	7.1	22.2

Source: Eurostat.

Table 3 Structure of manufacturing industry by NACE divisions, 2004, in %

	Motor vehicles, trailers and semi-trailers	Machinery and equipment	Computer, electronic and optical products	Food products, beverages and tobacco products	Wood, paper, printing and reproduction of recorded media	Textiles, clothing, leather and footwear	Other non-metallic mineral products	Metal and fabricated metal products	Basic pharmaceutical products and preparations	Other
Germany	15.4	14.6	6.7	8.2	5.7	1.7	3.1	12.5	3.5	28.6
Austria	7.5	11.6	7.3	10.6	11.4	3.1	6.0	16.3	2.7	23.6
Belgium	7.2	5.6	3.4	13.3	6.9	4.6	5.0	15.4	8.2	30.4
France	6.8	5.9	6.6	19.4	6.5	3.1	3.7	11.7	5.6	30.7
Netherlands	3.4	8.8	5.4	18.1	7.5	1.6	2.6	11.4	4.2	36.9
EA-5 average	8.1	9.3	5.9	13.9	7.6	2.8	4.1	13.5	4.8	30.1
Slovenia	5.2	5.5	5.4	8.5	9.0	6.7	4.5	15.8	10.7	28.7
Slovakia	10.5	6.6	2.8	9.6	7.8	6.1	5.5	21.9	0.7	28.4
Estonia	2.5	3.5	4.1	13.3	20.4	12.5	7.5	9.0	0.3	27.1
Latvia	0.4	2.7	2.0	26.6	25.2	10.0	3.1	10.7	1.9	17.2
Lithuania	2.7	1.6	5.1	19.7	11.9	14.1	3.9	4.4	0.3	36.3
NMS-5 average	4.3	4.0	3.9	15.5	14.9	9.9	4.9	12.4	2.8	27.5

Source: Eurostat.

viewed as preconditions for Croatia's accession to the monetary union. The main reason is that Croatia, as a small, open and highly euroised economy, even today, while it still has at its disposal autonomous monetary policy, might only to a limited extent use this policy to stabilise the economy if a negative shock hits tourism or another strategic activity. Therefore, by adopting the euro and transferring monetary sovereignty to the European Central Bank, Croatia would not be more vulnerable to asymmetric shocks than it is today. Moreover, by adopting the euro, Croatia's resilience might grow as the risk of an asymmetric shock creating pressures on the domestic currency and triggering a currency crisis would be eliminated. It should be noted that the industrial structures of Slovenia, Slovakia and, in particular, the Baltic states were, at the time of joining the exchange rate mechanism,¹⁹ also different from the industrial structures of euro area member states (Table 3).

4.4 Labour mobility

Labour force mobility among regions in Croatia is relatively low, which is reflected in significant differences in unemployment rates across counties. On the other hand, intense cross-border mobility of Croatian workers has been seen in recent years, driven by the effects of the long-lasting crisis and, in particular, easier access to the labour markets of developed member states following Croatia's EU accession in 2013. The mobility of production factors between Croatia and EU member states is ensured within the framework of the single EU market based on the free movement of goods, services, people and capital. At the time of Croatia's entry to the EU several countries decided to use the option to postpone for two years the application of the provisions on the free movement of workers from Croatia. However, as only a small number of

¹⁹ The year in which a member state joined the exchange rate mechanism is taken as a reference period because the entry to the mechanism may be considered a key step on which the overall dynamics and duration of the adoption procedure of the common currency largely depends.

these countries decided to request an extension of the transition period following the expiry of the initial two-year period, Croatian workers have been able to participate in the labour markets of most other member states²⁰ without a labour permit since mid-2015. Many Croatian citizens decided to use the opportunity to find employment in other member states. According to the Croatian Bureau of Statistics (CBS) data, more than 30 thousand people emigrated to other EU member states in 2014 and 2015 alone. However, due to registration difficulties, it is believed that official statistics underestimates the intensity of emigration.²¹

In such circumstances, it may be said that Croatia currently meets the labour mobility criterion to a lesser extent. While the emigration of unemployed workers has somewhat reduced imbalances in the domestic labour market during the recession, without a reversal of migration flows, the outflow of workers might in the longer run have an unfavourable effect on potential economic growth and the sustainability of the pension and health systems. It is currently impossible to determine whether the departure of workers for foreign countries will be permanent or whether a major share of them will return to the country once macroeconomic conditions improve. It may be concluded that Croatia fully meets the labour mobility criterion only if it turns out that the outflow of workers was a temporary phenomenon induced by cyclical factors.

4.5 Wage and price flexibility

While prices in Croatia change relatively slowly in normal conditions²², research shows that their downward flexibility increases noticeably when enterprises face a significant drop in demand. Based on the results of a survey covering a sample of 295 Croatian enterprises, Pufnik and Kunovac (2012) established that the frequency of price changes grows significantly in the case of shocks in the form of rapid changes in demand or production costs. For example, while enterprises change their prices less than once a year in normal circumstances, in cases of a substantial decrease in demand, price adjustment takes place after only one to three months. Comparing the results of their analysis with the results of similar research papers, the authors conclude that price flexibility in Croatia is relatively greater than in euro area member states in the case of strong shocks. It follows that Croatia meets the price stability criterion to some extent.

A similar conclusion can be made with regard to the wage flexibility criterion. While nominal wages in Croatia are rather

rigid, in conditions of the deep recession that began in 2008, enterprises tried to reduce labour costs, in part by freezing or reducing nominal wages. Based on survey information, Kunovac and Pufnik (2015) show that, while the layoff of redundant workers was the dominant adjustment strategy of enterprises²³, in the later stage of recession – from 2010 to 2013 – there was a significant increase in the number of enterprises that resorted to base wage cuts. The share of such enterprises in Croatia was much larger than the average share in other member states covered by the survey on wage dynamics²⁴ (26% vs 4.5%). Izquierdo et al. (2017) find that cuts in base wages in crisis conditions were much more frequent in countries suffering a particularly deep recession than in countries where the economic downturn was mild. In addition to Croatia, a reduction in nominal wages was a frequent phenomenon in the Baltic states, Greece and Cyprus.

4.6 Fiscal and political integration

The degree of fiscal and political integration between Croatia and the euro area to a large extent depends on the present set-up of the EMU and in several aspects it corresponds to the degree of integration of other member states that have not yet adopted the euro. As a result of EU membership, Croatia has begun to participate in the European Semester, the annual cycle of economic policy coordination, with emphasis on sound public finances on the one hand and, on the other hand, measures to avoid the build-up of excessive macroeconomic imbalances and their correction. Up to the adoption of the euro as the national currency, Croatia is not subject to either the provisions on direct financial sanctions²⁵ in the case of failure to implement the recommendations to correct an excessive deficit or provisions on prior consultations with the European Commission and other EU member states when adopting a new government budget.

However, Croatia today is in some sense less politically integrated with other member states as it still has not signed the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union. In particular, the Treaty sets the rules for closer coordination of economic policies and euro area governance and in particular for the fostering of fiscal discipline through a fiscal compact that is an integral part of it.²⁶ By signing the Treaty on Stability, Coordination and Governance in the Economic and Monetary Union before adopting the euro, a member state demonstrates its readiness for a deeper integration. By incorporating the obligation to observe the fiscal

20 The transitional period for Croatian workers at the time of Croatia's accession to the EU was imposed by the following 13 member states: Germany, Austria, Italy, France, Belgium, the Netherlands, Luxembourg, Spain, Greece, Cyprus, Malta, Slovenia and the United Kingdom. As of 1 July 2015, restrictions on Croatian workers' freedom of movement have been applied only by Austria, the Netherlands, Malta, Slovenia and the United Kingdom.

21 These numbers are much higher according to statistics of member states to which Croatian workers emigrate the most. Based on these sources, it is estimated that labour force losses due to negative net migrations have exceeded 100 thousand persons since Croatia's accession to the EU.

22 Krznar (2011) finds that in usual macroeconomic conditions prices in Croatia change, on average, every eight quarters, which points to their inertia.

23 In that sense, Croatia was not different to other member states. As shown by Fabiani et al. (2015), during the recent crisis, most European enterprises focused on decreasing the number of workers to make the necessary savings, while only a small percentage decided to cut base wages.

24 Wage Dynamics Network Survey.

25 Nevertheless, if an excessive deficit procedure is taken, similar to the cases of non-compliance with recommendations to correct excessive deficit, Croatia, as a member state that has not yet adopted the euro, is subject to sanctions in the form of temporary suspension of the use of European Union funds.

26 The Treaty relates in entirety to euro area member states but it may be signed by member states that have not yet adopted the euro, in which case they are not subject to some provisions, unless they themselves require it. So far, all member states have signed the Treaty, with the exception of the United Kingdom, the Czech Republic and Croatia.

rules under the Treaty in its constitution or another national law with constitutional force, a country further commits itself to the fiscal discipline required by (the full future) economic and monetary union.

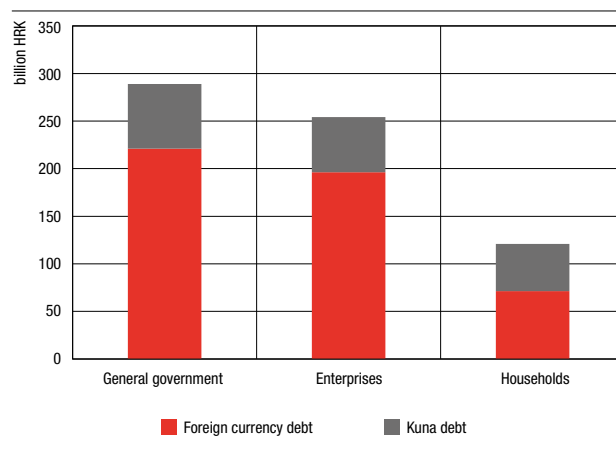
As an EU member state, Croatia has the opportunity to support the efforts of heads of EU institutions²⁷ to complement the current economic and monetary union by some form of a fiscal union. While discussions are in progress about the form of a macroeconomic stabilisation function for the euro area, where mostly considered are some limited forms of fiscal integration (e.g. common unemployment insurance scheme or mutual investment fund), some principles and preconditions for any form of fiscal capacity are already known. These are avoidance of moral hazard and consistent application of fiscal rules and elimination of structural weaknesses. Moreover, as preconditions for such measure of further integration, particularly noteworthy are the readiness of member states for a deeper political integration and a high degree of already developed confidence, both in the capacity of the governance framework to successfully coordinate fiscal policies in the EMU and in national governments to observe the rules of that framework.

4.7 Why the optimum currency area theory is not entirely relevant for Croatia

Croatia does not necessarily have to meet all criteria of the optimum currency area theory in order to profit from euro adoption. As noted by Tavlas (1994), a serious deficiency of the optimum currency area theory is that its criteria often lead to opposite conclusions regarding the justification of a country's joining a currency area. For example, in the case of Croatia, the optimum currency area theory does not answer the question of whether the synchronisation of business cycles and a high degree of trade and financial integration are sufficiently strong arguments in favour of euro adoption, so that the introduction of the euro would be beneficial despite insufficient economic diversification.

Furthermore, the optimum currency area theory overestimates the reach of monetary policy in small open economies and at the same time disregards currency risk which may be a valid argument in favour of a country's joining the monetary union. As noted earlier, the optimum currency area theory originated in the 1960s, when global capital flows were scarce, which provided central banks manoeuvring space to pursue an active monetary policy. In today's time of abundant international capital flows, central banks of small countries are forced to adjust to policies of major global central banks, in particular the European Central Bank (ECB) and the Federal Reserve System (Fed) to protect themselves from speculative capital flows. As a result, the manoeuvring space for discretionary monetary policy is quite narrow in small countries. An additional limitation for central banks of small countries like Croatia is the high levels of foreign currency debt. More precisely, taking into account the potential adverse effects of exchange rate depreciation on entities burdened by foreign currency debt, a central bank cannot use monetary policy measures if

Figure 9 Amount and currency structure of debt of domestic sectors, 31 December 2016



Sources: CNB and HANFA.

there is a risk that they will threaten exchange rate stability. In such a setting, by entering the euro area and giving up on its own monetary policy, Croatia will not lose an important economic policy tool and it will gain significant benefits in terms of eliminating the currency risk that presents a heavy burden for all sectors.

Data on the currency structure of the debt of domestic sectors given in Figure 9 reveal a significant exposure of the Croatian economy to currency risk. A little more than three quarters of the total debt of general government and non-financial corporations and approximately 60% of household debt is denominated in or indexed to a foreign currency. The high share of foreign currency debt in total debt of domestic sectors is the outcome of significant external debt of the economy and a high degree of euroisation of bank loans. A specific feature of the Croatian banking system is the large share of foreign currency savings of households in the total sources of bank financing, which prompts banks to minimise direct exposure to currency risk by placing foreign currency-indexed loans. However, the practice of granting foreign currency-indexed loans exposes borrowers to significant currency risk, which indirectly also increases risks for the banking system. In particular, by granting foreign currency-indexed loans to persons who earn income in the domestic currency, banks expose themselves to currency-induced credit risk, i.e. the risk that borrowers will stop meeting their loan obligations on time if there is a significant depreciation of the domestic currency.

In view of the large amount of foreign currency debt, it is not hard to foresee that a fairly strong depreciation of the kuna against the euro would have a significant adverse effect on the balance sheets of domestic sectors. Taking account of the fact that the total foreign currency debt of domestic sectors stands at HRK 511bn (148% of GDP), a 10% nominal depreciation of the kuna against the euro would instantly raise the principal of domestic sectors' debt by HRK 51bn, or around 15% of GDP. The increase in the principal amount of debt would

27 This mostly refers to the Five Presidents' Report (2015), which lists the steps necessary to complete the European economic and monetary union, including the measures to establish a fiscal and political union. All member states have been consulted in the preparation of that report and they have participated in negotiations on individual initiatives arising from the report and put forward as legislative proposals.

raise the cost of its repayment and reduce the disposable income of debtors. The weakening of the kuna would have a particularly adverse effect on the stability of public finances: under the scenario of a 10% depreciation of the kuna, general government debt would grow by HRK 22bn, or 6.4% of GDP, while the direct negative effect on the budget would amount to almost HRK 1bn on an annual basis²⁸. Apart from the said direct effects on the debt level and budget, an additional problem would be diminished credibility of the government in financial markets. In the period following kuna depreciation, investors would require higher risk premiums to protect themselves

from possible further weakening of the kuna and negative effects of initial exchange rate depreciation on the highly euroised domestic economy. In such conditions, new borrowings would be possible only at higher interest rates, with adverse effects on the budget balance. Taking into account the considerable systemic risk arising from foreign currency debt of domestic sectors, particularly the government sector, by adopting the euro and eliminating currency risk, Croatia would make an important strategic step towards long-term maintenance of macroeconomic and financial stability.

5 Conclusion

The optimum currency area theory proposes several criteria a country should meet to be able to function successfully in a setting of common monetary policy. Most of the criteria refer to the establishment of a degree of economic integration between a country and a monetary union in view of the fact that close economic integration implies lower risk of asymmetric shocks. More precisely, the optimum currency area theory suggests that accession to a monetary union is a reasonable step for a country if it has intensive foreign trade and financial relations with member states of the monetary union and a high correlation of business cycles, if there is labour mobility among them and if nominal prices and wages in the country are sufficiently flexible to enable the country to adjust in the event of an asymmetric shock. Furthermore, the economic structure of the country should be diversified so that it is not excessively sensitive to shocks faced by individual sectors. Finally, it is desirable that between the country and the other members of the monetary union there should be an appropriate degree of political integration to guarantee coordination in the area of other economic policies as well as fiscal integration in terms of fiscal transfers intended for countries hit by a negative shock. If a country fails to meet these conditions, it should retain monetary independence. Otherwise, it would be exposed to asymmetric shocks it would not be able to offset appropriately.

The criteria speaking in favour of euro adoption in Croatia are trade and financial integration, the synchronisation of business cycles and political integration. Almost two thirds of Croatia's total foreign trade is accounted for by euro area member states, which implies that Croatia is currently more closely integrated than some monetary union members. Croatia's accession to the EU in 2013 eliminated the remaining obstacles to the free movement in goods and services, which contributed to an additional noticeable strengthening of foreign trade with the euro area. Apart from trade integration, Croatia is characterised by the high intensity of financial relations with euro area countries, which is mostly due to significant participation of euro area banks in the Croatian banking system. The recent research by Kotarac, Kunovac and Ravnik (2017) showed that there is a high degree of business cycle synchronisation between Croatia and the euro area. The same study showed that domestic economic activity is predominantly affected by

symmetric shocks, i.e. shocks that have a comparable impact on the economic activity in Croatia and the euro area. Taking into account the high degree of the synchronisation of cycles and the predominance of symmetric shocks, it may be concluded that, following the adoption of the euro, Croatia may function without difficulties in the setting of a common monetary policy. Finally, following its EU accession, Croatia has started to participate in the European Semester – a mechanism for economic policy coordination, which has effectively raised the degree of political integration with euro area member states, while with euro adoption it would also commit itself to observing stricter fiscal rules. Assuming that these mechanisms would guarantee discipline among economic policy makers and that macroprudential policy would effectively reduce systemic financial risks, the probability of another deep crisis in Croatia and the EMU should be lower than in the past.

Croatia has performed poorly as regards the economic diversification criterion. Insufficient diversification of the Croatian economy is best seen in excessive dependence on the tourism sector. In terms of the relative size of tourism revenues, Croatia stands out even from other Mediterranean tourist countries, such as Greece, Portugal and Spain. The surplus which Croatia generates in services trade – which is almost entirely due to the tourism sector – exceeds the structural deficit in goods trade, so that Croatia has recently recorded a positive current account balance on an annual basis. However, such a structure of the current account balance is a major source of vulnerability, for if an external shock should noticeably reduce tourism revenues, the current account balance would certainly deteriorate, which would, without strong inflows to the financial account, create disturbances in the foreign exchange market, with possible depreciation pressures on the domestic currency. Therefore, if the decision were to be made solely on the basis of the economic diversification criterion, the conclusion would probably be that Croatia is not fully ready for euro adoption. However, although reforms to remove obstacles to the development of manufacturing industry and to reduce the relative importance of the tourism sector in the national economy are necessary and desirable, such adjustments should not be viewed as preconditions for Croatia's accession to the monetary union. The main reason is that Croatia as a small,

28 In 2016, the implicit interest rate on total public debt (kuna and foreign currency) stood at 3.9%. Assuming that the interest rate on the foreign currency component of public debt is the same, an increase in the principal of foreign currency debt of HRK 22bn would raise annual interest expenses by around HRK 850m.

open and highly euroised economy could even today not actively pursue a monetary and exchange rate policy to stabilise the economy should a negative shock hit tourism or another strategic activity. Therefore, by adopting the euro and transferring monetary sovereignty to the European Central Bank, Croatia would not be more vulnerable to asymmetric shocks than it is today. Furthermore, Croatia's resilience might grow due to euro adoption as it would eliminate a risk that an asymmetric shock creates pressures on the domestic currency and triggers a currency crisis.

As the optimum currency area theory has certain deficiencies, it cannot have a key role in assessing the suitability of the euro for Croatia. One of the theory's deficiencies is that its criteria often lead to opposite conclusions and it is sometimes impossible to reach a clear-cut conclusion on whether a country is ready to join the monetary union. For example, in the case of Croatia, the optimum currency area theory does not provide an answer to the question of whether a high degree of business cycle synchronisation and firm trade and financial integration are sufficiently strong arguments in favour of euro adoption, so that it is desirable despite poor economic diversification. The second deficiency of the theory is that it overestimates the importance of monetary and exchange rate policies as stabilisation instruments while neglecting currency risk, which may be a crucial argument in favour of joining the monetary union for small and open economies. In conditions of liberalised international capital flows, the central banks of small countries are forced to adjust themselves to the policies of major global central banks in efforts to avoid excessive speculative capital flows that might threaten financial and macroeconomic

stability. In many small countries, including Croatia, an additional limitation to monetary policy arises from a high level of foreign currency debt as the weakening of the national currency would directly raise the burden of debt repayment for domestic debtors. As a result, central banks of small countries have limited degrees of freedom in monetary policy implementation even when they officially do have monetary autonomy.

In the setting of a substantial foreign currency debt of domestic sectors, the CNB is primarily focused on maintaining exchange rate stability, so that monetary policy cannot generally be actively pursued to stabilise the economy. More precisely, by taking into account potential adverse effects of exchange rate depreciation on entities burdened by foreign currency debt, the central bank cannot use monetary policy measures if there is a risk that they would threaten exchange rate stability. Depreciation of the exchange rate of the kuna would worsen the financial position of all domestic sectors, with adverse effects being particularly evident in public finances. Croatia's public debt stands at approximately HRK 290bn (84% of GDP), more than three quarters of which is linked to the euro. It arises that any stronger depreciation of the kuna against the euro would trigger a steep increase in the principal of public debt and budget outlays for its repayment. In addition, exchange rate depreciation would reduce Croatia's credibility in financial markets and thereby impede the refinancing of the high public debt and make it more expensive. By adopting the euro and eliminating currency risk, Croatia would take an important strategic step towards maintaining macroeconomic and financial stability, while the loss of an independent monetary policy would not entail significant costs.

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