Adoption of the Euro in Croatia: Possible Effects on International Trade and Investments

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HNB

SURVEYS S-26

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Abstract

This paper presents the results of selected empirical research on the euro's effect on trade, foreign investment and tourism, and gives a brief analytical overview of the developments in individual euro area countries, particularly newer member states and tourist destinations. Based on that, and taking into account Croatia's close ties to the euro area, we estimate that the introduction of the euro, due to lower transaction costs, easier price comparison and currency risk reduction, might provide a small boost to Croatian trade in goods and services, particularly in tourism, and encourage foreign investment.

Keywords:
euro, trade in goods, tourism, foreign investment, Croatia

JEL:
F4, F14, F15, L83

Contents

1 Introduction

The motive for the creation of the euro was the expectation that the single currency would bring economic benefits to EU member states by strengthening their macroeconomic stability, promoting trade and investment and ensuring more efficient functioning of the single EU market, all together fostering economic and political ties between the member states. As regards the common market, the role of the single currency is to simplify its functioning, mostly by eliminating exchange rate fluctuations and transaction costs, increasing price transparency and strengthening market competition.

The introduction of the common currency eliminates the need for the currency exchange and related transaction costs that arise from the difference between the buying and selling rate and the exchange offices' commission. It simplifies the execution of payments and improves transparency and price comparability. The common currency has important advantages for consumers since it not only reduces costs but also helps consumers make purchase decisions, which may be particularly important in sectors with a large volume of cash transactions or internet purchases, such as tourism. In addition, it helps reduce possible consumer discrimination in different markets, by making it difficult for the producers to differentiate prices (e.g. determine different prices for different markets).

The specific benefits for the producers, particularly exporters, lie in lower operating costs once the uncertainty and the costs of exchange rate risk hedge are removed. This, in addition to the reduction of transaction costs, improves their competitiveness and facilitates trade with other EU member states (i.e. *trade creation effect*). At the same time, reduced sales costs in countries using the same currency in relation to third-country products may channel third-country trade towards euro area member states (i.e. *trade diversion effect*).[1] The reduction of obstacles to trade helps the export orientation of companies, particularly of small and medium-sized ones, which, due to the relatively high costs of foreign market entry, are mostly oriented towards the domestic market; it also assists the broadening of their range of export products.[2] However, it can also spur stronger investment in production in the foreign countries where the euro is used and thus reduce the need for international trade. Competitiveness can also be eroded by the price increases that may take place following the adoption of the common currency, as was the case in some tourist destinations.

Before its introduction, the euro was expected to facilitate not only trade but also capital flows among European countries. It was generally considered that the creation of a common European currency would have a significant effect on financial markets, institutions and investor behaviour, since lower transaction costs and the elimination of the exchange rate risk would encourage investments and enable better integration and development of the financial markets (their deepening, higher liquidity, broadening of the range of products). But it was also believed that the single currency could lead to increased outward investments to third countries due to smaller investment diversification opportunities within the euro area. In examining the euro's effect on economic activity, particular attention was paid to foreign direct investments (FDI), which are closely related to foreign trade.

Even before the creation of the euro there were optimistic expectations that its creation would strengthen economic, trade and financial relations between the European countries and thus fuel faster economic growth. In parallel with such expectations, economic literature, in addition to developing theoretical models, started evaluating *ex-ante* and after a while also *ex-post* the real effects of the single currency. Most of the research focussed on the relationship between the euro and trade in goods, resulting in a large number of papers, reporting, partly due to advances in estimation methods, great differences in the magnitude of the estimated effects. It should be noted that the first papers suggested much greater potential effects than the recent literature, which covers longer periods of time after the introduction of the euro, and uses more advanced econometric techniques. Unfortunately, literature on the euro's effect on tourism or investments is much scarcer.

This paper presents in more detail the results of selected empirical research on the impact of the introduction of the euro and offers an analytical overview of euro area countries' experiences, particularly of the new member states and tourist countries. All the information presented, combined with the description of economic ties between Croatia and the euro area, help us to estimate the potential benefits of euro adoption in Croatia on international trade and investments.

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1 Empirical literature failed to confirm the existence of trade diversion effects in the euro area, which can be explained by adjustments in the form of export price reductions made by third countries in an effort to avoid losing a market share in the monetary union. For more information, see, for instance Baldwin et al. (2008).

2 For more information on non-cost channels of the euro's effect on trade, see Baldwin et al. (2008).

2 Empirical literature review

2.2 Literature on the euro's effect on trade in goods

The literature estimating the euro's effect on trade in goods is indeed abundant and its results vary greatly. The gravity model of trade in goods[3] was used as the basis for the research. In addition to many control variables, a separate variable was introduced into this model, enabling the estimate of the effects of currency unions on foreign trade. Different papers used different econometric techniques, country samples and time periods, which resulted in very different conclusions. The estimation is made more cumbersome by different factors such as globalisation, the integration of emerging markets into global trade and the process of European integration, accompanied by foreign trade liberalisation, all of which had a great impact on trade, irrespective of the introduction of the euro, but are often not separated from the euro effect within econometric estimations. A factor that could have further complicated the estimation was the fact that the countries that accepted the euro had had only a small exchange rate volatility prior to its introduction and this could have boosted trade in advance. Despite significant differences in the model assumptions, the prevailing conclusion in the literature using more advanced econometric techniques is that when the positive effects of the introduction of the euro are confirmed, they are small.

The first papers estimating the effect of currency unions on foreign trade pointed to their very large positive effects. The first research on this topic was published by Rose (2000) who showed, using the gravity model on a panel of data of 186 countries in the period from 1970 to 1990, that countries sharing the same currency trade three times as much as countries with different currencies and that exchange rate volatility has a small negative effect on trade. After that, Glick and Rose (2002) estimated a slightly altered model on a larger sample of countries over a longer period of time, revising downwards the earlier estimates.

Separate research into individual currency unions shows that the EMU has smaller effects on trade than other unions. Glick and Rose (2002) already warned that their results, which are based on a sample of a large number of countries included in different currency unions, may be inapplicable to an estimation of the future effects of EMU because their sample included mostly small and poor countries. In an effort to investigate further the differences between individual currency areas, Eicher and Henn (2011) estimated them separately and concluded that trade increase in the case of the euro area is lower than in the case of other currency unions. In their latest

estimate, Glick and Rose (2016) also singled out the EMU from other currency areas, thus additionally lowering the estimated euro effect on exports. However, if the country sample is reduced only to current and future members of the EU (in contrast with the global sample), Croatia included, the euro effect on exports becomes statistically insignificant, even significantly negative, depending on the observed period. In addition, Glick (2017) analysed the effect of a country's accession to the European Union, separately from the effects of other regional trade agreements, building on the work of Glick and Rose (2002 and 2016)[4] and found that the statistically significant and positive effect of the euro on trade was considerably lower than that of accession to the EU.[5]

Earlier papers on the specific impact of the introduction of the euro, conducted only on a sample of European countries, pointed to a relatively large positive effect on foreign trade. For instance, in the period prior to and immediately after the introduction of the euro, Baldwin et al. (2005) studied the relationship between trade and exchange rate volatility, and came to the conclusion that this relationship was convex, i.e. that the marginal increase in trade rises sharply as the exchange rate volatility approaches zero, and that the effect of the euro on an increase in trade in the euro area might be slightly bigger if estimated on an aggregate than on a sectoral level. In addition, the euro did not lead to trade diversion from third-countries, quite the opposite, the trade with non-euro area countries rose, since trade acceleration between the euro area countries, as a result of import dependency of exports, led to a growth in imports from third countries. In the same way as this research, other earlier papers also had to deal with the problem of the brevity of their time series (only a few years after the introduction of the euro) so their conclusions should be interpreted with caution.

Some papers have concluded that the euro's effects on foreign trade also depend on the economic characteristics of a country acceding the euro area, such as its openness or size. For instance, Badinger and Breuss (2009) examined whether the intensity of the effect depended on a country's size, under the assumption of the theoretical model by Casella (1996) that smaller countries gain more from access to the common market than large countries, with the relative gain often depending on the size difference between the large and the small country. The analysis on both aggregate and sectoral levels confirmed that, on average, small countries improved their export results with the introduction of the euro (in relative terms, in relation to large countries) by 3-9%. As shown by Aristotelous (2006), the effect of the EMU is not equal in all countries[6], and the

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3   The gravity model of trade in goods estimating bilateral trade flows (Anderson (1979), Bergstrand (1985), Anderson, van Wincoop (2003), Helpman et al. (2008) is based on Newton's law of universal gravity, where the trade between two countries is larger, the bigger these two countries are in terms of their economies (higher GDPs) and the closer they are geographically (lower transport costs). Often included in the gravity equation are additional variables which explain the trade flow, such as exchange rate volatility, language and borders, free trade agreements, historical sovereignty and affiliation to the same currency area.

4   Glick and Rose (2002 and 2016) do not estimate the effect of a country's accession to the EU on its trade individually, but they include it in a variable measuring the impact of signing regional trade agreements.

5   The effect of accession to the EU on trade for older member states is estimated at 70% and of that for newer member states at 300%. The effect of the introduction of the euro on trade stands at 40% for older member states while that for newer member states cannot be established yet due to the relative shortness of the time series. The size of the estimated parameters should be taken with some reservation since the model used and the estimation method, which are the same as in Glick and Rose (2016), were criticised in other authors' papers in 2017.

reason for this inequality might lie in the degree of a country's openness to trade, with the more open countries, such as Germany, benefiting more from the reduction of transaction costs and exchange rate uncertainties and from higher price transparency. Camarero et al. (2013) came to similar conclusions regarding this unequal effect among countries[7].

As the years went by and as literature developed further, the estimated positive effects of the euro on trade decreased considerably. In addition to the shortness of time observations, later papers also criticised the fact that earlier research did not include the euro's effects separately from other integration processes, primarily in trade, which is very relevant for European countries. To answer these questions, Bun and Klaassen (2007) expanded the original Glick and Rose (2002) model by introducing a time trend-variable which describes the general trade intensification, thus reducing the euro effect to only 3%. Similarly, on a sample of EU and OECD countries de Nardis et al. (2008) found a short-term positive effect of euro adoption on intra-EMU trade of 4% and estimated that the long-term effect might be higher, since it requires a longer period of time for the effects of a common currency area to materialise.

In a paper by Baldwin et al. (2008), which offers an extensive literature review, criticizing model specification or estimation methods, the gravity model of trade was estimated on a sample of only 15 European countries (old member states). The authors concluded that the euro's effect on trade was significant and stood at approximately 2%, much below the author's previous estimates. Furthermore, Jagelka (2013) investigated four new member states of the EMU (Slovakia, Slovenia, Malta and Cyprus), and concluded that their trade with other countries of the euro area had risen 9%. Polyak (2016) compared the exports from Slovakia and the Czech Republic, the country that still uses its currency, and on the basis of the gravity model that draws upon Baldwin et al. (2008) concluded that the euro's effect on trade was small, around 5%.

Recent papers, however, suggest the conclusion that the introduction of the euro has no effect on trade. For instance, Larch et al. (2017) built on the work by Glick and Rose (2016), using the advanced estimation method[8] on a large data set, including 200 countries over 65 years. The obtained results also rebutted the conclusions presented in Glick and Rose (2016) about the significant effect of the euro on trade, and

Table 1 Overview of the results of selected research

Research based on Economic and Monetary Union of the EU:			
		Estimated effect on trade after the introduction of the euro:	
Author(s):	Data:	In the euro area:	Outside the euro area:
Baldwin, Skudelny, Taglioni (2005)	1991-2002	70-112%	15-19%
Aristotelous (2006)	1992-2003	6% (different for different EMU member states)	Not estimated
Flam, Nordstrom (2007)	1995-2006	17% for 1999-2001, 28% for 2002-2006	8% for 1999-2001, 12% for 2002-2006
Bun, Klaassen (2007)	1967-2002	3%	Not estimated
De Nardis, De Santis, Vicarelli (2008)	1988-2004	17% (4% over a short term)	Not estimated
Baldwin et al. (2008)	1990-2006	2%	Slightly positive or insignificant
Badinger, Breuss (2009)	1994-2005	3-9% (for small countries only)	Not estimated
Camarero, Gomez, Tamarit (2013)	1967-2008	13-16% (different for different EMU member states)	Only a small positive effect
Jagelka (2013)	1/1999-8/2010	9% (for Slovakia, Slovenia, Malta and Cyprus only)	Insignificant effect
Polyák (2016)	1995-2010	5%	Slightly negative but not statistically significant
Glick (2017)	1948-2013	40%	Not estimated
Research based on a number of monetary unions:			
Author(s):	Data:	Estimated effect on trade	
Rose (2000)	1970-1990	three times bigger relative to countries with different currencies	
Glick, Rose (2002)	1948-1997	two times bigger relative to countries with different currencies	
Eicher, Henn (2011)	1950-2000	50% on average for all monetary unions, 40% for the EMU	
Glick, Rose (2016)	1948-2013	50% (sample whole world) stat. insignificant (industrial countries and EU countries), stat. significant and negative (EU countries)	
Larch et al. (2017)	1948-2013	stat. insignificant (sample whole world)	
		stat. significant and negative (industrial countries and EU countries), stat. significant and negative (EU countries)	
Campbell and Chentsov (2017)	1948-2013	stat. insignificant (sample whole world)	

6   Aristotelous (2006) found a positive and statistically significant effect for Belgium (Luxembourg included), Finland, Germany, Ireland, the Netherlands, Portugal and Spain and a negative and a statistically significant effect for Austria, France and Greece, while the effect for Italy was positive but not statistically significant.

7   Camarero et al. (2013) found Belgium, Luxembourg, France and Italy to have benefited the most from the introduction of the euro, while exports from euro area countries to third countries did not change significantly (i.e. there was no trade diversion effect).

although they confirmed that in other currency unions (except the EMU) the use of the common currency boosted trade[9] greatly, they estimated that the effect of the euro was almost nil and statistically insignificant. Furthermore, Campbell and Chentsov (2017) use the Glick and Rose (2016) dataset to check the robustness of the results[10] and use additional control variables. They found that the effect of a common currency area was strongly influenced by important geopolitical occurrences, such as the communist takeovers, decolonisation, warfare, ethnic cleansing episodes, the fall of the Berlin Wall and the history of European integration. Taking into account the afore-mentioned control variables, the effect of the euro on trade becomes statistically insignificant.

2.2 Literature on the effect of the euro on foreign direct investments

In the analysis of the euro effect on trade and financial relationships among European countries, attention was also paid to the area of foreign direct investment which is closely related to foreign trade. Although it might be expected that euro adoption would have a positive effect on investments, its ultimate effect is not clear in advance. Namely, it is exactly the relationship between trade and FDI that determines the possible euro effect on investments. It should be distinguished whether it is a matter of vertical FDI[11] (production abroad to utilise lower costs, such as lower wages), which is a complement to (accompaniment of) trade or a horizontal FDI[12] (production abroad to avoid trade costs), which is a substitute for (alternative to) trade.

How then does the euro affect foreign investment in a country adopting it? Among others, Baldwin et al. (2008) explain that the introduction of the euro should encourage investments from non-euro area countries, irrespective of their form, since it enables simpler and cheaper entry of companies into the markets of a larger number of countries (the whole euro area). By contrast, investments across euro area countries might even fall in the case of horizontal FDI, if it is there solely for the purpose of lowering transaction costs. Furthermore, since currency costs are not the primary reason for the existence of a vertical FDI (as is the case of core euro area countries' investments in peripheral, particularly new, member states) and the euro's effect on such investments is unclear. However, it might be positive if the euro contributes to a further reduction of costs and operational risks in the host investment country.

As in the case of trade, gravity models were used in the empirical estimation of the euro's effects on FDI. The first estimates pointed to a positive, although smaller effect, than in the case of trade. Using a sample of OECD countries from 1980 to 2001, Schiavo (2007) confirmed that being a part of a currency union has a positive effect on FDI, which in the case of euro area does not relate only to the member states but also to investments between the members and third countries. The author estimates that the effect not only goes beyond pure elimination of the exchange rate uncertainty, a noticeable reduction of which could be seen even before the entry into a currency union but also reflects the elimination of transaction and informational barriers affecting investment decisions. Petroulas (2007) estimates that in the period from 1992 to 2001, the introduction of the euro increased inward FDI flows within the euro area a little more than those from/to non-member states. Furthermore, de Sousa and Lochard (2006) find that the euro had a positive effect on FDI within the euro area and that the effect was stronger in peripheral countries such as Greece and Italy. In a later paper (2011) they confirm that the level of FDI within the euro area rose after the introduction of the euro, but they also found that euro area countries invested even more in non-euro area countries (the study does not take into account investment flows from the rest of the world to EMU countries). Coeurdacier et al. (2009) conclude that the creation of the EMU had a strong positive impact on the value of cross-border intra-sectoral mergers and acquisitions in manufacturing among euro area countries and a slightly smaller impact on investments from the rest of the world in the euro area.[13] In a comprehensive study, Baldwin et al. (2008) refer to most of these research papers and conclude that euro adoption promoted investments in the euro area from non-euro area countries, but even more within the euro area, primarily investments in the manufacturing sector, stating that the magnitude of the effect itself is not clear.

By contrast, some papers deny there is any significant effect of the euro on FDI. They refer instead to the link between EU membership and FDI and emphasise that financial integration accelerated within the euro area primarily as a result of debt-type and not equity-type capital flows. The unstable link between the introduction of the euro and FDI might be explained by the difference in the samples used in the research[14], which might suggest that that the euro effect was present mostly in the first years after the creation of the common currency and in old member states, or by the fact that it depends on the specific features of the accession of new EU member states in

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8   The implementation of an iterative PPML algorithm resolves the issue of a numerical calculation for a full (three-dimensional: exporter-importer-time) set of fixed effects. On the other hand, Rose and Glick (2016) used OLS with two-dimensional fixed effects (exporter-time, i.e. importer-time and exporter-importer).

9   In the basic estimation, by over 100% on average, and the result remains robust regardless of the change in country sample or period.

10 For example, running an estimation on each individual currency area and the identification of a suitable control group of countries in order to test for each currency union switch (prior to and after entry to/exit from the currency area).

11 It is described by means of factor-proportion models (Helpman-Krugman, 1985), according to which production is located at a place with a most favourable resource allocation.

12 In literature they are known as proximity-concentration models (Brainard, 1997) because a company chooses between producing in a home country and then exporting, which has lower costs due to the economy of scale but may attract additional costs (among others, transaction costs associated with different currencies) and production in another country, which implies additional costs of setting up production. Production abroad intended for sale on the host market is usually resorted to in order to avoid obstacles to trade, and therefore it represents a substitute, being negatively correlated to the level of trade. However, horizontal FDI may also serve as an export platform FDI for sale on the neighbouring (third) countries' markets, which is then a complement to trade, increasing with rising trade.

13 By contrast, no similar effect was confirmed for the services sector, which was explained by the existing barriers to trade and entry to individual services markets that act as a strong deterrent to exploiting the advantages of the common currency.

2004[15]. Using a sample of 35 OECD countries between 1997 and 2008, Dinga and Dingova (2011) found that the euro had no significant effect on FDI[16]. In addition, they found that EU membership fosters FDI flows from direct investment much more than the euro and they also confirmed that long-term exchange rate volatility had an unfavourable effect on FDI. Darvas et al. (2013) also found that euro area membership had no significant effect on equity-type capital flows (FDI), that the direction of the link (sign) was not robust to changes in specification and that there was a positive link between FDI flows and EU membership. Furthermore, they concluded that the introduction of the euro boosted debt-type capital flows. Lane (2013) confirmed that the euro had a stronger effect on debt capital flows than on equity capital flows[17], explaining this by the fact that the exchange rate risk being a much less important factor in the valuation of equity than debt capital investments, and that its elimination following the adoption of the euro had a much smaller effect on developments in equity than debt capital.

2.3 Literature on the euro's effect on tourism

Economic research has paid very little attention to the issue of the euro's effect on turnover in tourism. The relatively modest strand of literature on this topic can be explained by tourism being a major economic activity in only a small number of European countries and accounting for a much smaller share of total international trade than trade in goods. In addition, as the largest European tourist countries adopted the euro simultaneously, there was no concern that a possible rise in tourist prices might distort their competitiveness relative to competitors. The available empirical research mostly confirms the positive implications of the introduction of the common currency on tourist expenditure in monetary unions. However, the magnitude of this relationship may vary greatly depending on country sample, period covered and the method used (in the same way as in the case of trade, the most commonly used were gravity models) and the estimation is hampered by tourist market globalisation.

The first estimates of the euro's effect on tourist turnover suggested much lower values than the corresponding estimates for trade in goods. Using the gravity model on a sample of 20 OECD countries, Gil-Pareja et al. (2007), show that the introduction of the euro boosted tourist flows in the euro area by 6.5%. Such a relatively small effect may be explained by the short time span that had elapsed since the introduction of the euro and the fact that the biggest effect can be achieved only after the currency has been put into circulation (2002) and

not at the moment of its adoption as the accounting currency (1999)[18]. Furthermore, the authors find that the positive effect is widely spread among euro area countries and that the positive link between tourist turnover and the introduction of the euro is found in nine out of eleven new EU member states.

Even though the last available research by Santana-Gallego et al. (2016) points to slightly bigger effects of the introduction of the euro on tourism in individual euro area countries[19], it should be stressed that the authors used a methodology similar to that used in earlier papers on the euro's effect on trade in goods, which indicated much greater effects than found in recent research[20]. They also find that the gains from the introduction of the euro are not evenly distributed across the countries, with a greater positive effect being seen in the first 11 member states. Interestingly, in Greece, one of the major tourist destinations, euro adoption had no impact on tourist flows. As regards time, the effect was the greatest in the early phase of introduction, mostly in 2002 when the euro started circulating, and it has been falling steadily since then.

Individual country research on Slovenia and Greece has shown that positive effects of the introduction of the euro prevail. Immediately after Slovenia's accession to the EU, Rudež and Bojnec (2008) surveyed foreign tourists in Slovenia about their perception of the euro's effect on different aspects of tourist demand, which may also be relevant for Croatia, in view of the similar structure of visitors (Italians and Austrians prevailed in the sample). The respondents associated the greatest positive effects with better and easier comparability with other tourist destinations in the euro area and with reduced travel and operating expenses, while euro adoption did not influence their perception of Slovenia's attractiveness as a tourist destination. However, the same respondents noted the increase in prices of tourist products. Although Greece also recorded a rise in tourist prices after the introduction of the euro, Thompson (2010) showed in an empirical paper that this did not harm tourist revenues, given the inelastic demand for Greek tourist products.

By contrast, the negative effect of the adoption of the euro was confirmed for relatively cheaper tourist destinations that are more price sensitive. Kanada (2003) conducted research based on the example of the Spanish island of Tenerife and concluded that the negative effect of price increase outweighed the positive effects of reduced transaction costs and increased transparency. This eroded the competitiveness of the island of Tenerife, commonly perceived as a cheaper destination (in relation to other Spanish destinations) which as such is more sensitive to price changes. These conclusions seem to support research findings indicating that the biggest price increase after the introduction of the euro was recorded in the services

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14 Recent research observes longer periods (samples going up to 2008 or even further) and a greater number of countries.

15 At the time of their accession to the EU, it was believed that the euro would be introduced very soon, and this fact could have spurred investments even prior to the formal introduction of the euro.

16 A positive and statistically significant effect was confirmed only in the estimation on a smaller subsample of EU member states. The papers which estimate the effect of the euro on trade also tend to take samples of a large number of countries as in the basic estimation by Dinga and Dingova (2011), while the estimate on a subsample is only performed as a robustness check.

17 However, in earlier literature reviews Lane (2006, 2008) stated that equity capital flows were positively influenced by the creation of the euro.

18 The euro's effect in the starting year of its circulation rose to 14% and in the period before that it stood at 3.5%.

19 They find that the positive effect of the euro on tourist consumption in the euro area in the period since the introduction of the euro until 2012, ranged between 44% and 126% and that the gains from the introduction of the euro were not evenly distributed across countries.

20 Santana-Gallego et al. (2016) refer to the papers by Baier and Bergstrand (2007), Flam and Nordstrom (2006), Berger and Nitsch (2005), Micco et al. (2003).

sector, in the group of products directly associated with tourism (accommodation, catering and recreational services, food and beverages).[21]

In general, research focussed on the effect of different exchange rate regimes on tourist revenues confirm the advantages of stable exchange rate regimes, particularly monetary unions. Webber (2001) determines that exchange rate volatility is an important negative determinant of tourist demand, i.e. that risk-averse tourists may decide to cancel, postpone or even change their choice of tourist destination in cases of excessive exchange rate volatility. Santana-Gallego et al. (2010) also conclude that the impact of the exchange rate regime on tourist revenues is more positive the less flexible the exchange rate regime is, the greatest arising in the case of monetary unions, around 12%. De Vita (2014) came to the same conclusions, and in the case of the euro this positive impact is even greater.

3 Trade flows in selected euro area member states after the introduction of the euro

3.1 Trade in goods

The European Economic and Monetary Union was established at the time of foreign trade intensification, both within the euro area[22] and globally, and the prevailing expectation was that the euro might provide a further boost to the intra-euro area trade. In the year when the euro was introduced as an accounting currency (1999), the trade between the euro area countries amounted to 26.4% of their GDP. By the time it was released into circulation in 2002, this share rose to 28.0% of GDP, and continued growing until it was interrupted by the global financial crisis and a collapse of world trade in 2008-2009. Trade rebounded in the following year and afterwards the share of euro-area trade in GDP held steady at approximately 32% of GDP, only slightly above the pre-crisis level (Figure 1). During the same time, the volume of trade with other EU member states outside the monetary union but participating in the common market of goods and services rose slightly. However, contrary to theoretical expectations, the volume of trade with non-EU countries rose even faster (from 18.0% of GDP in 2002 to 24.3% of GDP in 2016), helping these countries to increase their market share in the euro area. Such strong integration of the emerging markets into global trade, just like the creation of the common market of the European Union, blur the expected euro effect on trade and make its estimation more difficult, as seen in a wide range of empirical research estimates.

Experiences of individual euro area member states with regard to developments in trade in goods after euro adoption are different. For instance, of the five new members of the euro area with economic features similar to Croatia, after the introduction of the euro, Slovenia and Estonia witnessed stronger export dynamics to euro area countries than to other countries. Quite the opposite happened in Slovakia while in Latvia and Lithuania no significant differences were observed (Figure 2). An additional aggravating circumstance for the estimation of the euro's effect in Latvia and Lithuania is the fact that these countries were relatively new to the EMU and it was not possible to observe longer-term effects on foreign trade. In addition, the dynamics of trade in the Baltic countries was largely influenced by the economic and political situation in Russia, their major trading partner.

In all new euro area member states that introduced the euro in 2007 or later, goods exports started growing even earlier, with their accession to the European Union in 2004, which is the fact confirmed in literature[23]. As in the case of Croatia (2013), this was spurred by barrier-free trade in the common EU market and this fact further blurs the possible estimation of the effect of the common currency on trade. This

Figure 1 Structure of trade (goods imports and exports) in euro area countries
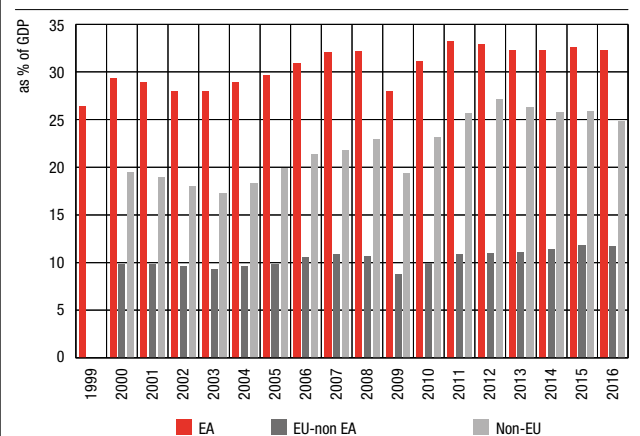
Note: The scope of countries changes during the observed period in accordance with their year of accession to the euro area.
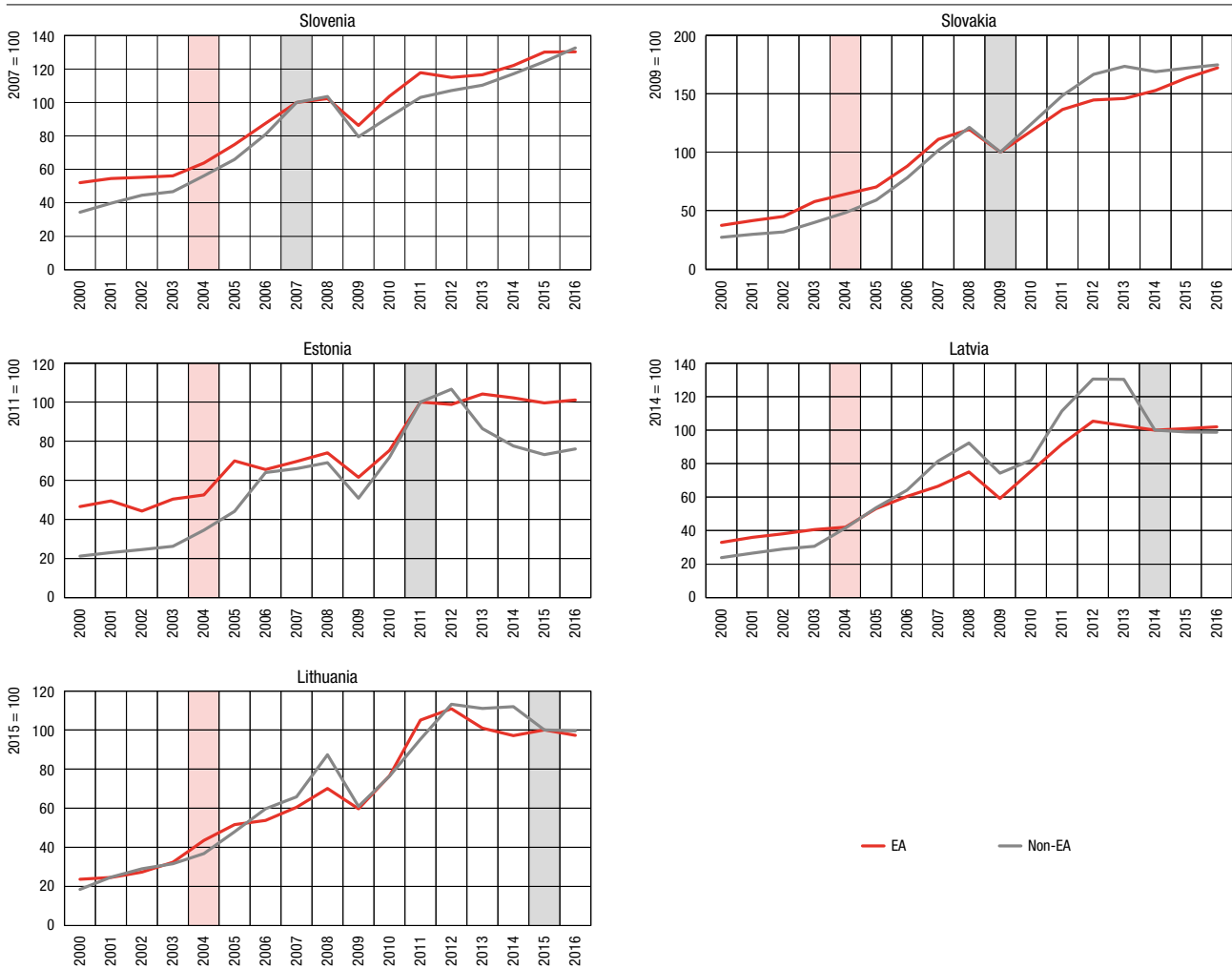Source: Eurostat.

Figure 2 Goods exports of the new euro area member states to other euro area member states and third countries

Note: Data are presented in the form of an index, with the base year being the year of the introduction of the euro in each individual country. The composition of the index changes during the observed period in accordance with accession of euro area countries (when calculating the growth rate in the year of its entry into the euro area, each new member state is also included in the composition of the euro area in the previous year). The year of accession to the EU is shown by the vertical red bar and the year of introduction of the euro by the vertical gray bar.
Source: Eurostat.

Figure 3 Market share of selected countries on the market of old euro area member states
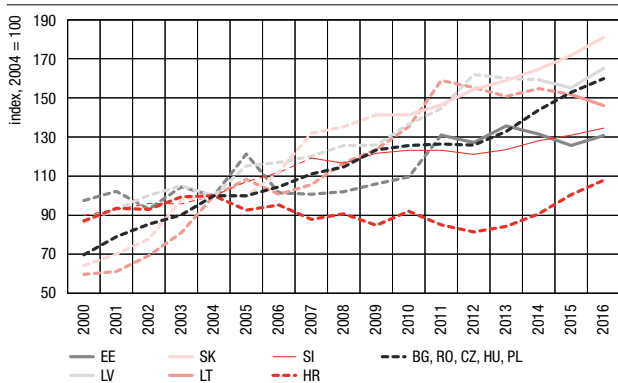
Note: The market share is calculated as the ratio of each country's exports to old euro area member states and the total imports of old euro area member states. Dotted lines show the period prior to the introduction of the euro. Old euro area member states include Austria, Belgium, Finland, France, Greece, Ireland, Italy, Luxembourg, the Netherlands, Germany, Portugal and Spain.
Source: Eurostat.

is particularly noticeable if the market share of new euro area member states in the market of old euro area member states (Figure 3) is observed, and particularly strong was the improvement in their relative position in the years following entry into the EU, while no key changes in the trend were observed after the introduction of the euro.

3.2 Tourism

As in trade in goods, there is a high degree of integration of European countries in the trade in services, especially in tourism, as confirmed by the tourist nights structure. Visitors from other EMU member states account for about one half of tourist nights in euro area countries while visitors from other EU member states outside the euro area account for approximately 25% and visitors from the rest of the world account for the rest (Figure 4). Tourist nights in the euro area grew steadily in all groups of visitors, with the trend being only briefly interrupted during the global financial crisis. However, the fastest growth was seen in the category of non-EU visitors (the rest of the world), and as a result this was the only category that increased its share in total number of nights spent in the euro area (from 20% in 2005 to 26% in 2015).

But, if tourist nights are observed in the context of euro adoption, the expected effect of the common currency did not materialise in new euro area member states, either with regard to the change in the growth trend or to the increase in the share of the euro area tourist nights relative to non-euro area tourists (Figure 5). Actually, more pronounced trend changes during the last decade were observed mostly in the group of non-euro area visitors, as confirmed in a paper by Santana and Rodríguez (2016) and much less in tourist turnover within the EMU. In general, the European tourist market witnessed an increasing number of visitors from fast-growing emerging markets, such as Russia and the Far East countries, such as China and South Korea and a strong rise in tourist demand from some EU non-euro area member states, such as Poland.

These developments reflect changes that took place on the global tourist market during the past decade. In that period, owing to greater flight availability and lower travel costs, emitting markets broadened considerably and the volume of global tourist turnover increased, transforming many distant countries and emerging market countries into important players on the European tourist market. Although this reduces somewhat the relative importance of tourist turnover within the euro area, particularly the importance of traditional emitting tourist markets such as Germany and France, it can be concluded that the common currency has in certain aspects facilitated travel between different countries of the euro area, both for their citizens and third-country visitors.

Figure 4 Structure of foreign visitors' nights in euro area countries, by visitor origin
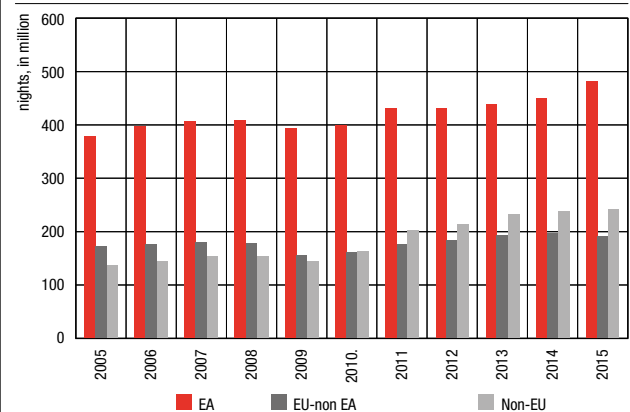
Note: Due to data limitations, the Netherlands, Ireland, Malta and Cyprus which account for approximately 7% of total nights in the euro area have been excluded from the scope of destinations.
Source: Eurostat.

Figure 5 Structure of foreign visitors in new euro area member states, by visitor origin
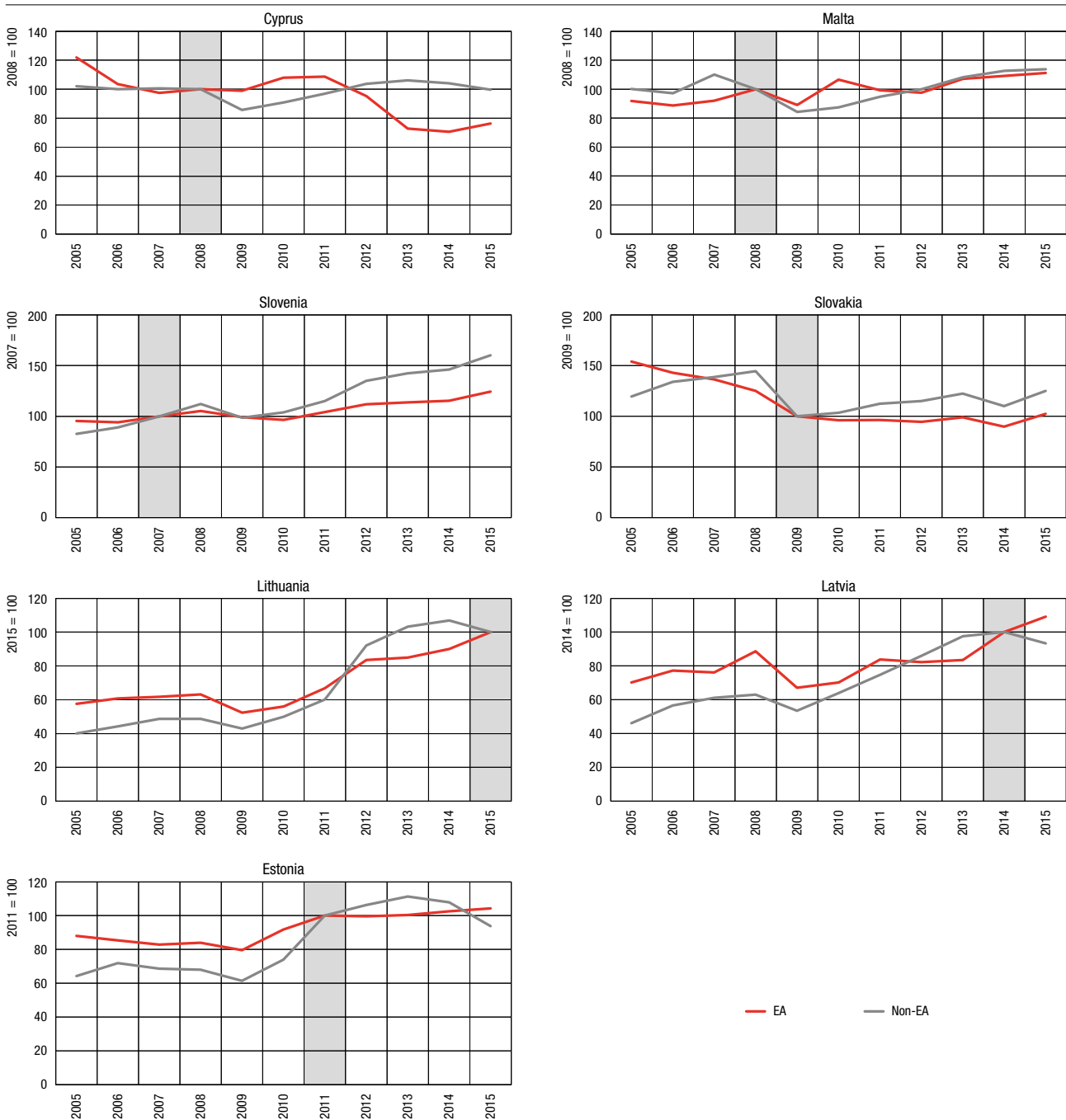
Note: The euro area (EA) implies the today's 19 member states. The year of the introduction of the euro is shown by the vertical gray bar.
Source: Eurostat.

4 Croatia and the euro area – how strong is the tie?

Croatia's accession to the European Union brought with it entry into the customs union and internal market integration, both of which had a positive effect on the Croatian economy. The elimination of barriers to trade with other member states facilitated and accelerated Croatian exports to the EU and imports from the EU, which spurred a strong recovery of Croatian exports and foreign trade in general. At the same time, the continuously improving tourism results were also fuelled by certain geopolitical factors such as the perception of Croatia as a safe destination easily accessible by road. Capital flows continued to be determined by external factors and the unfavourable structural position of the domestic economy, and therefore after the entry into the EU, the country witnessed continued deleveraging and no rise in foreign direct investments, in contrast with developments during the first wave of EU enlargement. In the light of such trends in the preceding years, the question remains open whether the introduction of the euro in Croatia could provide an additional boost to foreign trade and foreign investments and if so, to what extent?

The possible benefits of the euro are emphasised by the high participation of euro area member states in Croatian trade in goods and services. Out of the total trade in goods and services, over one half is accounted for by trade with euro area countries, which is an even higher share than in peer countries (Figure 6). This indicator is slightly higher for Croatian trade in goods than for trade in services, and the importance of the euro area is higher for goods imports than exports. By contrast, although the euro area also accounts for a dominant share of the export of services, the import from the euro area accounts for only a little over one third of the total (the concentration of the import of services is much smaller because they originate from a larger number of countries). It should be noted that in absolute terms the value of services exports to the euro area even slightly exceeds the value of goods exports, while on the side of imports from the euro area, goods imports are dominant, and services imports are ten times lower. The

structure of services exports mostly reflects revenues from travel services, with the visitors from the euro area countries accounting for almost 70% of the total tourism revenues and for over 60% of total arrivals and nights spent in Croatia by foreign guests, in particular visitors from Germany, Italy, Austria and Slovenia.

The importance of the introduction of the euro for tourist activity in Croatia lies in euro countries' dominance in the EU tourist market. Tourists from the euro area countries account for over one half of the total nights spent in the European Union, with the largest emitting markets being Germany, France and the Netherlands. At the same time, most of the main European destination markets, measured by the number of tourist nights, such as Italy, Spain and Greece or markets generating relatively large revenues from tourism, such as Malta, Cyprus

Figure 7 Tourist sector in selected countries of the European Union in 2015
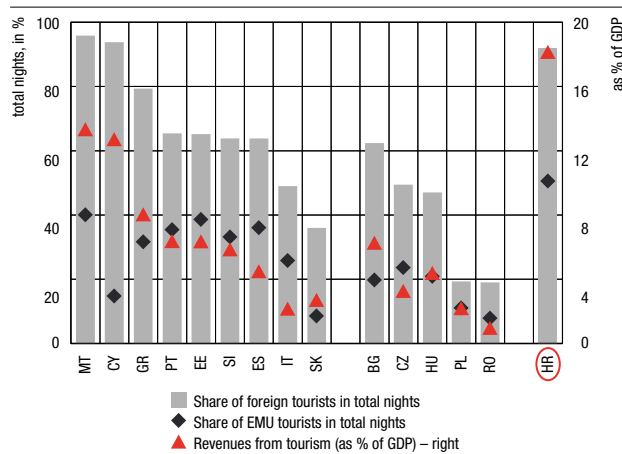
Source: Eurostat.

Figure 6 Geographical structure of trade in goods and services in Croatia and selected countries
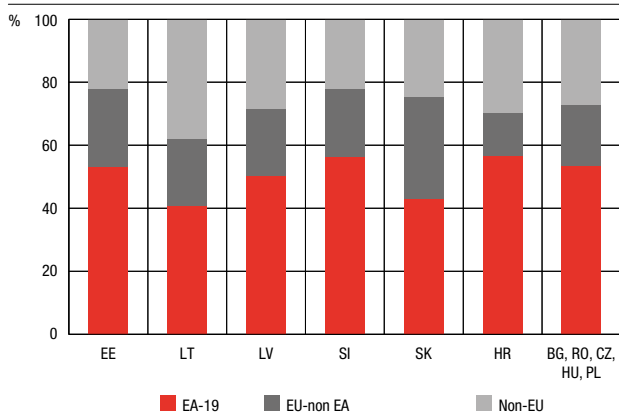
Note: The figure shows the average share in total trade (sum of exports and imports) in the period from 2013 to 2016. For all the periods, the euro area implies the current 19 member states.
Sources: Eurostat and CNB.

Figure 8 Structure of the stock of foreign direct investments liabilities at the end of 2015
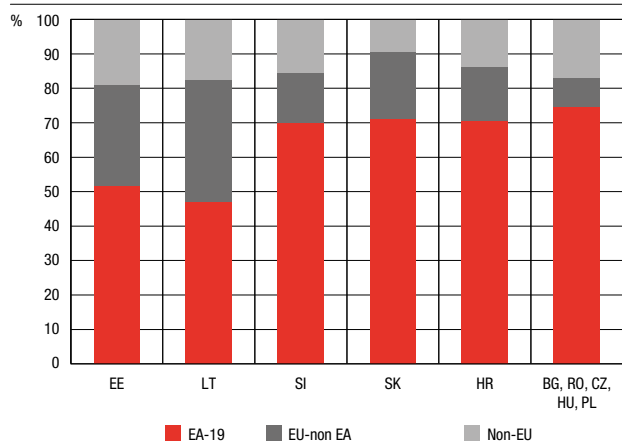
Source: Eurostat.

and Greece are also members of the euro area[24]. Among European tourist countries, Croatia is an exception in this sense. It generates relatively high revenues from tourism (as much as 18% of GDP), of which two thirds can be ascribed to tourists from the euro area (Figure 7).

Croatia's close ties with the euro area are also present in financial relations, reflecting the fact that the most widely represented foreign investments are those from euro area countries.

According to the available data on the structure of equity investments, of the total stock of direct investments in Croatia in 2015, over two thirds can be accounted for by investments from the euro area, as in Slovenia and Slovakia (Figure 8). In the structure of Croatian residents' outward investment, investments in euro area countries are also heavily represented, despite their much more modest importance in both absolute and relative terms compared to inward investments.

5 Conclusion: will the introduction of the euro bring benefits to international trade and investments in Croatia?

Taking into account all the arguments presented above, it can be concluded that the effect of the euro on Croatian international trade and investments might be positive. The trade in goods might rise slightly due to lower transaction costs, easier price comparison and currency risk elimination, which might increase the price competitiveness of Croatian companies. The introduction of the euro might have a slightly more visible effect on tourist activity because of the size of the tourist sector and a considerable volume of cash transactions, which augment the effects of the euro. As regards the investments, as in the case of trade, it was expected that there would be a positive effect on foreign direct investments even earlier, during the preparation for accession and after the accession to the EU, but this did not occur due to the poor domestic investment climate and the reluctance of international investors. However, a part of the unmaterialised investment potential could still materialise with the introduction of the euro and the ensuing risk reduction, and improved macroeconomic stability.

The introduction of the euro in Croatia might boost trade in goods though at a relatively slower rate than the accession to the EU. These expectations are based on the results of empirical research for the euro area, which are very diverse and in more recent papers show that even if the positive effects of the euro on trade are confirmed, they are very small, considerably smaller than the effects of accession to the EU. Considerable strengthening of goods exports in the new euro area member states began with accession to the European Union, as it did in Croatia, and a circumstance that makes it additionally difficult to estimate the euro's effects in new member states is the fact that they have been in the monetary union for a relatively short period of time and most of them adopted the euro at the time or immediately after the financial crisis and trade collapse. In addition, it is possible for the effects of the euro to be different for every euro area member state depending on its economic characteristics, such as its size or degree of trade openness. However, regardless of all the restrictions, when observed from a macroeconomic perspective, the introduction of the euro should improve the transparency and stability of the entire economic environment, which might have positive effects on the export sector competitiveness and trade growth.

As regards the euro's effects on foreign investments in Croatia, the common currency might encourage investors through a reduction in foreign exchange uncertainties and other informal barriers to trade. Empirical literature offers confirmation of the fact that the use of the euro has a positive effect on foreign investment flows, mostly based on the experience of old member states which were the first that started using the euro. But in the same way as in the case of trade, there are vast differences in the size and importance of the estimated effect. Also, elimination of the exchange rate risk and belonging to the EU are confirmed as an important determinant of foreign direct investment flows. In addition, it should be noted that foreign direct investments are determined by a range of other factors, such as the conditions on the global financial markets and in the domestic economy, such as taxation burden, labour costs and quality of the work force. The introduction of the euro could, through a reduction of the currency risks, improve the business climate and encourage foreign investments.

As regards tourism, even though the euro effects on tourism have been analysed and confirmed in only a small number of studies, it is clear that they might be positive in Croatia, given the specific features of Croatian tourism. If we take into account the fact that most of Croatia's tourist competitors as well as its visitors come from the euro area, the potential benefits of euro adoption are even greater. The benefits of the elimination of the conversion costs, increased transparency and easier price comparison are all too clear, and they all lead to improved competitiveness of a tourist sector.

However, there are some minor negative risks, mainly associated with a possible increase in services prices following the introduction of the euro. This increase could, judging by the experiences of other countries, be somewhat greater in the tourist sector, which could have an unfavourable effect on price competitiveness, particularly in tourist destinations whose business strategy is based on relatively low prices. However, such developments might be offset by improved non-price competitiveness (branding and quality of products and services, quality of the business environment).

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24 Montenegro, which uses the euro as a means of payment, should be mentioned here.

Appendix 1

List of abbreviations

bn   – billion
GDP   – gross domestic product
CBS   – Croatian Bureau of Statistics
CNB   – Croatian National Bank
EA   – euro area
EMU   – Economic and Monetary Union
EU   – European Union
FDI   – foreign direct investments
m   – million

Two-letter country codes

AT   – Austria
BE   – Belgium
BG   – Bulgaria
CY   – Cyprus
CZ   – Czech Republic
DE   – Germany
DK   – Denmark
EE   – Estonia
ES   – Spain
FI   – Finland
FR   – France
GB   – Great Britain
GR   – Greece
HR   – Croatia
HU   – Hungary
IE   – Ireland
IT   – Italy
LT   – Lithuania
LV   – Latvia
MT   – Malta
NL   – Netherlands
PL   – Poland
PT   – Portugal
RO   – Romania
SI   – Slovenia
SK   – Slovakia

References

Anderson, J. E (1979): *A Theoretical Foundation for the Gravity Equation*, American Economic Review, 69(1), pp. 106-116.

Anderson, J. E., and E. van Wincoop (2003): *Gravity with gravitas: A solution to the border puzzle*, American Economic Review, 93 (1), pp. 170-192.

Aristotelous, K. (2006): *Are There Differences Across Countries Regarding the Effect of Currency Unions on Trade? Evidence from EMU*, JCMS, 44(1), pp. 17-27.

Badinger, H., and F. Breuss (2009): *Country size and the trade effects of the euro*, Rev World Econ, 145, pp. 207-223.

Baier, S. L., and J. H. Bergstrand (2007): *Do free trade agreements actually increase members' international trade?*, Journal of International Economics, 71 (1), pp. 72-95.

Baldwin, R., F. Skudelny, and D. Taglioni (2005): *Trade Effects of the Euro – Evidence from Sectoral Data*, Working Paper Series 446, European Central Bank.

Baldwin, R., V. DiNino, L. Fontagné, R. A. De Santis, and D. Taglioni, D. (2008): *Study on the Impact of the Euro on Trade and Foreign Direct Investment*, Economic Papers 321, European Commission Directorate-General for Economic and Financial Affairs.

Berger, H., and V. Nitsch (2005): *Zooming Out: The Trade Effect of the Euro in Historical Perspective*, CESifo Working Paper Series No. 1435.

Bergstrand, J. H. (1985): *The gravity equation in international trade: Some microeconomic foundations and empirical evidence*, Review of Economics and Statistics, 67 (3), pp. 474-481.

Brainard, S. (1997): *An Empirical Assessment of the Proximity-Concentration Trade-off between Multinational Sales and Trade*, American Economic Review 87, pp. 520-544.

Bun, M., and F. Klaassen (2007): *The Euro Effect on Trade is not as Large as Commonly Thought*, Oxford Bulletin of Economics and Statistics, 69, pp. 473-496.

Camarero, M., E. Gomez, and C. Tamarit (2013): *EMU and Trade Revisited: Long-Run Evidence Using Gravity Equations*, World Economy, 36(9), pp. 1146-1164.

Campbell, D. L., and A. Chentsov (2017): *Breaking Badly: The Currency Union Effect on Trade*, MPRA Paper No. 79973.

Casella, A. (1996): *Large countries, small countries and the enlargement of trade blocs*, European Economic Review, 40(2), pp. 389-415.

Coeurdacier, N., R. A. De Santis, and A. Aviat (2009): *Cross-Border Mergers and Acquisitions Financial and Institutional Forces*, Working Paper Series 1018, European Central Bank.

Darvas, Z., P. Hüttl, S. Merler, C. de Sousa, and T. Walsh (2013): *Analysis of developments in EU capital flows in the global context*, Final Report, Bruegel, N° MARKT/2013/50/F.

De Nardis, S., R. De Santis, and C. Vicarelli (2008): *The Euro's Effect on Trade in a Dynamic Setting,* The European Journal of Comparative Economics, 5, pp. 73-85.

De Sousa, J., and J. Lochard (2006): *Union monetaire et IDE: Quels sont les effets de l'euro?,* Revue Economique, Vol. 57, Issue 3, pp. 419-430.

De Sousa, J., and J. Lochard (2011): *Does the Single Currency Affect Foreign Direct Investment?*, The Scandinavian Journal of Economics, Vol. 113, No. 3, pp. 553-578.

Dinga, M., and V. Dingová (2011): *Currency Union and Investment Flows: Estimating the Euro Effect on FDI*, IES Working Paper 25/2011, IES FSV. Charles University.

ECB (2013): *Intra-euro area trade linkages and external adjustment*, ECB Monthly Bulletin, January 2013.

Eicher, T. S., and C. Henn (2011): *One Money, One Market: A Revised Benchmark*, Review of International Economics, 19(3), pp. 419-435.

Felbermayr, G., J. Gröschl, and T. Steinwachs (2017): *The Trade Effect of Border Controls: Evidence from the European Schengen Agreement*, ERIA Discussion Paper Series 2016/36.

Flam, H., and H. Nordstrom (2007): *The Euro and Single Market Impact on Trade and FDI*, Institute for International Economic Studies.

Gil-Pareja, S., R. Llorca-Vivero, and J. A. Martínez-Serrano (2007): *The effect of EMU on tourism*, Review of International Economics, 15 (2), pp. 302-312.

Glick, R. (2017): *Currency Unions and Regional Trade Agreements: EMU and EU Effects on Trade,* Comparative Economic Studies 59 (2), pp. 194-209.

Glick, R., and A. K. Rose (2002): *Does a currency union affect trade? The time-series evidence*, European Economic Review, 46, pp. 1125-1151.

Glick, R., and A. K. Rose (2016): *Currency unions and trade: A post-EMU reassessment*, European Economic Review, 87, pp. 78-91.

Helpman, E., and P. Krugman (1985): *Market Structure and Foreign Trade: Increasing Returns, Imperfect Competition, and the International Economy*, MIT Press, Cambridge.

Helpman E., M. Melitz, and Y. Rubinstein (2008): *Estimating trade flows: Trading partners and trading volumes,* Quarterly Journal of Economics, 123(2), pp. 441-487.

Jagelka, T. (2013): *Bilateral Trade and the Eurozone: Evidence from New Member Countries*, World Economy, 36(1), pp. 48-63.

Kanada, J. (2003): *Inside and Outside the Boundaries of the European Union: The Impacts of a Monetary Union on Tourism in Spain.* Available at: https://www.researchgate.net/publication/228982749_Inside_and_outside_the_boundaries_of_the_European_Union_The_impacts_of_a_monetary_union_on_tourism_in_Spain.

Lane, P. R. (2008): *EMU and Financial Integration* in The Euro At Ten: Lessons and Challenges, Fifth ECB Central Banking Conference, ed. Mackowiak, B., F. Mongelli, G. Noblet, and F. Smets, European Central Bank, pp. 82-115.

Lane, P. R. (2013): *Capital Flows in the Euro Area*, European Economy, Economic Papers 497.

Lane, P. R., and G. M. Milesi-Ferretti (2008): *The Drivers of Financial Globalization*, American Economic Review, 98(2), pp. 327-332.

Larch, M., J. Wanner, Y. V. Yotov, and T. Zylkin (2017): *The Currency Union Effect: A PPML Re-assessment with High-Dimensional Fixed Effects*, LeBow College of Business, Drexel University, School of Economics WP 2017/07.

Micco, A., E. H. Stein, and G. L. Ordoñez (2003): *The Currency Union Effect on Trade: Early Evidence from EMU*, Economic Policy, 18(37), pp. 315-356.

Petroulas, P. (2007): *The effect of the euro on foreign direct investment*, European Economic Review, 51, pp. 1468-1491.

Pufnik, A. (2017): *Effects of the Adoption of the Euro on Consumer Prices and Inflation Perceptions: An Overview of Experiences and Assessment of the Possible Impact in Croatia,* Croatian National Bank Survey, S-27.

Ranilović, N. (2017): *The Effects of Economic Integration on Croatian Merchandise Trade: A Gravity Model Study*, Croatian National Bank Working Paper, W-50.

Rose, A. (2000): *One Money, One Market: Estimating the Effect of Common Currencies on Trade,* Economic Policy, 30, pp 9-45.

Rudež, H. N., and Š. Bojnec (2008): *Impacts of the Euro on the Slovenian Tourism Industry*, Managing Global Transitions: International Research Journal, Vol. 6, No. 4, pp. 445-460.

Santana-Gallego, M., F. Ledesma-Rodríguez, and J. Pérez-Rodríguez (2010): *Exchange rate regimes and tourism*, Tourism Economics, 2010, 16 (1), pp. 25-43.

Santana-Gallego, M., F. Ledesma-Rodríguez, and J. Pérez-Rodríguez (2016): *The euro effect: Tourism creation, tourism diversion and tourism potential within the European Union*, European Union Politics, Vol. 17, No. 1, pp. 46-68.

Schiavo, S. (2007): *Common Currencies and FDI Flows*, Oxford Economic Papers, serial online, 59(3), pp. 536-560.

Thompson, A., and H. Thompson (2010): *The exchange rate, euro switch and tourism revenue in Greece*, Tourism Economics, 16 (3), pp. 773-780.

Webber, A. (2001): *Exchange rate volatility and cointegration in tourism demand*, Journal of Travel Research, Vol. 39, No. 4, pp. 398-405.

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