

MĀRTIŅŠ BITĀNS
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IMPACT OF THE EURO ADOPTION ON THE ECONOMY OF LATVIA

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ABSTRACT

In the past decade, Latvia's macroeconomic structure and the financial system have undergone momentous and radical changes, and the experience gained so far supports the assumption that the economy has been able to adjust effectively to changes in external environment. The calculations based on the gravity model analysis demonstrate that over longer horizons Latvia's GDP might be up to 19% higher than under a hypothetical scenario of Latvia preserving its national currency. Several indicators of the national structural development (structural changes of GDP sectors, structure of foreign trade broken down by trade partner and main commodity group, etc.) and the analysis of cyclical economic volatility show that in terms of real convergence Latvia often differs substantially from large euro area countries and only on few occasions Latvia's respective indicators display close similarity to the indicators of countries known as the periphery. It does not necessarily imply that along with the euro adoption the impact and periodicity of asymmetric shocks in Latvia are going to increase.

Key words: *euro area enlargement, euro adoption, convergence, Maastricht, EU*

JEL classification codes: *E42, E58, F33, F42*

The views expressed in this publication are those of the authors, who are employees of the Bank of Latvia Monetary Policy Department. The paper has been revised and may differ from the Latvian version of this publication. The authors assume responsibility for any errors and omissions.

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INTRODUCTION

The alignment with international structures, including also full-scale participation in the European Union (EU), has ranked among Latvia's most significant strategic development goals since the restoration of country's statehood and independence. The accession of Latvia to the EU marked the end of a period of the long and complicated integration process that started in the mid-1990s. However, the signing of the accession agreement does not bring the integration process to a close, and pursuant to the current EU accession agreement, the accession for all new entrants, Latvia among them, means also joining the Economic and Monetary Union (EMU) and the adoption of the euro. To this end, Latvia will have to comply with a number of criteria (the Maastricht criteria) that assess the degree of the country's nominal convergence. Similar to the initial integration period (liberalisation of trade with the EU Member States under the European Treaty), the up-coming integration stages are going to have substantial implications for the country's economy.

The impact of the introduction of the euro in Latvia will, to a great extent, be determined by macroeconomic maturity of the country as well as operational efficiency of its financial and banking systems. In the past decade, Latvia's macroeconomic structure and the financial system have undergone momentous and radical changes, and the experience gained so far supports the assumption that the economy has been able to adjust effectively to changes in external environment. That is why Latvia's gains from the integration process have so far outnumbered losses. Nonetheless, a comprehensive analysis of the consequences associated with the introduction of the euro is needed to ascertain with conviction that the concluding period of economic integration is likewise going to be to the advantage of Latvia.

Chapter 1 of the study is devoted to the macroeconomic analysis of the euro adoption in Latvia with a focus on both its eventual gains and possible risks. Using practices of the euro area countries as the basis, Chapter 2 presents the analysis of potential impact of the euro adoption on Latvia's financial sector.

1. INTRODUCTION OF EURO: IMPACT ON REAL SECTOR

Eleven of the 15 EU Member States joined the EMU in 1999 and introduced a single currency – the euro – in compliance with the terms and conditions of the Maastricht Treaty. While not meeting all the required Maastricht criteria in 1999, Greece joined the EMU in 2001. The voluntary substitution of their national currencies with the euro by the majority of the countries implies that the changeover to euro is not only politically founded but also economically advantageous. Nevertheless, three EU Member States – Denmark, Sweden and the United Kingdom – are still using their national currencies. While the United Kingdom is the only one to declare openly that the preservation of the national currency stems from economic considerations, mean-

ing that the introduction of the euro will bring about more losses than gains, the overall behavior of the given countries signals their cautious attitude to the adoption of the euro suggesting that it may entail some potential economic risks as well.

The most often voiced economic arguments in favor of the euro as a single currency is the complete elimination of exchange rate volatility with respect to major trade partners (provided that an economy is actively trading with the euro area countries) – an act promoting foreign trade of the country, and also elimination of the exchange risk that is a driving force behind a decline in interest rates and a rise in investment. It is acknowledged that in the presence of still existing differences in economic structures among the euro area countries in conjunction with structural rigidities in the labor market the common monetary policy conducted by the European Central Bank (ECB) will not be able to entirely smooth out business cycle fluctuations but may, in the worst case scenario, actually amplify macroeconomic fluctuations; this is the major risk associated with the introduction of the euro.

As either positive or negative impact of the euro introduction will affect Latvia only after joining the EMU, the magnitude of such an eventual impact can be indirectly measured by analysing practices of the existing EMU countries (the outcomes of such analysis, however, cannot be taken as absolute due to the circulation of the euro in the EMU for less than 5 years). The experience of a number of countries in Southern Europe shows that, indeed, with countries approaching the EMU membership and introduction of the euro, interest rates fall substantially (see Table 1). First, it is caused by the need to meet the Maastricht convergence criteria that stipulate low inflation and fiscal discipline. Second, when a country joins the Exchange Rate Mechanism II (ERM II) and receives final approval on participation in the monetary union from the responsible EU institutions, the exchange risk incorporated in interest rates disappears, hence money market interest rates in a given economy almost level out with those of the euro area.

Table 1

SPREADS BETWEEN MONEY MARKET RATES IN SELECTED EMU COUNTRIES AND EURO AREA AVERAGE

(in percentage points; 1–3 years prior to euro adoption and in the year of euro adoption)

	3 years	2 years	1 year	Year of euro adoption
Spain	2.73	1.24	0.51	-0.25
Portugal	2.46	1.53	0.51	-0.26
Greece	6.47	5.33	1.81	0.11

Source: *Industrial and Financial Systems (IFS)*.

Introduction of the euro and a related fall in interest rates may substantially promote investment inflow (in Portugal and Spain, foreign investment grew at a more rapid pace than prior to the introduction of the euro), which, however, is not an automatic

process (Greece did not experience a notable investment inflow after euro was introduced; see Table 2). In relation to exports, developments in some EMU members – countries of Southern Europe – indicate that the introduction of the euro alone does not necessarily push up exports notably. One of the reasons is a comparatively short period of euro circulation in these countries, and it is quite likely that favorable outcomes of a country's foreign trade will be felt in years ahead. Another factor to be taken into account is the close interrelation of exchange rates of all present EMU countries within the ERM already prior to the formal introduction of the euro, hence the exchange rate in these countries has been relatively stable for a long time and had supported export growth in the run of several years prior to joining the EMU. In such a case, there are no grounds for an immediate and robust pick-up in export growth.

Table 2

CHANGES IN SELECTED MACROECONOMIC INDICATORS IN SELECTED EMU COUNTRIES PRIOR TO AND AFTER INTRODUCTION OF EURO
(%)

	Annual average growth of foreign direct investment		Annual average growth of exports	
	3 years prior to euro introduction	3 years after euro introduction	3 years prior to euro introduction	3 years after euro introduction
Spain	3.2	19.5	3.1	3.7
Portugal	8.6	16.0	7.8	4.6
Greece*	6.1	5.5	0.1	-0.8

* Greece – 2 years prior to euro introduction and 2 years after it.

Sources: IFS, national central banks.

Against this background, in the following analysis of possible effects of the euro introduction in Latvia, the central focus will be on foreign trade and potential effects of the changeover on interest rates in Latvia, as well as on testing the probability that the loss of monetary policy independence and the introduction of the euro might have an adverse impact on macroeconomic stability or increase the number of economic shocks in the country.

1.1 Assessing the impact on Latvia's foreign trade turnover

Prior to joining the ERM II, Latvia will have to fix the exchange rate by changing the lats peg from SDR basket of currencies to euro. The peg to the SDR basket of currencies so far has been fully in line with the structure of Latvia's economy, as both of the two main world currencies – the US dollar and the euro – have been extensively used in foreign trade and financial transactions. The currency peg, on the other hand, also affects the structure of currencies used in settlements; hence the lats peg to the euro might be accompanied by shifts in the currency structure of Latvia's foreign trade.

Possible changes can be assessed using Table 3 data on development trends in Latvia's

foreign trade turnover broken down by country groups and currencies. The euro bloc (EUR) is made up of countries that adopted the euro in 1999 as official legal tender, and also those whose national currency was or is pegged to the euro (in 1995, the euro bloc comprised the countries whose currencies were later replaced by the euro and the countries whose currencies' exchange rates were pegged to a currency later replaced by the euro). This group includes all EU countries except Sweden and the United Kingdom that have no explicit fixed exchange rate target vis-à-vis the euro. In 1995, the group included also some EU candidate countries (e.g. Estonia) whose national currencies were pegged to the German mark. The US dollar bloc (USD) comprises the CIS countries, those of North and South America, and several EU candidate countries (e.g. Lithuania) with their national currencies not pegged to any of European currencies. Finally, taking into account the significant role the United Kingdom and Sweden play in Latvia's foreign trade, they were designated the British pound sterling bloc (GBP) and the Swedish krona bloc (SEK), respectively.

Table 3

LATVIA'S FOREIGN TRADE TURNOVER

(%)

Country bloc	1995		2003 (I-IX)	
	Turnover in breakdown by country group	Turnover in breakdown by settlement currency	Turnover in breakdown by country group	Turnover in breakdown by settlement currency
EUR	38	29	62	53
USD	42	48	16	27
GBP	7	2	7	4
SEK	7	7	8	3
LVL	–	6	–	6
Other	6	8	7	7

Source: Central Statistical Bureau of Latvia.

The table shows that the euro bloc had been gradually gaining importance due to a number of factors – mainly an increase in the EMU share in Latvia's total foreign trade turnover and in the number of Central and East European countries pegging their national currencies to the euro. With the share of the euro bloc growing, the role of the euro and national currencies pegged to the euro also increased, and in 2003, more than a half of Latvia's total foreign trade transactions were settled in these currencies. Nevertheless, in 2003 and all the preceding years, the share of the euro in the structure of settlement currencies by 10 percentage points lagged behind the share of the euro bloc countries in total foreign trade turnover of Latvia. It indicates that trade transactions even with the euro bloc countries are not always conducted in euros but in other currencies (e.g. lats or US dollars). Conversely, the role of the US dollar in foreign trade transactions of Latvia currently is much more significant than that of

the US dollar bloc countries overall. It suggests that the US dollar is the predominant legal tender in cases when neither the lats nor the national currency of the respective trade partner of Latvia can be used.

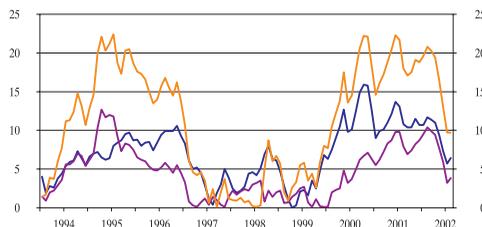
With Latvia approaching the EMU participation, the situation is likely to change. By pegging the lats to the euro, exchange risk on transactions in euros will be reduced, and an increase in the share of euro transactions in the settlement currencies structure may be expected. Even the most cautious forecasts indicate that the share of the euro is likely to rise to the level that is similar to the share of the euro bloc countries in Latvia's foreign trade turnover. It is, however, also quite likely that with the adoption of the euro in Latvia coming closer, the euro will be more widely used instead of the US dollar in settlements with trade partners that do not make their payments in their national currencies. It may push the current euro share in the settlement currencies structure up from 50% to 70% or even more, provided that the existing US dollar bloc countries (e.g. Russia) start to use the euro extensively in their foreign trade settlements. The share of the US dollar in settlements is going to shrink accordingly and is not expected to exceed 10%–15% of total foreign trade turnover corresponding to an approximate significance of the US dollar bloc in Latvia's foreign trade.

When Latvia joins the EMU, its national currency – the lats – will be pegged to the euro and due to it the mutual lats and euro exchange rate volatility will diminish substantially. Simultaneously, more pronounced fluctuations of the lats exchange rate against the US dollar might be expected. Since the lats peg to the SDR basket of currencies, its exchange rate fluctuations against any of the basket currencies (including the euro and the US dollar) have been weaker than bilateral fluctuations of the basket currencies (see Chart 1). When the lats is pegged to the euro, its exchange rate fluctuations against other currencies will directly depend on changes in exchange rates of the latter against the euro. The Chart shows that in some periods the euro exchange rate against other major world currencies (including the US dollar) may deviate from the long-term average rate even by 25%.

Chart 1

EXCHANGE RATE FLUCTUATIONS
(1994–2002; absolute standard deviation; %)

- USD/EUR
- LVL/EUR
- LVL/USD



Source: Bank of Latvia.

In the period spanning 1994 and 2002, the average standard deviation of the lats and the euro exchange rate was 8.2%, of the lats and the US dollar exchange rate – 5.7%, while that of the euro and the US dollar – 13.9%. Assuming that similar bilateral fluctuations

tuations of the euro and the US dollar are likely to occur also in the future, an inference can be made that the lats peg to the euro will completely eliminate lats fluctuations relative to euro, while Latvia's exporters to the countries of the US dollar bloc are likely to experience an 8.2% increase in exchange rate fluctuations on average.

Table 4 presents the analysis of regression results estimating elasticity of Latvia's export flows relative to exchange rate fluctuations. Using the obtained export elasticities, the potential effects of the adoption of the euro on Latvia's exports, arising from the fixed exchange rate of the lats relative to the euro and simultaneous strengthening of euro fluctuations relative to the US dollar, can be estimated. Calculations indicate that in the event of the adoption of the euro, Latvia's exports to countries of the euro bloc (i.e. all EU members, except the UK and Sweden¹) will go up by 1.1%, whereas exports to countries of the US dollar bloc (primarily the CIS countries) will decline by approximately 4% compared with the theoretical scenario of Latvia preserving the peg to the SDR basket of currencies. However, taking into account the fact that the share of the euro bloc countries in total exports of Latvia several times exceeds that of the US dollar bloc countries and is going to grow further with the EU enlargement, positive effects are likely to exceed potential losses.

Growth in Latvia's exports to euro bloc countries will push up total exports by 0.7%, while a decline in export growth to US dollar bloc countries will reduce total exports by 0.4%. Hence over a longer period of time, the adoption of the euro will have a positive effect on Latvia's exports and result in a 0.3% rise in total exports. Moreover, according to the estimates of export functions, positive effects from the elimination of nominal exchange rate volatility against the euro will materialise in a much shorter period than possible negative effects from a greater exchange rate volatility against the US dollar. For instance, in two years following the adoption of the euro, the positive impact of expanding trade with the euro bloc countries will translate into an approximate 0.6% increase in total exports, while the negative impact will measure only 0.1%, thus producing a net positive effect roughly measuring a 0.5% rise in total exports. Companies maintaining trade relations with the US dollar bloc countries will have an adequately long period of time at their disposal to limit possible negative effects of a higher exchange rate volatility. In addition, de facto negative effects associated with exchange rate volatility may be less pronounced than the estimates would suggest, if the current US dollar bloc countries start using the euro more actively in their foreign trade operations.

The introduction of the euro will positively affect Latvia's foreign trade activities. The positive impact however is not likely to be too pronounced, as so far under the current exchange rate regime the lats exchange rate fluctuations relative to the euro have not been significant either. Hence the gain from a complete stability of the lats relative to the euro in Latvia would not be as large as in the countries with a freely floating

¹ Although Denmark has not introduced the euro officially, it participates in the ERM II and is included among the euro bloc countries.

Table 4

ESTIMATION OF LATVIA'S GOODS EXPORT FUNCTIONS
(01.1995–12.2002)

Exogenous variables	Endogenous variable: goods exports to EU			Endogenous variable: goods exports to CIS		
	Coefficient	<i>t</i> -statistic	<i>p</i> -value	Coefficient	<i>t</i> -statistic	<i>p</i> -value
Export variable of previous period	0.428	5.273	0.000	0.845	17.207	0.000
Importers' GDP growth	1.586	3.304	0.002	0.215	2.092	0.039
Volatility of nominal exchange rate	-0.075	-2.964	0.004	-0.080	-1.440	0.086
Volatility of real exchange rate				-0.289	-2.516	0.013
Constant	-10.741	-6.444	0.000			
R ²	0.918			0.904		
Durbin-Watson statistic	2.088			2.037		
Implicit long-term elasticity of nominal exchange rate volatility	-0.13			-0.51		

exchange rate. This estimation is consistent with the experience of a number of EMU countries and implies that the adoption of the euro alone does not necessarily bring about an immediate and significant expansion of exports.

However, the experience of countries that have long been locked in monetary unions indicates that the adoption of a single currency does not only mean elimination of a country's exchange rate volatility relative to currencies of its major trade partners. According to practices of the existing currency unions, not only costs related to hedging exchange risks are reduced but also the entire economic environment in which country's exporters operate is altered substantially with the transition to a single currency. The altered environment exerts powerful influence on country's foreign trade flows in the course of several years or even decades. In order to avert such an impact, gravity models are one of the most commonly used approaches.

According to this approach, trade between two countries or country groups is directly proportionate to the size of these countries (determined by country's GDP) and inversely proportionate to the distance separating them. In addition to these variables, a host of extra variables may be added to the trade-explaining equation to obtain more efficient estimates. The most widely used gravity models take the following shape:

$$\ln(T_{ijt}) = \beta_0 + \beta_1 \ln(Y_i Y_j)_t + \beta_2 \ln(D_{ij}) + \gamma CU_{ijt} + \beta_3 X_{ijt} + u_{ijt} \quad [1],$$

where

T_{ijt} is total foreign trade between countries i and j in the time t ;

Y is GDP of the country concerned;

D_{ij} is the distance between countries i and j ;

CU_{ijt} is a binary variable with the value 1, if countries i and j use common currency, and 0 in other cases;

X_{ijt} is the vector of control variables, including such variables as common official language, shared land border, existence of a free trade agreement, colonial links between countries etc;

u_{ijt} is the influence of all other factors.

In order to measure the impact of the transition to a single currency, the principal objective of the analysis is to estimate the coefficient γ . If its value is positive and statistically significant, it can be argued that the adoption of a single currency by countries i and j will promote bilateral trade of the two. Consequently, one approach to estimate the long-run impact of the euro introduction in Latvia is to use estimates of the coefficient γ obtained in external studies and to apply them taking into account the intensity of trade between Latvia and the EMU.

One of the most important achievements related to the effect of a currency union on trade flows is the gravity model by Andrew Rose. Using this model, the author has analysed data of over 180 countries relating to the period between 1970 and 1995. The analysis led the author to the conclusion that the coefficient γ in equation [1] is positive, statistically significant, and around 1.2.(25) This coefficient implies that mutual trade between countries that share common currency is roughly three times larger than that of similar countries with individual national currencies.¹ It should be noted, however, that the author has arrived at this assumption by comparing a number of different countries, not dealing with the same countries in their pre- and post-currency union stages. By extending databases and obtaining longer statistical data time series, the estimation of the coefficient γ was derived from the panel data in addition to the pure cross-section data. The coefficient thus estimated was smaller, yet preserved statistical significance and was around 0.65.(9) These observations indicate that when two or more countries have a common currency, trade flows between them almost double.²

After publication, the results have been tested on several occasions and estimated by different modifications of equation [1]. In three years following their publication, over twenty other studies have been conducted and more than 400 coefficients γ have been estimated.(24) In the majority of cases coefficients γ are statistically significant and positive, while their values vary notably. Some authors argue that currency union countries are mutually incomparable (e.g. currency union countries in Africa differ significantly from other states, European ones in particular), and it has not been accounted for in the initial estimation of the coefficient γ . Likewise, variables in equation [1] are

¹ As equation [1] is constructed using logarithms, the coefficient γ should be adjusted when interpreted. As $\exp(1.2) \approx 3.3$, the value 1.2 of the coefficient implies that trade has increased 3.3 times.

² $\exp(0.65) \approx 1.9$

not fully independent of each other – in accord with specifications of a particular model, trade between countries depends on their GDP, while GDP, in turn, is determined by foreign trade. Consequently, the estimated values of the coefficient γ may be largely overstated.

Taking the above arguments into account, several researchers have attempted to correct the initial deficiencies. One of research papers, in which the above factors have been accounted for, shows that the coefficient γ obtained by adjusting independent variables in equation [1] for the purpose of eliminating the endogeneity problem is considerably smaller and stands only at about 0.4.(26) Moreover, the estimate drops additional 30% (declining to 0.26) if African countries are not included in the calculation. The coefficient γ implies that the adoption of a common currency pushes up trade between countries sharing the same currency by about one third.¹

Proceeding from the assumption that over a longer time horizon the euro is adopted by all new EU Member States, long-term effects of the adoption of the euro on Latvia's economy are estimated using various values of the coefficient γ from empirical studies and duly considering the share of the EU countries in Latvia's foreign trade turnover. The estimates are presented in Table 5. According to different estimations of gravity models, growth of Latvia's foreign trade will be substantially and favorably affected by the adoption of the euro in the longer run. Furthermore, research (6) suggests that an increase in foreign trade turnover by 1 percentage point is likely to bring about a 0.3% rise in GDP in the course of 20 years.

Table 5

ESTIMATION OF CURRENCY UNION EFFECTS FOR DIFFERENT VALUES OF THE COEFFICIENT γ

	Value of coefficient γ		
	0.65	0.4	0.26
Long-term foreign trade turnover growth (%)	57.7	31.0	18.7
GDP growth (%)	19.2	10.3	6.2

On the basis of these estimates, it can be calculated that favorable effects of the euro adoption may translate into 6%–19% of GDP, which would not be the case if Latvia preserved its national currency. It should be noted, however, that these estimations refer to long-term trends, and such GDP growth could be attainable in the run of several decades.

1.2 Assessing Latvia's economy in the light of the potential adoption of the euro

For a country to be eligible to adopt the single currency, it must satisfy a number of economic criteria. A part of such criteria set down in the Maastricht Treaty refer to

¹ $\exp(0.65) \approx 1.3$

nominal convergence of the country's economy toward countries that already use euro. In addition to the criteria whose compliance will be monitored and controlled by EU institutions, there are some other conditions that will not be formally reviewed by the latter when assessing the maturity of a country for participation in the EMU; however, compliance with these extra terms and conditions is similarly significant, and default on them may hamper Latvia's economic growth upon joining the euro area.

One of the largest euro-adoption-related potential risks for Latvia is the transmission of ECB-pursued common monetary policy decisions. As the ECB monetary policy has been developed with a central focus on the European economy as a whole and not on its individual economies, the common monetary policy may not always be completely consistent with the actual economic situation in Latvia, particularly at times when Latvia's economic growth trends would cardinaly differ from the average growth trends in the euro area. Thus, for instance, if Latvia's economic growth rate is lagging behind that of the majority of the euro area countries for an extended period of time either due to structural factors or external shocks, the ECB monetary policy would be inadequately tight for Latvia and would ultimately hinder economic recovery in the country. Conversely, if Latvia's economic growth rate notably exceeds the average level of the euro area countries, the ECB monetary policy would be inadequately expansionary, giving rise to concerns about inflationary pressure. Consequently, if notable structural disparities between the economy of Latvia and the rest of the euro area persist in a longer run, the common ECB monetary policy will apparently amplify the volatility of economic growth rate upon the introduction of the euro, and Latvia will be subject to more often asymmetric shocks.

In order to avoid negative effects of possible asymmetric shocks, prior to the adoption of the euro the economy of Latvia needs to achieve a sufficiently high degree of structural convergence with other economies of the euro area. If it is achieved, the possibility of Latvia's economic growth differing substantially from that of other national economies will be notably limited. However, the existence of these structural differences may still be justified if the labor market is able to quickly adjust to changes in external environment.

1.2.1 Assessment of possible asymmetric shock occurrence

The simplest structural convergence estimation can be conducted by comparing the structure of economic sectors in different countries. Table 6 presents GDP structure in the breakdown by main economic sectors of Latvia and a number of current euro area countries; the breakdown and recent structural changes are compared with the EMU average indicators. According to the so-called optimum currency area theory, a country is likely to gain more from introducing the currency of another country or a country group if structural indicators in these countries are broadly similar.(15, 18, 20)

6. *tabula***GDP STRUCTURE IN BREAKDOWN BY ECONOMIC SECTORS**

(%)

	Latvia		Greece		Portugal		Spain		EMU (1999)		
	1996	2002	1996	2001	1994	2001	1994	2001	aver.	min.	max
Agriculture, hunting and forestry	8.1	4.7	9.1	7.0	5.5	3.6	4.7	3.4	2.9	0.8	8.9
Industry	26.7	18.6	15.9	13.7	23.0	21.0	21.8	19.9	23.2	15.2	32.8
Construction	4.8	6.1	6.5	7.7	6.1	7.6	7.3	8.7	5.5	4.2	7.9
Trade; transport, storage and communication	33.8	35.6	27.6	29.7	24.9	23.7	27.1	27.6	21.3	17.7	28.3
Financial intermediation; real estate, renting and business activities	9.0	15.7	21.9	22.0	17.3	18.4	18.5	20.0	26.1	17.9	38.6
Other services	17.6	19.3	19.1	19.9	23.2	25.6	20.6	20.3	21.0	17.0	23.9

Sources: *OECD database, Central Statistical Bureau of Latvia.*

The table shows that even though the structure of Latvia's GDP radically differs from that of EMU averages, the disparities are similar to those observed in the countries already using the euro. For instance, the relatively large share of agriculture in Latvia's GDP implies that any economic shock likely to affect the sector would have a more pronounced overall effect on its economy than would a similar shock on EMU countries on average; hence concerns may arise that the common monetary policy pursued by the ECB would not be equally effective in dealing with such shocks in all countries. Even though the share of the respective sector in Greece's GDP is considerably larger, the country successfully operates within the euro area. In contrast to agriculture, industry in Latvia is less significant when compared with the EMU average indicators; hence the reaction, if any, of the ECB monetary policy to economic shocks in this sector might turn out to be stronger than necessary for Latvia. However, disparities between the respective indicator of Latvia and the EMU average are not larger than those among the present EMU members. When compared with the average of the EMU countries, economic shocks affecting Latvia's manufacturing sector are less pronounced, while the trade sector and transport, storage and communication industry are more vulnerable to eventual asymmetric shocks. All in all, given that the disparities between Latvia's economic structure and those of the euro area countries are not so large, the ECB's common monetary policy to be implemented in Latvia after the introduction of the euro is unlikely to undermine the economic development of the country.

The economic structure in view, however, is too general and includes both the sectors producing internationally tradable output and hence subject to eventual external shocks, and the sectors whose development mainly depends on the domestic con-

sumption (primarily various services sectors). Practice suggests, however, that under a common monetary policy, developments in the domestic demand in all countries using single currency are quite similar; hence, when analysing asymmetric shock possibilities, a central focus should be on sectors whose growth is driven by the external demand (primarily industrial production sectors). The comparison of economic structures of Latvia and a number of euro area countries is given in Table 7.

For Latvia in comparison with both Germany and France (deemed as the "core" EMU countries whose economic growth determines the policy stance of the ECB to a large extent) on the one hand, and Spain, Portugal and Greece (more "peripheral" countries that more often need to adjust to the ECB monetary policy decisions) on the other, manufacture of food products and beverages as well as wood and products of wood and cork is more significant. That is why any external shock in these sectors (e.g. changes in external demand) will affect Latvia to a greater extent than any other EMU country. On the other hand, manufacture of chemicals and chemical products, of fabricated metal products, except machinery and equipment, as well as of other transport vehicles is less significant for Latvia, and any external shock in these sectors will not affect Latvia's economy as strongly as the economies of other EMU countries.

When dealing with Latvia's economic convergence, the opinion of several authors strictly assessing the current euro area countries cannot be neglected. According to them, one cannot unquestionably argue that all countries currently using the euro as their national currency fully meet all the terms and conditions set forth in the optimum currency area theory, as there still exist quite notable disparities in their economic structures.(5, 8) Consequently, even full convergence with one or several leading euro area countries does not warrant a constantly positive reaction of the country's economy to the ECB monetary policy upon its entry into the currency union.

The analysis identifies branches that are most susceptible to external shocks, yet the emergence possibility of such shocks is not captured. In order to do it, a country's foreign trade structure should be dealt and compared with that of the euro area countries. Table 8 shows export structure in the breakdown by major trade partner groups. According to the basic principle of the optimum currency area theory, the larger the share of euro area countries in total exports of a country, the smaller is the possibility for external asymmetric shocks to occur.

Exports to the euro area countries, Denmark including, account for slightly more than one third of Latvia's total exports, and it is considerably below the level of exports to the current EMU countries (except Greece). It should be noted, however, that the other nine new EU members from Central and Eastern Europe are going to introduce the euro sooner or later. This will result in a more than 50% share of the euro area countries in Latvia's total exports. Moreover, countries currently outside the euro area (Sweden and the UK) that figure among the major trade partners of Latvia are likewise going to change from the national currency to the euro. If all

Table 7

INDUSTRIAL STRUCTURE OF SELECTED COUNTRIES

(%)

	Latvia		France		Germany		Greece		Portugal	Spain	
	1997	2002	1996	2000	1996	2000	1996	2001	1996	1996	2000
Manufacture of food products and beverages	43.0	31.4	16.9	14.4	12.3	10.7	33.1	32.3	20.7	21.2	16.2
Manufacture of textiles; manufacture of wearing apparel; dressing and dyeing of fur	10.2	8.7	5.1	4.1	3.0	2.4	16.9	13.8	21.4	7.9	6.9
Manufacture of wood and of products of wood and cork	12.3	18.5	1.5	1.4	2.1	1.8	2.2	2.2	3.8	2.2	2.4
Manufacture of pulp, paper and paper products; publishing, printing and reproduction of recorded media	4.6	6.1	7.4	6.8	6.9	6.7	5.7	6.1	7.6	6.9	7.1
Manufacture of chemicals and chemical products	7.0	5.2	19.1	20.3	16.4	16.4	16.9	15.9	12.3	16.3	18.4
Manufacture of other non-metallic mineral products	1.8	3.5	3.6	3.3	3.8	3.1	4.7	5.8	6.9	5.3	5.9
Manufacture of fabricated metal products, except machinery and equipment	2.5	3.2	11.3	10.9	12.4	11.8	8.8	10.2	4.9	11.4	12.6
Manufacture of electrical machinery and apparatus n.e.c.	7.9	5.7	17.6	17.7	25.0	25.6	5.7	7.1	10.4	11.7	11.9
Manufacture of other transport vehicles	3.2	3.4	14.2	18.0	15.4	18.9	2.3	2.4	8.4	13.5	14.9
Manufacture of furniture; manufacturing n.e.c.	2.2	3.9	2.5	2.3	2.6	2.4	3.5	4.0	2.1	3.4	3.4
Other manufacturing; recycling	5.4	10.4	0.7	0.7	0.1	0.2	0.0	0.2	1.5	0.2	0.3

Sources: OECD database, Central Statistical Bureau of Latvia.

current EU Member States adopt the euro, the share of euro area countries in Latvia's exports would reach almost 80%, and this will imply a significant reduction in the

Table 8

EXPORT STRUCTURE IN BREAKDOWN BY GROUPS OF TRADE PARTNER COUNTRIES
(%)

	Latvia		Greece		Portugal		Spain	
	1996	2002	1996	2001	1994	2001	1994	2001
EMU countries and Denmark	27.0	35.3	43.8	33.1	66.1	68.2	61.8	60.5
United Kingdom and Sweden	17.7	25.1	6.8	8.9	14.0	11.8	9.0	9.4
10 new EU Member States	13.5	17.3	6.0	9.4	0.4	1.2	1.4	2.4
Other countries	41.8	22.3	43.4	48.6	19.5	18.8	27.8	27.7

Sources: OECD database, Central Statistical Bureau of Latvia.

possibility of asymmetric shocks in Latvia. Thus it can be argued that a possibly sooner EMU membership of all the euro area countries is important for Latvia's successful operation in the euro area.

The foreign trade structure broken down by countries does not fully illustrate the potential of eventual risks – the structure of foreign trade in the breakdown by major groups of commodities is similarly significant. As has been stated before, the larger the similarity of trade structure of Latvia and euro area countries, the smaller is the possibility of the emergence of any external shocks. The most widespread method for comparing trade structures of countries is the calculation of the share of intra-industry trade using the Gruber–Lloyd (GL) equation (10):

$$GL_j^i = \Sigma [\alpha_j (1 - |X_j^i - M_j^i| / X_j^i + M_j^i)] \times 100 \quad [2],$$

where

GL_j^i is the Gruber–Lloyd index characterising the level of trade specialisation with the country i ($GL^i = 100$ reflects similar bilateral trade structures of two countries, whereas $GL^i = 0$ indicates complete specialisation in bilateral trade);

X_j^i, M_j^i is exports of the commodity group j to the country i and imports from the country i ;

α_j is the share of the commodity group j in total trade turnover with the country i .

Under the optimum currency area theory, any country joining a currency union should attain a possibly higher GL index in its trade with partners in the currency union for the purpose of limiting possible macroeconomic risks. Chart 2 shows the actual situation in Latvia at the end of 2002.

According to the GL index, Latvia's foreign trade structure in 2002 was most similar to that of Lithuania and Estonia. In the EU country group, Latvia's situation most closely resembled that of Denmark, whereas in the EMU country group – that of Greece. It should be noted, however, that the average GL index in trade with euro area countries was relatively low (around 30%), indicating a rather high trade specialisation with these countries as a group. Compared with the other nine new EU Member States,

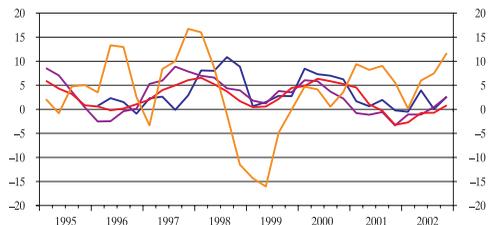
optimum currency area theory, these are Latvia's main areas, which currently are most susceptible to asymmetric shocks and will remain such also in the near future.

So far, possibilities of asymmetric shocks in Latvia have been treated from the static point of view, i.e. without considering the dynamics of economic indicators. However, for the assessment of positive and negative effects of the adoption of the single currency it is equally important to deal with the cyclical development of the economy. According to the economic theory, in order to make a common monetary policy effective, business cycles should be synchronised across the countries sharing the same currency. Thus, for instance, if the majority of single currency countries have entered the stage of economic expansion, relatively high nominal interest rates will be the reaction of monetary policy. For a country experiencing the opposite stage of the business cycle (e.g. slow economic growth or even recession), the high interest rates are an extra burden to economic growth and would notably hamper the recovery from recession. By contrast, should the majority of euro area countries experience recession, low nominal interest rates set by the ECB would cause additional inflationary pressure and undermine sustainable macroeconomic growth in countries experiencing economic expansion.

For the assessment of cyclical development of Latvia's economy relative to the current EMU countries, Chart 4 shows percentage changes in industrial production. As is seen from the Chart, the industrial production index in Latvia fluctuates more than in the current EMU countries. It does not necessarily imply that upon entering the euro area, monetary policy in Latvia will lose its effectiveness. The Chart suggests, however, that at this point Latvia has not yet achieved a complete cyclical convergence (cyclical development patterns between Latvia and EMU countries are not sufficiently synchronised). For instance, robust economic growth continued in Latvia in late 2002 and early 2003, while in the majority of EMU countries economic growth was moderate. Under such conditions due to monetary policy pursued by the ECB, interest rates in Latvia would have been lower than required by the national economic growth and would have resulted in extra inflationary pressures, if Latvia had joined the EMU already then.

Chart 4
CHANGES IN INDUSTRIAL PRODUCTION INDICES OF SELECTED COUNTRIES BY QUARTER
 (year-on-year; %)

- EMU countries
- Latvia
- Spain
- Greece



Source: National central statistical institutions.

Table 9 shows correlation coefficients that have been obtained through the comparison of changes in industrial production of Latvia and several EMU countries, and EMU average indicators. The analysis of monthly and annual percentage changes suggests that industrial production in Latvia, compared with the current EMU members, is much less correlated with the EMU average indicators. Consequently, there is a possibility that after Latvia adopts the euro, the common ECB monetary policy in Latvia may turn out to be less effective than in the current euro area countries, which however does not necessarily imply that by introducing the euro the Latvian economy would incur sizable losses.

Table 9

CORRELATION COEFFICIENTS OF INDUSTRIAL PRODUCTION CHANGES IN SELECTED ECONOMIES (%)

	Latvia	Spain	EMU countries	Greece	Countries of SDR basket of currencies
Monthly changes					
EMU	0.139	0.537	1.000	0.169	0.766
SDR	0.004	0.489	0.766	0.135	1.000
Annual changes					
EMU	0.165	0.824	1.000	0.606	0.816
SDR	0.015	0.751	0.816	0.378	1.000

The lats has been pegged to the SDR basket of currencies since 1994. The economic theory states that for this peg to be a success, cyclical developments of the Latvian national economy shall be synchronised, to the largest extent possible, with the average weighted cyclical developments of the countries whose currencies are included in the SDR basket of currencies (US, EMU countries, UK and Japan). Nevertheless, the Table indicates that the correlation coefficient between changes in industrial production of Latvia and countries of the SDR basket of currencies is even smaller than that of Latvia and the EMU countries' average. It follows that by pegging the lats to the SDR basket of currencies, the monetary policy pursued in Latvia was closely related to the average monetary policy of the SDR currency basket countries, which due to substantial disparities in business cycles of Latvia and the countries of the SDR basket of currencies has not always been fully consistent with the principles of the economic theory. This implies that even though monetary policy in Latvia after the adoption of the euro would be less effective in respect of limiting cyclical variations as compared with the current euro area countries, it is unlikely to lead to a significant worsening compared with the current state of developments. Given that cyclical convergence between Latvia and the EMU is higher than between Latvia and the countries of the SDR basket of currencies, the adoption of the euro may even slightly improve the efficiency of monetary policy in Latvia.

Moreover, developments in the euro area so far have suggested that EMU participation and the preparation for it are likely to promote greater cyclical convergence. This is partly seen from Table 10 where co-integration test results of industrial production indices are summed up.

Table 10

CO-INTEGRATION TEST RESULTS OF INDUSTRIAL PRODUCTION INDICES

	1994–1998	1999–2002
Latvia/EMU	-1.70	-1.27
Greece/EMU	-0.93	-2.48
Spain/EMU	-2.49	-3.56*

* *t*-value indicates that the null hypothesis of non-cointegration can be rejected with 95% probability. Source for critical values: Maddala, G. S. "Introduction to Econometrics." Second Edition. Prentice-Hall, Inc., 1992, p. 607.

It follows from the test results that the average industrial output indices of Latvia and EMU do not display co-integration signs indicating inadequate cyclical convergence achieved so far. A number of other researchers have come to a similar assumption when reviewing the degree of real convergence with EU in several former EU candidate countries.(7, 16, 28) However, inadequate real convergence is characteristic not only for Latvia and other new EU Member States – a similar situation is observed also in a number of current euro area countries. Although the dynamics of Spain's industrial production indicators for the period between 1994 and 1998 does not reflect a significant real convergence towards the EMU average, the relationship becomes closer in the following years. Consequently, it may be argued that joining the euro area and introducing the single currency may boost cyclical convergence with other euro area countries. This is in support of an assumption that cyclical disparities between Latvia and EMU countries are likely to diminish when Latvia enters the euro area.¹

1.2.2 Assessment of labor market flexibility

In accordance with the economic theory, even if a country on its way to join a currency union experiences a strong threat of asymmetric shocks due to inadequate structural or cyclical convergence, it can join the single currency area without running a risk to provoke deterioration of economic stability, provided that a sufficiently flexible labor market to offset possible adverse effects of asymmetric shocks on the economy is in place. For instance, if due to common monetary policy a country experiences higher interest rates than it would under an independent monetary policy of its central bank, its economic growth will not be subject to a long-term and notable impact provided that a relatively slower pace of the nominal wage growth acts as an offsetting factor.

Elasticity of wage growth relative to changes in unemployment is one of the main fac-

¹ There is an assumption (17) that when a country enters a currency union, the level of its specialisation increases and may possibly lead to various asymmetric shocks. Developments in the euro area have not confirmed this assumption so far.

tors characterising labor market flexibility, and it can be tested by statistical methods. If in the event of a growing unemployment rate the average wage growth slows down, it can be argued that a sufficiently flexible labor market to avoid serious problems associated with the adoption of the single currency is in place.

Baltic labor market studies have confirmed that Latvia, Lithuania and Estonia have sufficiently flexible labor markets, particularly in comparison with the old 15 EU members. It is argued that labor market flexibility principally depends on the fixed exchange rate regime that enhances a flexible labor market response to different external economic shocks; be it otherwise, even temporary economic shocks would cause long-term deterioration of external national competitiveness of the small and open-to-foreign-trade countries (as are the three Baltic states).(13)

The national wage formation mechanism often figures as a factor promoting labor market flexibility in an economy. First, elasticity of labor remuneration is ensured through the wage negotiation usually at the enterprise level, thereby considerably limiting the possibility that changes in wages of one sector of the national economy would affect wages also in other sectors where a respective wage rise might be inconsistent with the increase in labor productivity. Second, collective contracts of employment, if concluded, most often concern the terms and conditions for work safety and health insurance than for labor remuneration. Finally, recent studies often emphasise that contrary to several EU countries where extremely favorable social security systems often reduce people's motivation to engage in active search for employment, Latvia's laws and regulations do not support continuous absence from the labor market.(22)

In order to conduct additional elasticity assessment of Latvia's labor market, the formation of wage mechanism in Latvia has been estimated by econometric methods. As the econometric analysis did not allow rejection of the null hypothesis about non-stationarity for all reviewed time series, co-integration testing was applied and an error correction model built using the two-step Engel–Granger method. The number of model variables was determined using Breusch–Godfrey LM tests. As a result, the following equation characterising Latvia's wage dynamics was obtained:

$$\Delta \log(RW)_t = 0.565^* \Delta \log(PROD)_t - 0.143^* \Delta U_t - 0.572^* [\log(RW)_t - (0.148 + 0.543^* \log(PROD)_t - 0.286^* U_t)] + \varepsilon_t \quad [3],$$

(st. dev)	(0.179)	(0.046)	(0.167)	(0.121)	(0.067)	(0.043)
(p-value)	(0.004)	(0.005)	(0.002)	(0.231)	(0.000)	(0.000)

where

RW is the logarithm of real wages;

$PROD$ is the logarithm of productivity;

U is the unemployment rate;

Δ is changes in a respective factor.

As is seen from the equation, changes in productivity figure as one of the central long-term factors affecting wages. Also, unemployment has an impact on the average wage

in the country – a declining unemployment rate promotes an increase in wages and vice versa. Nevertheless, the labor market flexibility assessment is more dependent on shorter term (in this case – quarterly) changes in wages than on longer term developments. From this point of view, an important feature of the wage formation mechanism is the statistically significant relationship between the wage growth and unemployment. The estimation results indicate that a quarterly rise in unemployment rate by 10% causes an average 1.4% slow-down in the real wage growth. Consequently, even if the Latvian economy is adversely affected by an external shock causing a rise in unemployment, a declining pace of average wage growth will ensure sustainability of the Latvian producers' competitiveness in the circumstances of falling economic activity, allowing for a relatively quick recovery from the crisis without serious losses to the economy. This feature would also enhance the reversal of the economic growth rate to the pre-crisis level and prevent a long-term upward swing in unemployment. In the event of a possible asymmetric shock, a flexible response of the Latvian labor market would significantly reduce both the size and the length of potential adverse repercussions, if any, on the economy.

This analysis however is not profound, as it does not deal with causal relationship between wages and unemployment, the two main variables. It was assumed that unemployment changes are the exogenous variable that affects the wage growth rate. It is quite likely that the latter, on the other hand, also affects unemployment indicators (e.g. as a result of excessively high wages, unemployment in the country may increase). The Granger causality tests may be applied to get a more comprehensive idea about the labor market flexibility (see Table 11). Unfortunately, the tests do not allow determining unambiguously the direction of causality, as the null hypotheses are rejected with 95% probability in both cases.

Table 11

RESULTS OF GRANGER CAUSALITY TESTS

Period: 01.1996–04.2002

Variables of previous periods: 2

Null hypothesis	Number of observations	<i>f</i> -statistic	<i>p</i> -value
$\Delta(U)$ does not affect $\Delta(RW)$	33	3.62541	0.04279
$\Delta(RW)$ does not affect $\Delta(U)$	33	3.82784	0.02017

However, the fact that Granger causality tests do not unequivocally indicate that unemployment is the exogenous variable does not reduce the significance of assumptions above. Instead of the employee, the employer plays the major role in setting the wage amount (it may be explained by a minor role trade unions play in the labor market). Hence it is unlikely that in Latvia wages incompatible with productivity and the country's overall economic situation could be bargained under the pressure of job takers. Consequently, the assumption that it is unemployment that influences wages, and not vice versa, could be quite accurate for Latvia. This also leaves the central

conclusion unchanged: in Latvia, a flexible labor market will be a key factor to offset eventual adverse effects of such shocks if, after the adoption of the euro, the Latvian economy is hit by external asymmetric shocks that cannot be offset by means of an active monetary policy. Even though real structural and cyclical convergence is not achieved by the moment Latvia enters the EMU, the ECB monetary policy is unlikely to pose significant adjustment problems for the economy of Latvia.

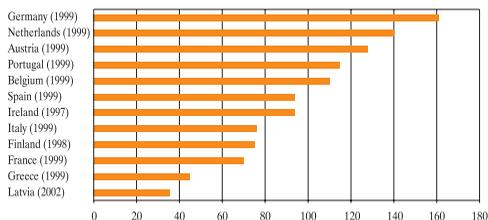
1.3 Comparison of monetary policy transmissions

Previous chapters dealt with the impact of the euro on the economy of Latvia, assuming that the structure of the Latvian economy were greatly different from that in the EMU countries. It was assumed that the monetary policy impulses in all EMU countries and also in Latvia were similarly strong, implying complete similarity of the monetary policy transmission across countries, and, hence, also changes in interest rates had the same impact on all currency union countries.

Developments in the current EMU countries so far have demonstrated that the intensity of monetary policy transmission channels in various countries differs alongside substantial distinctions in the structure, depth and size of the countries' financial systems. For instance, by the main financial market indicators (e.g. total bank assets, credits extended and deposits received relative to GDP), both the banking sector and also the other segments of Latvia's financial market are considerably lagging behind the EMU countries on average (see Chart 5). This implies a potentially less pronounced response of the economy to interest rate movements in Latvia than in the majority of EMU countries.

Chart 5

BANK LOANS TO RESIDENTS
(% of GDP)



Source: ECB (1999), authors' estimates.

To evaluate monetary policy transmission in a country, the vector autoregressive (VAR) model is the most widely applied method. It is assumed that all principal variables used in VAR models are interdependent (endogenous), hence allowing determination of the impact of any variable of the model on the other variables.

For the purpose of comparing Latvia's monetary transmission mechanism with those of EMU countries, the study uses an ECB model that has been employed in the estimation of monetary transmission features in a number of EMU countries.⁽¹⁹⁾ The following vector of endogenous variables is used in the model:

$$Y_t^l = (y_t, p_t, s_t, x_t),$$

where

y_t is real GDP;

p_t is consumer prices;

s_t is short-term domestic interest rates;

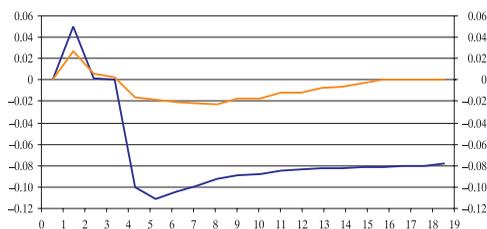
x_t is the real effective exchange rate.

Exogenous variables reflecting changes in world consumer prices, GDP and interest rates are additionally included in the model.¹ The same model is also applied to Latvia, with the results showing the interest rate impact on Latvia and the respective EMU countries given in Chart 6.

Chart 6

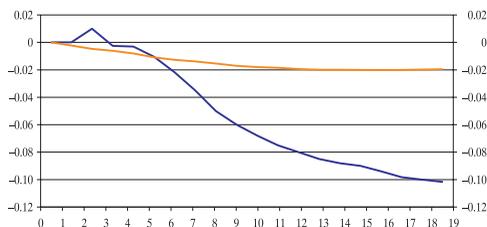
IMPACT OF INTEREST RATE CHANGES BY ONE STANDARD DEVIATION ON GDP
(difference relative to base scenario with constant interest rates; %)

— Latvia
— EMU



IMPACT OF INTEREST RATE CHANGES BY ONE STANDARD DEVIATION ON PRICES
(difference relative to base scenario with constant interest rates; %)

— Latvia
— EMU



Source: ECB, authors' estimates.

The Chart suggests that interest rate changes are less significant in Latvia than in current euro area countries – the impact of interest rate changes on Latvia's GDP is 5–6 times weaker than in EMU countries. Moreover, after shocks triggered by interest rate changes, the reversal of Latvia's GDP to the previous level is notably quicker than in the major EMU countries. Likewise, the effect of interest rate changes on prices is relatively insignificant, and, taking the estimation standard error into account, it can be assumed that the impact of interest rates on consumer prices in Latvia is not statistically significant.

¹ For Latvia, changes in global consumer prices, GDP and interest rates have been replaced by the variables representing consumer prices, GDP and interest rates in euro countries.

This inference suggests, in the first place, that even less than full compliance with structural and cyclical convergence criteria is not the primary obstacle that might put Latvia's participation in the EMU at risk at least in the initial years. Given that effects of monetary policy on the real sector of the economy are rather limited, Latvia's economy is not going to incur notable losses even when the common monetary policy implemented within the EMU is not fully appropriate for the country. However, in line with further strengthening and deepening of domestic financial markets, the significance of interest rates and hence also the efficiency of monetary transmission through the interest rate channel in Latvia is likely to increase. Second, a limited monetary policy that comes along the fixed exchange rate regime implies that negative economic consequences caused by eventual asymmetric shocks cannot be fully offset; therefore, when Latvia joins the EMU, the loss of independent monetary policy will not result in a serious damage to its economy. Finally, as monetary policy currently is not a sufficiently effective economy-driving instrument, other means – and the national fiscal policy as a decisive one – should be used more intensively. The effective application of it, however, requires firm rejection of pro-cyclic fiscal policy (i.e. a significant buildup of budget deficit at the stage of robust economic growth).

2. IMPLICATIONS OF EURO ADOPTION ON FINANCIAL SECTOR

2.1 Potential changes in the number and concentration of credit institutions and the number of employees

Since the fixing of national currencies to the euro (as of January 1, 1999), the number of credit institutions in the EMU countries has decreased; similar trends, however, were also observed in previous years. In large EMU countries, the process became more pronounced after 1998, with the number of banks shrinking in Germany, France, Italy, Spain, the Netherlands and Belgium. As compared with 1997, the number of credit institutions in the EU countries dropped by more than 10% on average. In respect of small countries with population under 10 million, development trends are more mixed, as in some, Finland and Ireland as examples, the number of credit institutions has increased (see Table 12). It cannot be stated with certainty that in the initial period after fixing the lats to the euro the number of credit institutions in Latvia should decrease. Of all Latvia's credit institutions, banks are most important in terms of assets; as to the growth dynamics, recently the number of credit unions has been growing at a faster pace than the number of banks, notwithstanding the emergence of the former only in 1995. Since 1998, a tendency of slightly shrinking bank number has been observed; over a longer horizon, the fixing of the lats to the euro or adoption of the euro is unlikely to affect substantially the number of credit institutions in Latvia.

Comparative indicators regarding the number of banks and bank employees give a comprehensive picture of the part banks play in the national economy of countries.

Table 12

CREDIT INSTITUTIONS IN COUNTRIES WITH POPULATION UNDER 10 MILLION

Country	1990	1995	1998	1999	2000	2001	2002
Austria	1 210	1 041	898	875	848	836	823
Finland	529	381	348	346	341	369	369
Ireland	48	56	78	81	81	88	85
Luxembourg	177	220	212	211	202	194	184
Latvia	6	41	35	34	37	45	47
of which banks of Latvia	6	40	28	24	22	23	23

Sources: ECB, FCMC, Association of Commercial Banks of Latvia (ACBL).

As is indicated by the workload of bank branches and with banks having 0.6 branches per 1 000 inhabitants on average in the EMU, the banks of Latvia have a large capacity to expand their network of branches (see Table 13).

Table 13

NUMBER OF BANK BRANCHES

(per 1 000 inhabitants)

Country	1990	1995	1999	2000	2001
Austria	0.58	0.58	0.57	0.56	0.56
Finland	0.58	0.38	0.24	0.23	0.23
Ireland	0.27	0.29	0.29	0.26	n.a.
Luxembourg	0.78	0.85	0.71	0.68	n.a.
Latvia	n.a.	0.08	0.07	0.08	0.08

Sources: ECB, ACBL.

In respect of the number of bank employees per 1 000 inhabitants, Latvia's banks have a good potential for growth and expansion, as they have not yet reached the level of the EMU countries in terms of significance (see Table 14). It should also be taken into account that non-resident liabilities to a greater extent dominate total liabilities of the Latvian banks than of the banks in EMU countries. This leads to an assumption that due to the need to render services also to non-resident customers, the number of employees should be above the average of the EMU countries; this indicator could theoretically position Latvia between Austria and Luxembourg.

On average, banks, except central banks, in the EU countries employ 100–200 bank staff per 1 billion euro assets (over 1 000 employees in 2001 in Latvia). Latvia's bank assets are, however, growing at a faster pace than the bank staff; with well-being improving and enterprises strengthening financially, the proportion of bank employees relative to bank assets is likely to shrink. In the EU banking system, the number of bank employees has stabilised since the mid-1990s, and though the number of banks is

Table 14

NUMBER OF BANK EMPLOYEES
(per 1 000 inhabitants)

Country	1990	1995	1999	2000	2001
Austria	9.86	9.78	9.07	9.07	9.19
Finland	10.15	6.31	4.66	4.86	n.a.
Ireland	4.99	6.4	n.a.	n.a.	n.a.
Luxembourg	41.78	44.9	48.65	52.2	54.14
Latvia	n.a.	n.a.	3.27	3.33	3.39

Sources: ECB, ACBL.

constantly decreasing, a decline in the number of employees is no longer observed. In 2000, the staff of the EU banking system accounted for 1.7% of the totally employed.(27) In Latvia, the banking system employed 0.8% of the totally employed in 2002.

Assets of credit institutions of the EU-15 countries rose by 34.2% and reached 23.3 trillion euro or 277% of GDP in the period from 1997 to 2000.(27) Greece had the smallest bank assets accounting for 124% of GDP in 2000. The assets of Latvia's credit institutions in 2002 accounted for 85.2% of GDP, indicating banks' capacity for growing.

2.2 Bank income and expense

Two income groups dominate profit or loss statements of banks, including also expense. The first group of income is net interest income. It includes income from interest on claims to credit institutions and non-banks, on bonds and other fixed income debt securities, futures etc, and such interest expense as interest on liabilities to credit institutions, non-bank deposits, bonds and other fixed income securities, subordinated liabilities, futures etc. The second group of income comprises net non-interest income (net income from commission, including commission income and expense) as well as net income from transactions with securities and foreign currency. These income groups shall not necessarily generate income on all occasions. Sometimes transactions with securities and foreign currencies may even entail losses (net interest income and net income from commissions can do it only theoretically). The largest expense items are administrative expense, also expense related to provisions for doubtful debts, depreciation and write-offs of intangible and fixed assets.

Banks in Latvia are earning their largest income from interest (in 2002 it accounted for 51.4% of aggregate profit generated by the three most important income items; see Table 15). Commission fees accounting for 31.2% is the second large income generator, and bank transactions with securities and foreign currency accounting for 17.4% rank third.

Table 15

STRUCTURE OF MAJOR INCOME ITEMS OF LATVIA'S BANKS

(%)

	1997	1998*	1999	2000	2001	2002
Interest income	51.2	87.5	55.8	52.4	52.9	51.4
Income from commission fees	26.5	41.2	31.6	32.6	31.9	31.2
Profit or loss from securities and foreign currency transactions	22.3	-28.7	12.6	15.0	15.2	17.4

* 1998 was untypical with losses incurred from securities and foreign currency transactions.

2.2.1 Net interest income

Starting with 2000, divergence of interest income has been observed in the EU countries. It stems from uneven movements in spreads between lending and depositing interest rates in the EU countries as well as disparate credit cycles. Spain recorded one of the widest interest rate spreads resulting from an overall instability in Latin America.

In 2000, net interest income accounted for around 1.0% of total balance sheet assets (a slight drop in comparison with 1997) in EU countries.(27) Germany reported net interest income of 1.15% of balance sheet assets in 2000, with 5.51% as received interest income and 4.36% as interest expense.(29) The share of net interest income in banks' balance sheets in 2000 in Latvia was nearly three times that of the EU countries (see Table 16). This difference was determined by a larger interest rate gap between assets and liabilities in Latvia's banks than in the banks of EU countries.

Table 16

INTEREST INCOME OF LATVIA'S BANKS AGAINST TOTAL ASSETS

(%)

	1997	1998	1999	2000	2001	2002
Net interest income	3.91	4.56	3.84	3.06	2.76	2.55
Interest income	5.47	6.93	6.08	5.41	5.22	4.44
Interest expense	1.56	2.37	2.24	2.35	2.46	1.89

Of late, the margin of net interest income in the largest EU countries has slipped below 100 basis points. The net interest margin is calculated as net interest income against total average profit-bearing assets, this being a slightly more accurate indicator of bank efficiency than the one derived from relating interest income to total assets. In 2002, Latvia reported a sustained net interest income margin of 2.9%–3.0%. This implies that in the future Latvia's banks will have to lower the net interest income margin nearly threefold, which will reduce net interest income accordingly.

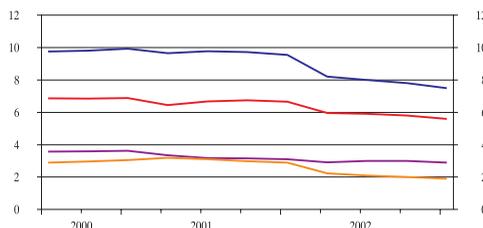
After joining the EMU, a higher net interest income margin is possible in Latvia. For instance, in Greece it was 2.8% in 2000, 3.0% in 2001, and 2.2% was a projection for 2002 and 2003.(30) Over longer horizons, the respective indicator for Greece is assumed to decline and approach the level of advanced EU countries.

The effective lending and depositing interest rate spread at Latvia's banks was 6.0% in the first quarter and 5.6% in the fourth quarter of 2002 (see Chart 7). In contrast to the net interest income margin, the effective spread includes only interest income from lending to non-banks and interest expense on non-bank deposits. In addition, the effective lending interest rate of Latvian banks has decreased faster than the effective depositing interest rate, while the net interest margin has showed greater sustainability. Banks are seeking to maintain an almost unchanging spread to avoid any notable volatility of banks' profit.

Chart 7

EFFECTIVE LENDING AND DEPOSITING RATES AND NET INTEREST INCOME MARGIN OF LATVIA'S BANKS (%)

- Effective interest rate on deposits
- Effective interest rate on loans
- Net interest income margin
- Effective interest rate margin



Source: FCMC.

Interest rates on newly received deposits of all types are strongly correlated to the effective lending rate (correlation coefficient 0.86); lending rates have the same correlation (correlation coefficient 0.90). This indicates that banks are seeking to sustain profitability over a longer period of time.

Interest on loans to non-banks is gaining importance as a component of the banks' interest income (see Table 17). In 1997, income from interest on loans to non-banks was of fairly the same amount as income from debt securities, whereas in 2002 the income from credit already accounted for 71% and income from debt securities for 17% of total interest income. It suggests that business (lending) strategies are likely to figure as an important aspect of bank competition. Only a small number of non-banks are going to borrow from foreign banks, hence it can be expected that the net interest income margin will decline slowly and banks will strive for higher efficiency to offset such narrowing of their income. Banks of Latvia do not place their assets in profitable and at the same time risky debt securities, hence income from debt securities should not change much and affect competitiveness of banks after the EU accession.

In Germany, loans to non-banks accounted for 47.8% of total assets in 2001; loans to banks were 25.1% and the security holding – 18.5%.(29) The asset structure of the

Table 17

SHARE OF INTEREST INCOME AND SELECTED ASSET ITEMS OF LATVIA'S BANKS
(%)

	1997	1998	1999	2000	2001	2002
Share of loans to non-banks in interest income	40	54	67	61	65	71
Share of debt securities in interest income	40	30	21	18	19	17
Share of loans to banks in interest income	20	16	12	20	14	10
Share of loans to non-banks in assets	26	40	40	37	44	48
Share of debt securities in assets	18	13	15	17	15	16
Share of loans to banks in assets	27	18	21	27	23	25

Latvian banks is similar to the asset structure of the German banks, and there are no grounds to assume that the EU accession could notably change the bank asset structure in Latvia. In respect of the German bank liabilities, bank deposits accounted for 26.7%, non-bank deposits for 37.3%, debt securities for 23.7% and paid-up equity capital for 4.3% of total liabilities in 2001. In recent years, outstanding amounts of securities and the turnover of transactions in German banks increased notably, and today customers more often resolve on investing in securities through institutional financial intermediaries. German banks have likewise increased the demand for securities, given the growing role of securities in other deals where they are used as collateral. Due to it, the growth of securities is faster than that of lending and depositing. The share of non-bank deposits in Latvia is relatively larger, that of bank deposits is smaller, while issued debt securities account for a particularly small share (see Table 18).

Table 18

SHARE OF SELECTED LIABILITY ITEMS OF LATVIA'S BANKS
(%)

	1997	1998	1999	2000	2001	2002
Deposits of credit institutions	10	13	12	11	14	14
Non-bank deposits	58	58	63	65	64	69
Debt securities issued	0	0	0	0	1	1
Paid-up equity	8	11	10	7	6	6

Correlation between the lending and depositing rates in Latvia is very high, while cash flows in the profit and loss statement correlate to a lesser extent.

2.2.2 Net non-interest income

In the EU countries, the role of non-interest income has been growing, as banks are compelled to expand services to compete successfully with other players of the financial market, thus earning income in the form of commission fees. Non-interest income is subject to a greater variation than interest income, as, for instance, the evaluation of managed assets may change and affect income from commission. This was the case in Europe in 2001, when security prices quoted at the stock exchange dropped.

In EU countries, net non-interest income accounted for around 0.5% of total bank assets in 2000.(27) In Germany, net non-interest income was 0.42% in 2000.(29) The share of non-interest income in assets has posted an upward trend since 1997, while the share of interest income is decreasing. In Latvia, the share of non-interest income in assets is declining (see Table 19); nevertheless, in 2000–2002, the share of non-interest income of banks against assets was five times larger than in EU countries. For example, the share of net income from commissions in bank assets in Latvia exceeds net non-interest income in bank assets of EU countries. It indicates that in order to compete successfully with EU countries, Latvia's banks will have to lower commission rates in the future. It should be also born in mind that the volume of transactions in Latvia falls behind that of Western Europe and, consequently, transaction costs are higher, for lower commission tariffs can be achieved only by expanding the scope of transactions.

Table 19

NON-INTEREST INCOME OF LATVIA'S BANKS AGAINST TOTAL ASSETS (%)

	1997	1998	1999	2000	2001	2002
Net non-interest income	3.75	0.67	3.05	2.79	2.46	2.41
of which: income from commission	2.63	2.73	2.57	2.3	2.05	1.91
commission expense	0.61	0.57	0.39	0.4	0.38	0.36
profit or loss from transactions with securities and currencies	1.73	-1.49	0.87	0.89	0.79	0.86

2.2.3 Expense

At this point in EU countries, administrative and other expenses do not converge to the same extent as does the above-referred income.

In 2000, administrative expense in Germany accounted for 1.16% of bank assets, of which wages and salaries constituted 0.63%.(29) In Germany, the transition to the euro promoted a decline in administrative expense because the staff employed in currency exchange operations decreased in Germany. In Latvia, the share of adminis-

trative expense in assets is higher than in Germany (see Table 20). As has been stated above, in Latvia 5 to 10 times more employees than in the other EU countries manage billion euros worth assets. An increase in Latvia's bank assets is expected to contribute to a relative reduction of administrative costs.

Table 20

SHARE OF ADMINISTRATIVE EXPENSE IN ASSETS OF LATVIA'S BANKS
(%)

	1997	1998	1999	2000	2001	2002
Share of administrative expense in assets	3.94	4.07	4.13	3.35	2.92	2.78

If in the process of making future forecasts we assume that the share of administrative expense in bank assets falls by 0.10 percentage point on a yearly basis, the level recorded for Germany in 2000 may be reached by Latvia in 2019. The share of administrative expense in assets decreased by 0.78 percentage point year-on-year in 2000, by 0.43 percentage point in 2001, and by 0.14 percentage point in 2002. If we assume that Latvia's bank assets annually gain 15% and administrative expense increases by 10%, the share of administrative expense in bank assets would be below 1.16% in 2022. These calculations suggest that the banking system requires a more radical structural adjustment – it could possibly be the bank consolidation to encourage a more effective reduction in the staff-against-assets ratio.

In 2000, the value added per one employee of the banking system was around 130 thousand euros in EU countries, with personnel costs in the amount of approximately 60 thousand euros. The indicators for the majority of EU countries were similar, with Luxembourg and the United Kingdom as exceptions (e.g. the value added for Luxembourg was nearly 260 thousand euros).(27) By comparison, per capita personnel costs in Latvia are below 60 thousand euros. Lower wages might provide certain advantages for the Latvian banks in comparison with the banks in EU countries; nevertheless, banks must consolidate to press down total costs.

2.2.4 Profitability indicators

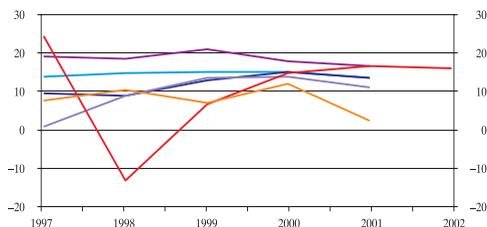
On average, return on equity (ROE) at the banks of EU countries grew from 9.2% in 1997 to 10.9% in 2000, with growth sustained over the entire period.(27) At the same time, return on assets (ROA) increased from 0.48% to 0.62%, respectively. In EU countries, annual profit per bank was 18 million euros on average in 2000.

ROE differs among banks of the major EU countries, in some years the difference even exceeding 10 percentage points (see Chart 8). As could be concluded from the profit and loss statement analysis, interest and non-interest income of the Latvian banks is higher than that of the banks in EU countries, hence also ROE is relatively

Chart 8

ROE OF BANKS IN LATVIA AND MAJOR EU COUNTRIES
(%)

- Germany
- France
- UK
- Italy
- Spain
- Latvia



Source: (27).

high. 1998 and 1999 were exceptional years, because the effect of the Russian crisis on bank ROE in Latvia was stronger than in developed countries.

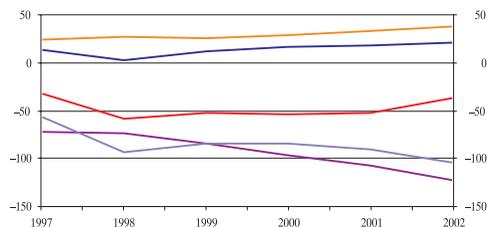
2.2.5 Profitability of Latvia's banks in highly competitive environment

If Latvia's banks had had to lower net interest income margin and the level of net interest income, as well as that of net non-interest income to the average level of EU countries with no reduction effected in administrative expense, the banks in Latvia would have incurred a loss not only in 1998 but over the entire period in question (see Chart 9). A tax reduction possibility was not accounted for in the calculation, yet this factor is not decisive. For instance, in 2002 the amount paid in taxes was 10.2 million lats, while that of previous years had been smaller.

Chart 9

PROFIT OR LOSS OF LATVIA'S BANKS IN HIGHLY COMPETITIVE ENVIRONMENT
(in millions of lats)

- Net interest income
- Net non-interest income
- Administrative expense
- Depreciation and write-off of intangible and fixed assets, doubtful debt related provisions
- Profit or loss



2.3 Implications of lats peg to euro for lats liquidity

At the end of 2002, 64% of Latvia's bank assets were denominated in foreign currencies. The examination of the major foreign asset items (vault cash, loans, securities) accounting for 73.7% of total assets, trust assets excluded, and foreign liabilities (deposits, subordinated liabilities, securities issued) accounting for 78.6% of total liabilities, trust liabilities excluded, shows that the US dollar predominates both foreign assets and foreign liabilities.

Residents' assets dominate the asset structure of Latvia's banks (see Chart 10). The shares of residents' assets in the group of largest assets, the EU countries group and

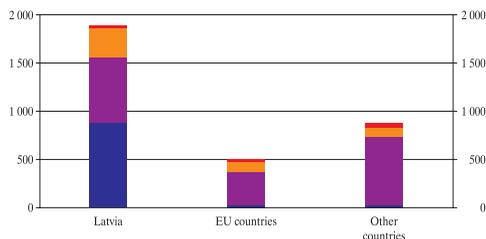
that of the other countries were 57.9%, 15.3% and 26.8%, respectively. Broken down by currency, the US dollar, lats, euro and currencies of the other countries accounted for 53.5%, 28.5%, 15.2% and 2.8%, respectively. In loans – the largest component of residents' assets – the share of lats was 45.4%, and the US dollar accounted for 36.9%. The high share of the US dollar in assets resulted from customers' willingness to borrow in US dollars due to a lower interest rate.

Chart 10

ASSET STRUCTURE OF LATVIA'S BANKS BY COUNTRY OF ORIGIN AND CURRENCY

(at end of 2002; in millions of lats)

- Lats
- US dollars
- Euros
- Other currencies



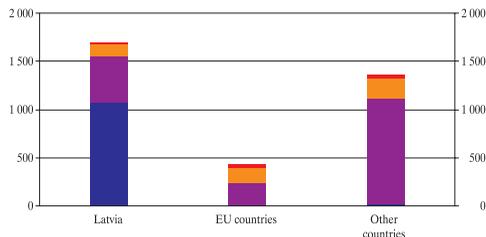
The reviewing of selected liabilities items leads to an assumption that the high share of the US dollar in the balance sheets of Latvian banks stems from the willingness of customers from the group of the other countries to make bank deposits mainly in US dollars (see Chart 11). In the major liabilities items, the US dollar accounted for 51.7%, including an 81.8% share in the liabilities items of the other countries. With the lats peg to the euro, it is unlikely that non-residents from EU countries and the group of other countries will start making deposits with Latvian banks in euros or lats due to the change in Latvia's currency regime – it is the developments in global markets that could change their behavior. In 2003, the US dollar continued to depreciate against the euro, and interest rates on transactions in US dollars remained lower than those on transactions in euros. These may be the reasons that could promote diversification of non-resident deposits with Latvian banks, increasing their share in euros and probably also in lats.

Chart 11

LIABILITIES OF LATVIA'S BANKS BY COUNTRY OF ORIGIN AND CURRENCY

(at end of 2002; in millions of lats)

- Lats
- US dollars
- Euros
- Other currencies



The lats peg to the euro could decrease the share of residents' deposits in US dollars (at the end of 2002, they accounted for 13.4% of the major liabilities items). It implies that the lats peg to the euro should not cause substantial changes in the currency structure of assets and liabilities of Latvian banks.

Lithuania's experience is useful for Latvia to a certain extent, although changes in Lithuania were more substantial than the planned re-pegging of the lats to the euro: Lithuania re-pegged the litas from US dollar to euro. In Latvia, since the euro is a component of the SDR basket of currencies, the peg to the SDR basket of currencies already implies a partial peg of the lats to the euro. After pegging the litas to the euro, resident depositors in Lithuania were willing to convert a part of their US dollar deposits into euros and litas. This led to an increase in litas liquidity and a reduction in litas interest rates, while banks experienced temporary problems with the placement of funds in litas. Although the volume of resident deposits in US dollars is relatively small in Latvia, the transition to the euro could cause an increase in lats liquidity, which would be short-lived and without a long-lasting effect.

Pegging the lats to the euro will make bank performance indicators more dependent on foreign exchange fluctuations. As bank balance sheets in Latvia are recalculated in lats, the lats peg to the SDR basket of currencies reduced foreign exchange volatility leveling out bilateral exchange rate fluctuations of the US dollar and the euro. After the lats is pegged to the euro, fluctuations in the value of US dollar-denominated assets and liabilities, when translated into lats and euros, are most likely to increase. Given the current structure of assets in US dollars and euros (accounting for approximately 96% of all foreign assets), as well as the average annual changes in foreign exchange since the lats peg to the SDR basket of currencies, it can be assumed that:

- under the lats peg to the SDR, if the US dollar appreciated against the euro, foreign assets of Latvian banks increased by 2.2% on average, but if the US dollar depreciated, foreign assets decreased by 2.0%;
- should the lats be pegged to the euro, the changes would be three times stronger; the appreciation of the US dollar against the euro would result in a 6.4% increase in foreign assets of Latvian banks, whereas its depreciation would cause a decrease of 5.9%.

With the currency structure of foreign liabilities remaining unchanged, Latvian banks would not be in the position to convert their US dollar assets into euro assets for the purpose of risk hedging, because the existing open position limit does not permit notable currency structure imbalances between assets and liabilities. Any imbalance between assets and liabilities of Latvian banks is more likely to be determined by geographical circumstances: deposits of the other countries (see Charts 10 and 11) are received mainly in US dollars, and a part of these funds is extended as loans in US dollars to Latvian residents. Under a low US dollar interest rate, the situation favors both banks and customers, as interest rates on deposits in US dollars are lower than those on deposits in other currencies, whereas lending rates in Latvia are higher than in advanced countries.

CONCLUSIONS

By analysing implications of the adoption of the euro for macroeconomic development, this paper has made several inferences.

The adoption of the euro in Latvia that would completely eliminate foreign exchange risk in trade with EMU countries but amplify exchange rate volatility with respect to currencies outside the EMU, would not generate immediate and sizable gains. It is due to the current exchange rate regime that limits fluctuations of the national currency against the euro to a great extent. However, data for a number of world countries show that over a longer horizon (even over 20–30 years) favorable effects of the adoption of the euro may be significant; calculations based on the gravity model analysis demonstrate that over longer horizons Latvia's GDP may be up to 19% higher compared to the hypothetical scenario of Latvia preserving its national currency.

However, the adoption of the euro in Latvia will be accompanied by the pursuit of the common monetary policy of the ECB, which is focused on the development of the euro area at large rather than individual member states. It follows that there exists a theoretical possibility of the ECB monetary policy not being fully consistent with the needs of the Latvian economy and of a consequent macroeconomic instability (asymmetric shocks) if the economic structure of Latvia does not conform to the average economic situation in the euro area.

Several indicators of the national structural development (structural changes of GDP sectors, structure of foreign trade broken down by trade partners and main commodity groups, etc) and the analysis of cyclical economic volatility show that in respect of real convergence Latvia often differs substantially from the large countries of the euro area, and only on few occasions Latvia's respective indicators display close similarity to the indicators of countries known as the periphery. It does not necessarily imply that along the euro adoption the impact and periodicity of asymmetric shocks in Latvia are going to increase.

First, the theory of optimum currency area stipulates the conformity of the Latvian economic structure with the average weighted economic structure of the countries of the SDR basket of currencies (US, UK, euro area countries and Japan) already with the pegging of the lats. Empirical studies, in turn, confirm that the economic structure of Latvia, instead of approaching the average weighted indicator of the US, the UK and Japan, displays closer similarity to that of the euro area countries. Therefore, even though upon the introduction of the euro in Latvia the possibility for asymmetric shocks to emerge may be stronger than in the core EMU countries (e.g. Germany), it may actually be weaker if compared with the current situation. In addition, the history of several EMU countries (Greece, Spain) indicates that the adoption of the euro is promoting the process of real convergence and reducing the possibility of asymmetric shocks.

Second, despite the Latvian economic structure differing distinctly from that of the SDR currency basket countries, the pegging of the lats to the SDR basket of currencies has been effective, indicating remarkable ability of the national economy to adjust to changes in the external environment. Empirical studies also confirm that a relatively flexible labor market is in place in Latvia, i.e. wages respond to moves not only in productivity but also in unemployment. For Latvia in the process of transition to the euro, it is an essential advantage inspiring a hope that the effects of asymmetric shocks would not be strong and long lasting.

Third, according to the comparative analysis of monetary transmission, changes in interest rates currently affect economic growth in Latvia to a lesser extent than in the majority of EMU countries. There is no reason to anticipate that these differences would cease to exist at high speed and in short term. So the ECB monetary policy, even if it does not fully satisfy the economic needs of Latvia, is not going to have a far-reaching effect on the economy.

Macroeconomic analysis seems to indicate, that the gains from the introduction of the euro in Latvia are likely to outnumber potential losses.

The review of the Latvian financial sector indicates that Latvia is behind the EU countries by the amount of bank assets, the number of employees and bank branches, hence opportunities for a momentous growth of its banking sector will remain in place also after the EU accession. The current scope of the Latvian financial markets to a great extent will save Latvia the trouble of experiencing active penetration of large European banks. It should be noted, however, that foreign capital is already dominating the Latvian banking sector, thus reducing the impact that extra foreign capital inflows in the financial system of Latvia might eventually exert.

Currently banks in Latvia have relatively larger administrative expense, net interest income margin and non-interest income than in the EU countries. Consolidation of banks is needed for the purpose of building up competitiveness of the Latvian banks. The transition to the euro may result in increased liquidity of lats, as residents may be interested to convert their US deposits into euro deposits, but as the volume of residents' deposits in US dollars in Latvia is relatively small, the rise in lats liquidity is expected to be short-lived. Likewise, the transition to the euro is not expected to have an impact on the volume of non-residents' deposits with Latvian banks.

BIBLIOGRAPHY

1. Backe, P.; Fidrmuc, J.; Reiningger, T.; Schardax, F. "Price Dynamics in Central and Eastern European EU Accession Countries." *Oesterreichische Nationalbank Working Paper*, No. 61, February 2002.
2. Bitāns M., Stikuts D., Tillers I. Monetāro šoku transmisija Latvijā. – Rīga: Latvijas Banka, 2003.
3. Corker, R.; Beaumont, C.; van Elkan, R.; Iakova, D. "Exchange Rate Regimes in Selected Advanced Transition Economies – Coping with Transition, Capital Inflows, and EU Accession." *IMF Policy Discussion Paper*, No. PDP/00/3, April 2000.
4. Deutsche Bundesbank Monthly Report, October 2001, pp. 15–30.
5. Eichengreen, B.; Bayoumi, T. "Ever Closer to Heaven? An Optimum-Currency-Area Index for European Countries." *Center for International and Development Economics Research Paper*, No. C96-078, December, 1996.
6. Frankel, J. A.; Rose, A. K. "Estimating the Effect of Currency Unions on Trade and Output." *CEPR Discussion Paper*, No. 2631, 2000.
7. Frenkel, M.; Nickel, C. "How Symmetric Are the Shocks and the Shock Adjustment Dynamics Between the Euro Area and Central and Eastern European Countries." *IMF Working Paper*, No. WP/02/222, 2002.
8. Ghosh, A. R.; Wolf, H. C. "How Many Monies? A Genetic Approach to Finding Optimum Currency Areas." *NBER Working Paper*, No. 4805, 1994.
9. Glick, R.; Rose, A. K. "Does a Currency Union Affect Trade? The Time Series Evidence." *NBER Working Paper*, No. 8396, 2001.
10. Grubel, H. G.; Lloyd, P. J. "Intra-industry Trade: The Theory and Measurement of International Trade in Differentiated Products." London, the McMillan Press, 1975.
11. Harrigan, J.; Zakrajšek, E. "Factor Supplies and Specialization in the World Economy." *NBER Working Paper*, No. 7848, 2000.
12. Iannizzotto, M.; Miller, N. J. "The Effect of Exchange Rate Uncertainty on Foreign Direct Investment in the United Kingdom." *IEA 13th World Congress Contributed Papers*, Lisboa, Portugal, September 9–13, 2002.
13. IMF. "Labor Markets in Hard-Peg Accession Countries: The Baltics and Bulgaria." *IMF Country Report*, No. 01/100, 2001.
14. Järvinen, M. "Exchange Rate Regimes and Nominal Convergence in the CEECs." *BOFIT Discussion Paper*, No. 4, 2002.
15. Kenen, P. "The Theory of Optimum Currency Areas: An Eclectic View." In: Mundell, R. A.; Swoboda A. K. (eds.). "Monetary Problems of the International Economy." Chicago, 1969, pp. 41–60.
16. Korhonen, I. "Some Empirical Tests on the Integration of Economic Activity Between the Euro Area and the Accession Countries." *BOFIT Discussion Paper*, No. 9, 2001.
17. Krugman, P. "Lessons of Massachusetts for EMU." In: Torres, F.; Giavazzi F. (eds.). "Adjustment and Growth in the European Monetary Union." 1993, pp. 241–269.
18. McKinnon, R. "Optimum Currency Areas." *American Economic Review*, No. 53, 1963, pp. 717–725.
19. Mojon, B.; Peersman, G. "A VAR Description of the Effects of Monetary Policy in the Individual Countries of the Euro Area." *ECB Working Paper*, No. 92, 2001.

20. Mundell, R. A. "Theory of Optimum Currency Areas." *American Economic Review*, No. 51, 1961, pp. 657–665.
21. Nitsch, V. "Honey, I Shrunk the Currency Union Effect on Trade." *The World Economy*, April 2002, Vol. 25, No. 4, pp. 457–474.
22. OECD. "Labour Market and Social Policies in the Baltic Countries." Paris, 2003.
23. Persson, T. "Currency Unions and Trade: How Large Is the Treatment Effect?" *Economic Policy*, No. 33, October 2001, pp. 435–448.
24. Rose, A. K. "Currency Unions and Trade: The Effect Is Large." *Economic Policy*, Vol. 33, October 2001, pp. 449–461.
25. Rose, A. K. "One Money, One Market: The Effect of Common Currencies on Trade." *Economic Policy*, No. 30, April 2000, pp. 9–45.
26. Smith, C. "Currency Unions and Gravity Models Revisited." *Reserve Bank of New Zealand Discussion Paper*, No. DP 2002/07, 2002.
27. Statistics on Credit Institutions. Eurostat, 2002.
28. Süppel, R. "Comparing Economic Dynamics in the EU and CEE Accession Countries." *ECB Working Paper*, No. 267, 2003.
29. www.german-banks.com
30. www.nbg.gr