E C O N O M I C S B U L L E T I N

Optimum Currency Areas theory and the Slovak suitability for the euro adoption

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Abstract

This paper tests the present readiness of Slovakia to join the European Monetary Union (EMU) based on the classical Optimum Currency Area criteria, the degree of trade intensity and business cycle synchronization. The results do not fully confirm the hypothesis that Slovakia already constitutes an optimum monetary union with the rest of the EMU countries; mainly the labour mobility is largely ineffective as adjustment mechanism. But, Slovakia is a open economy, its degree of trade integration is the highest among the Central and Eastern European countries and its economic and production structures are quite similar to the intra-EMU average. Moreover, Slovakia's business cycle appears at least as highly synchronized with the EMU's one as some present, small and peripheral EMU member countries. This would indicate that this country is equally a suitable candidate for the EMU membership and that the Euro adoption should not increase the likelihood of asymmetric shocks.

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1. Introduction

The creation of the European Monetary Union (EMU) and the successive enlargement of the European Union (EU) have provoked a renovated interest in the theory of Optimum Currency Areas (OCA), which in relatively recent time has been tested with empirical analysis focusing on the issue whether the EMU constitutes an Optimum Currency Area (Eichengreen, 1991; De Grauwe and Vanhaverbeke, 1991; Decressin and Fatas, 1995; Frankel and Rose, 1996; Gros and Hefeker, 2003). In some sense the "old continent" has been, still it is, and it always will be a "laboratory" to assess whether the OCA theory is consistent in order to monitor the effects of deepening economic, financial, monetary and political integration. Generally, the OCA theory identifies the criteria that countries should satisfy if they want to have a benefit from joining a broader monetary union (Mundell, 1961; Mckinnon, 1963; Kenen, 1969). The stronger are the underneath linkages between member countries, the more gains may be expected by the membership:

1. Labour mobility;
2. Degree of openness;
3. Product diversification;

In more recent time, others criteria have been added when considering the optimality of a monetary union:

4. Trade intensity;
5. Business cycle correlation.

Sharing the above properties reduces the usefulness of the nominal exchange rate as adjustment mechanism, decreases the impact of some type of shocks and facilitates the adjustment itself. The main point is that the loss of discretionary monetary and exchange rate policies would become less important arguments as far as the previously mentioned criteria are fulfilled and, in turn, a common central authority should efficiently ensures equilibrium among member countries and smoothly functioning of the monetary union.

Today the debate is shifting to the issue if also the Central and Eastern European countries (CEECs) are a natural part of the European Monetary Union (De Grauwe and Lavrac, 1999; Kornhonen, 2001; Frenkel and Nichel, 2002; Fidrmuc, 2003). For the moment, the CEECs enjoy their full monetary sovereignty but soon their monetary policy will become matter of common concern and subject to coordination. As a consequence, for the CEECs the EMU membership will lead to the loss of their independent monetary and exchange rate policies, which are useful instruments to cope with asymmetric shocks. To what extent the loss of these adjustment mechanisms is really a cost of the inclusion in the EMU depends mostly on the fulfilment of the OCA criteria and the degree of business cycles synchronization across member countries. This paper assesses the suitability for Slovakia to join the EMU based on the fulfilment of the OCA criteria and the similarity of business cycle. Other CEECs and EMU member states as well are included in the analysis as a benchmark for a better comparison. The paper is structured as follow: Section 2 investigates the efficacy of the labour mobility as adjustment instrument in Slovakia. Section 3 looks at the Slovakia's degree of openness, trade integration and business cycle synchronization. Section 4 focuses on the economic, production and trade structures diversification of the Slovak economy. Section 5 concludes and provides critical advices.

2. Labour mobility in Slovakia

Slovakia is expected to join the EMU in 2009; this suggests the need to examine the suitability of its membership. Generally, the main disadvantage for a member country of a monetary union is developed when it is hit by an adverse asymmetric demand shocks

(Mundell, 1961). As a result the output falls and the unemployment rises. A country can absorb the effects of this shock in different ways. Of course, a country that is member of a monetary union cannot use the nominal exchange rate as adjustment mechanism. In this case, Mundell emphasizes the need of a high degree of (inter)national labour mobility. Indeed, if the jobless resident in the member country negatively hit by an asymmetric demand shock could freely seek employment in another member country experiencing economic prosperity at the same time, the initial equilibrium will be automatically restored.

This section investigates the efficacy of the labour mobility as adjustment instrument in Slovakia. Table 1 shows the unemployment rate (ILO definition – seasonally unadjusted) and the annual gross wage for Slovakia and the EMU average in 2007. As we can see the Slovakia's unemployment rate is higher than the EMU average while the annual gross wage is higher for the latter than the former. According to the theoretical foundation of the modern migration literature, the immigration would be positively related to the average wage and negatively to the unemployment rate prevailing in the country or region. Otherwise, asymmetric shocks would lead to persistent differentials in unemployment and wages (Decressin and Fatas, 1995; Fidrmuc Jan, 2002). For this, it seems that the labour mobility in Slovakia does not play its role as national adjustment mechanism. In general, in the wake of asymmetric shocks the jobless would move in search of better employment prospect and doing so the adverse effects gradually get smoothed away (Gros and Hefeker, 2003). In other words, the condition for the equilibrium implies a positive relation between wages and unemployment rates. Looking at the table 1, the Slovak economy does not seem to give the impression to respond to dissimilar national economic conditions restoring the initial equilibrium among countries hit by asymmetric shock. But, to be able to draw any conclusion about the labour mobility in Slovakia as a channel of adjustment, we have to analyze the extent to which labour market shocks are common to all Slovak regions. There are several reasons to focus on regions rather than countries. First of all, analyzing regional dynamics gives an idea on labour mobility for the whole Slovakia at (inter)national level (Decressin and Fatas, 1995).

Table 2 shows the rates of registered regional unemployment, the average annual gross wages and the migration flows for Slovakia in 2006. We can see that unemployment rates between regions in Slovakia differ substantially. These regional divergences in unemployment trends are the result of different levels of economic development in individual regions. Moreover, during the last decade, the economic policy of the governments has been more worried to restructuring the economy at the national level than to prevent regional economic disparities. This is reflected by the regional distribution of unemployment and increased regional discrepancies. Indeed, in Slovakia, the unemployment rate fell in the less developed regions during the last 10 year by the average annual rate of 0,8%; while the average annual growth of wages was 9,5%. By contrast, in the most developed region, the unemployment rate fell during the 10 year period by the average annual rate of 2,5%; while the average annual growth of wages was almost 14%. In addition, the highest rates of unemployment are generally related with the lowest average wages of the regions. The relationship between unemployment rates and average wages is negative! The (inter)regional labour mobility is almost absent. Otherwise, higher wages and lower unemployment rates in a region would set off an immigration flow which equalizes wages and unemployment rates among regions (Gros and Hefeker, 2003). This implies low efficacy of the regional labour mobility in facilitating regional adjustment even if there are no informal (e.g. linguistic and cultural) barriers between regions, which are often the quoted reasons for low labour mobility between countries in Europe. This is confirmed by the economic development in Slovakia over the last decade. In fact, it has been relatively centralized in the sense that industrial and other enterprises were located closer to regional cities and most of new investments were

located in the western part of Slovakia. Even this fact did not force people to migrate to more developed regions. In conclusion, the implications with respect to the accession of Slovakia in the EMU are straightforward. Because of the low regional labour mobility a rapid accession to the euro-area may not be the optimal policy choice. Joining the EMU implies the loss of an autonomous monetary policy and also imposes important limitations on the counter-cyclical fiscal policy (due to the Maastricht fiscal criteria). With labour mobility largely ineffective as adjustment instrument, the traditional OCA theory underlines the importance of other alternative mechanisms to cope with asymmetric shocks.

3. Degree of openness, trade integration and business cycle synchronization of Slovak economy

The OCA theory also stresses that the cost of giving up the exchange rate instrument declines with the degree of openness of the country. For very open country the monetary and exchange rate policies are less effective to affect output and employment due to the large pass-through effect of the changes in nominal exchange rate into domestic prices. The higher is the degree of openness, the more the changes in international prices of tradable goods are rapidly transmitted to the domestic cost of living. So, more open is a country, larger this effect is more it has interest to join a currency union to protect its trade interests against exchange rates fluctuations and safeguard the stability of domestic prices at the same time (McKinnon, 1963). The McKinnon's criterion explains the interest for very open and typically small countries to join a monetary union since for such economies the monetary and exchange rate policies are less useful as adjustment mechanisms. For our purpose, we assess the degree of openness as ratio of the total trade (exports plus imports) over country's GDP.

Table 3 shows the degree of openness of the Slovak economy compared with that of other European countries. Slovakia has a relatively high degree of trade openness. The lowest among the other CEECs, the highest among the EMU states. Consequently, it is not sure if Slovakia will have more benefits than costs from losing the flexible exchange rate as adjustment mechanism. The previous result investigating whether Slovakia should join the European Monetary Union is necessary backward looking. The McKinnon's (1963) criterion is in fact assessed on the basis of past information. At the same time, the monetary integration represents a structural change for the countries involved (Kenen, 1995; Mundell, 1997; Mongelli, 2002; Mckinnon, 2002). Indeed, what economists are still interested in is the dynamic relationship between trade and business cycle synchronization. Of course, that trade integration can lead to concentration and agglomeration effects cannot be disputed. But, it is also true that as the integration process between countries proceeds, national border become less important as factors that decide about the location of economic activities. This creates the possibility that the relevant "regions" in which some economic activity is centralized will be common to more countries. If it is the case, shocks in these industries will affect in the same way the countries sharing the common region and, in turn, business cycles will become more synchronized too (European Commission, 1990).

Here, we analyze the relationship between trade integration and business cycles synchronization. The degree of trade integration (*TI*) is generally measured as a share of the bilateral trade in total trade of each trading partners (Jules-Armand, 2007).

$$TI_{ij} = \frac{T_{ij}}{T_i} \times 100 \qquad (1)$$

where T_{ij} denotes the bilateral trade intensity between countries *i* and *j*. Since trade intensity may be defined either in relation to exports, import, or trade turnover. We decide to use the share of exports, so that the (1) may be stated as:

$$TI_{ij} = \frac{X_{ij}}{X_i} \times 100 \qquad (2)$$

where X_{ij} stands for exports from country *i* toward *j*, and X_i for total exports of the country *i.* Table 4 shows that the degree of trade integration of Slovakia vis-à-vis the EMU is the highest among the others CEECs included in the sample and kept constant over time. Already, Frankel and Rose (1996) claim the existence of a significant and positive relationship between trade integration and synchronization of business cycles. Moreover, although not a real OCA criteria, the synchronization of business cycles can be viewed as a "catch all" property capturing the interaction between several other OCA properties. We calculate the level of business cycle synchronization as the cross-correlation of the cyclical component of the GDP series of country *i* over the time period *t*. The cross-correlation has been measured for all countries i_s vis-à-vis the EMU average. Since correlation values range between -1 and +1 inclusive, correlation results have been subtracted from one, so the new values are between zero and two, where zero represents perfect business cycle synchronization (Ozer and Ozkan, 2007). GDP series have been detrended with an application of the Hodrick-Prescott (H-P) filter in order to obtain the cyclical components of GDP (Hodrick and Prescott, 1997).

Table 5 shows the cross-correlation of the cyclical component of the GDP series for all European countries vis-à-vis the EMU average over the time period 1999-2007. We can see that, in general, business cycles in EMU member countries are quite correlated. For the CEECs, the correlation coefficients show a less homogeneous group than the EMU countries. There are clear differences in the degree of correlation between CEECs countries. For many of them the business cycles are quite desynchronized, thus an early membership in EMU could be problematic (Raguseo, 2007). This even is true for some advanced transition countries, even though, Slovakia shows the highest level of business cycle synchronization among all CEECs. Moreover, if we carefully look at the table 5, we can see that also some EMU countries (namely small and peripheral ones) have a low degree of business cycle synchronization. It can be found that business cycle in Slovakia appears at least as highly correlated with that of the EMU area as some present member countries (e.g. Italy, Ireland and Portugal). This would indicate that Slovakia would be equally possible candidates for the monetary union and that low degree of business cycle synchronization need not necessarily block the entry into the monetary union.

The main aim here is to assess whether Slovakia could belong to the same currency area with the other EMU member states estimating the relationship between degree of openness, trade integration and business cycles synchronization for our sample of European countries. In order to state our model, we use the following equation:

$$BCS_{i,t} = \alpha + \beta_1 \cdot TI_{i,t} + \beta_2 \cdot OP_{i,t} + \varepsilon_{i,t} \qquad (3)$$

Where $BCS_{i,t}$ stands for business cycles synchronization. $TI_{i,t}$ denotes the degree of bilateral trade integration between country *i* and the EMU over the time period *t*. $OP_{i,t}$ denotes the degree of openness of country *i* allowing to control for others factors which affect business cycle synchronization next to the bilateral trade. ε is the error term, α is the constant term and β_1, β_2 are the regression coefficients to be estimated. Our model applies a pooled two-stage least squares (2SLS) technique to a cross-sectional dataset of 24 EU states over the time period 1999-2007 as in Jules-Armand (2007). We include in the regression equation the EMU membership as instrumental variable taking value 1 when the country already is part of the monetary union, 0 otherwise.

Our research findings, presented in table 6, confirm that more open is a country, more it has interest to join a currency union. We obtain a positive and significant impact of the degree

of openness (OP) which in turn is favourable to monetary integration. The estimated coefficient is significant at 1% level and equal to 1,31. We also find that the impact of the bilateral trade integration (TI) has a positive effect on the business cycles synchronization. The coefficient is significant at 5% level and equal to 0,02.

Thus, due to its relatively high degree of trade openness and the importance of the bilateral trade integration vis-à-vis the EMU, Slovakia seems to face favourable preconditions for a rapid convergence toward the business cycle in the EMU. However, it must be said that is the structure of foreign trade and not the direct effect of bilateral trade that may be viewed as a major adjustment force inducing synchronization of business cycles among trading partner (Fidrmuc, 2003). Generally speaking, from the viewpoint of the OCA theory, if a large share of trade is intra-industry, business cycle synchronization is expected to increase across countries (Mongelli, 2002; European Commision, 1990).

4. Production diversification of the Slovak economy

How costly is the loss of an independent monetary and exchange rate policy depends mostly on the exposure to asymmetric shocks. As argued above, only if a country is hit by an asymmetric shock, it will need an "adjustment" to restore the initial situation; otherwise, in the case of symmetric shocks, a common monetary and exchange rate policy will be adequate. According to Kenen (1969) the likelihood of major asymmetric shocks depends on the economic diversification of a country. Countries with well-diversified production structure are natural candidates to form a monetary union (Kenen, 1969).

Table 7 shows the economic activities diversification of the Slovak economy as share of the gross value added (GVA) compared with that of other CEECs, EMU member states and the EMU average economic structure. Slovakia's economic diversification seems quite similar to that of the EMU countries and also to the EMU average. This is particularly true regarding the importance of the manufacturing sector, while some dissimilarity can be noted in the financial and business sectors. The resemblance of the Slovak manufacturing production structure to the EMU average is caused by the magnitude in its exports toward the EMU countries of the category of basic manufactures, machinery and transport equipment. Since a little literature looks at the similarity in the production structure diversification between EMU and CEECs, we also directly assess the degree of production structure correlation between European countries and the EMU area as a whole. Table 8 reports the average correlation coefficients of the production structure for several European countries vis-à-vis the EMU average. Data on production structure are collected from Eurostat database and refer to the annual statistics on manufacturing subsections (incl. food, beverage, tobacco, textiles, leather, wood, paper, coke, chemicals, plastics, minerals, metals, machinery and transport equipment) as a share of the total manufacturing activity (NACE classification).

Looking at table 8, Slovakia's production structure seems not to be very different from that of the other current EMU member countries. The Slovakia's correlation coefficient (0,66) is quite similar to that of Austria (0,68) and Spain (0,65). Furthermore, it is higher than the one for Italy (0,51), Ireland (0,44), Greece (0,26) and Portugal (-0,17).

Finally, in table 9, if we look at the trade structure of the Slovak Republic, using the net exports as a comparative advantage indicator, it can be quickly noted that Slovakia has a comparative advantage for the categories of basic manufactures, machinery and equipment (for transport), as previously argued.

Summing up, Slovakia today seems to have a good economic configuration with diversified production and trade structure. This indicates that Slovakia exports and imports a same range of products to and from the EMU countries. Therefore, from the viewpoint of Kenen's criterion, Slovakia is a suitable candidate for the monetary integration with the other

EMU member countries, even if the effects of a more tighten integration on the degree of specialization/diversification are still ambiguous. It is evident that not only the similarity of the industrial structures between member countries can be a measure of the expected impact of the European Monetary Union membership. Beside industrial similarity gains, there are other economic and political gains often related to the OCA theory and the optimum currency area enlargement.

5. Conclusions

The results of this analysis do not fully confirm the hypothesis that Slovakia already constitute an optimum currency area with the EMU, mainly the labour mobility is largely ineffective as adjustment mechanism. But, due to the great headway made in the last years, it seems that it will eventually fulfil the OCA criteria to the same degree as EMU member in the future. Indeed, Slovakia is a relatively open country, its bilateral trade intensity with the EMU is the highest among the CEECs and its business cycle appears at least as highly synchronized with the EMU one as some, small or peripheral, current EMU member countries (e.g. Italy, Ireland and Portugal Greece). Moreover, this analysis also revealed that the Slovak economic, production and trade structure diversification became more similar to that of other EMU countries. Also, we can assume that the monetary integration process in Europe is likely to increase the similarity of the industrial structures, because of the reduced trading costs beyond the elimination of the risk from exchange rate volatility, In addition, the coordination of the economic policy with the EMU is likely to result in a faster convergence of the Slovak business cycle. Thus, Slovakia faces positive pre-conditions for fully fulfil the OCA criteria as potential member of the EMU. This expectation is particularly based on the high degree of trade integration of Slovakia vis-à-vis the EMU, which is the highest among the others CEECs.

To conclude, Slovakia seems today to be a country suitable for joining the EMU. It is small, open, with a diversified production and trade structure and with an economic activity configuration quite similar to the EMU average. Its level of busyness cycle synchronization is also the highest among all CEECs. In prospective, given the high degree of trade openness and the similarity in the production structure with the current EMU members, Slovakia is expected to face a fast convergence toward the EMU business cycle. Therefore, Slovakia should not expect serious asymmetric shocks, which would cause problems for its economy once in the euro area, and the relinquish of an autonomous monetary and exchange rate policy could represent a benefit rather than a cost from the EMU participation. It is also obvious that there are other benefits expected in relation to the participation to a broader monetary union. For instance, increased economic growth (due to increased competition and decreased transaction costs and exchange rate risks) and political weight of the countries having joined the monetary union.

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Table 1
Unemployment rates (ILO) and average annual gross wages (in euro), 2007

	Unemployment rate	Annual gross wage
EMU	7,4	37391,4
Slovakia	11,1	7152,1

Source: Eurostat, 2008

Table 2
Regional labour market in Slovakia, 2006

Region	**Average annual gross wage (in Skk)**	**Registerd unemployment (in %)**	**Net immigration**	**Immigration to the region**	**Emigration from the region**
Banska Bystrica	15 657	21,1	-414	2514	2928
Kosice	17 930	20,3	-532	2450	2982
Presov	14 087	18,1	-876	2235	3111
Nitra	15 395	13,2	775	3862	3087
Zilina	16 437	11,8	206	2496	2290
Trnava	17 610	8,8	1448	4226	2778
Trencin	16 383	7,1	261	2703	2442
Bratislava	24 860	4,3	2986	6840	3854

Source: Statistical Office of Slovakia, 2008

Table 3
Degree of Openness (as a ratio of total trade over GDP), 2007

	Exp*	**Imp***	**GDP***	**Openness**
Hungary	56,4	63,3	100,95	118,57
Czech Republic	66,3	71,0	128,13	107,16
Slovenia	16,8	17,5	33,54	102,26
Slovakia	26,8	28,0	54,82	99,95
Germany	992,8	897,9	2.423,8	78,01
United Kingdom	668,6	697,3	2.023,6	67,50
Poland	84,9	93,6	307,34	58,08
France	546,3	537,8	1.867,3	58,06
Italia	411,8	424,9	1.535,5	54,49
Greece	48,2	58,7	228,95	46,69

* Exports, Imports and GDP in Mld EURO
Source: Eurostat, 2008

Table 4
Trade Integration vis-à-vis the EMU

	2004	2005	2006	2007
Slovakia	86,7	87,3	86,9	86,7
Czech Rep.	87,1	85,5	85,7	85,2
Hungary	83,1	80,9	79,2	78,7
Poland	80,3	78,6	79,0	78,7
Slovenia	67,5	68,2	68,4	69,3
France	66,0	63,5	65,5	65,0
Germany	64,6	64,3	63,6	64,8
Greece	64,2	61,7	63,9	64,0
Italy	61,9	61,2	61,2	60,1
United Kingdom	58,8	57,4	62,9	58,1

Source: Eurostat, 2008

Table 5
Business cycle synchronization with the EMU area*, 1999-2007

Countries	GDP series	Countries	GDP series
EMU area	0,00	Portugal	0,81
Belgium	0,00	Estonia	1,32
Spain	0,00	Czech Republic	1,33
Austria	0,00	Hungary	1,66
Germany	0,00	Slovenia	1,68
France	0,00	Latvia	1,81
Denmark	0,02	Italy	1,97
Slovakia	0,03	Cyprus	1,98
Sweden	0,03	Finland	1,98
Greece	0,06	Ireland	1,99
Poland	0,75	Lithuania	2,00
Romania	0,77	Bulgaria	2,00
Netherlands	0,78	United Kingdom	2,00

* Values are between zero and two. Zero represents perfect positive correlation (perfect synchronization) and two represents perfect negative correlation (perfect desynchronization).
Source: own calculations adapted from Eurostat, 2008

Table 6
Openness, trade integration and business cycles synchronization

Dependent Variable: BCS
Method: Pooled IV/Two-stage EGLS (Cross-section weights)
Sample Period: 1999-2007
Included observations: 9
Cross-sections included: 24
Total pool (balanced) observations: 216
Linear estimation after one-step weighting matrix
Instrument list: EMU membership

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.256702	0.637991	-1.969780	0.0502
OP	1.315367	0.178284	7.377940	0.0000
TI	0.016092	0.007225	2.227320	0.0270

Weighted Statistics

R-squared	0.886420	Mean dependent var	2.551761
Adjusted R-squared	0.885354	S.D. dependent var	3.061457
S.E. of regression	1.036593	Sum squared resid	228.8738
Durbin-Watson stat	0.226522	Instrument rank	14.00000

Source: own calculation by EViews 5.1

Table 7
Gross Value Added by economic activity (as percentage of total), 2006

	SLOVENIA	SLOVAKIA	POLAND	CZECHIA	ITALY	FRANCE	GERMANY	EMU
Agriculture, hunting, forestry and fishing	2,3	3,9,	4,2	2,6	2	2,1	1	1,8
Mining and quarrying	0,5	0,5	2,4	1,4	0,4	0,1	0,2	0,5
Manufacturing	24	22,4	18,9	26,7	18,3	12,7	22,6	17,6
Electricity, gas and water	3	5,7	3,5	3,7	2	1,6	2,5	2,1
Construction	6,2	6,9	6,5	6,4	6	6,2	4	6,4
Wholesale and retail trade; Repair of motor vehicles	11,9	15,4	19,1	13,2	11,5	10,3	10,5	11
Hotels and restaurant	2,3	1,3	1,2	2	3,8	2,4	1,6	3
Transport, storage and communication	7,8	9,9	7,2	10,3	7,6	6,3	5,8	6,7
Financial intermediation	4,9	4,3	4,5	3,5	4,9	5	4,7	5,2
Real estate, business activity	16,8	14,5	13,7	13,4	22,2	28	24,8	22,7
Public Administration	6,1	5,4	5,9	5,7	6,7	7,5	5,8	6,5
Education	5,6	3,7	4,9	4	4,8	5,4	4,4	5
Health and social work	5	3,5	3,7	4	5,9	8,4	7,1	6,9
Other services	3,6	2,6	4,3	3,3	3,8	4,1	5	4,3

Source: Eurostat, 2008

Table 8
Production structure correlation coefficients vis-à-vis the EMU average, 2005

Countries	Correlation coefficients	Countries	Correlation coefficients
EMU area	1,00	Spain	0,65
France	0,95	Denmark	0,55
Sweden	0,90	Italy	0,51
Germany	0,90	Ireland	0,44
Poland	0,89	Finland	0,43
United Kingdom	0,86	Romania	0,30
Czech Rep.	0,78	Greece	0,26
Netherlands	0,74	Bulgaria	-0,01
Slovenia	0,72	Portugal	-0,17
Belgium	0,72	Cyprus	-0,27
Austria	0,68	Estonia	-0,47
Hungary	0,68	Latvia	-0,52
Slovakia	0,66	Lithuania	-0,57

Source: own calculations adapted from Eurostat, 2008

Table 9
Trade structure diversification by sections of manufacturing activity (as percentage of total), 2005

	Export	Import	Net-Exports
Food & live animal	4	4,8	-0.8
Beverages & Tobacco	0,3	1	-0.7
Crude materials	3	3,5	-0.5
Minerals fuel	6,8	13,2	-6,4
Oils & fats	0,2	0,2	0
Chemicals	5,8	9,8	-4
Manufactures by materials	24,8	18	6,8
Machinery & equipment	44,3	37,9	6,4
Miscellaneous manufactures	10,6	11	-0,4
Others	0,2	0,6	-0.4

Source: Statistical Office of Slovakia, 2008