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Enlarging the EU: The Trade Balance Effects

SECTORAL ANALYSIS OF THE SLOVAK FOREIGN TRADE

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Introduction

The purpose of the research paper is the analysis of the possible impacts of EU accession on the Slovak foreign trade with respect to sectoral and geographical division. The paper examines export and import flows between Slovakia and its main trading partners.

The first section of the paper gives an overview of the major developments in the Slovak foreign trade during 1993-1999, which was marked mainly by two aspects – opening up of the EU market and the dissolution of former Czechoslovakia. The second and third sections include import and export equations using theoretical models and quarterly data for 1993-2000. Import and export flows are analysed by geographical and commodity breakdown. Based on these sectoral equations, a comprehensive forecast of foreign trade of the Slovak Republic is included in the fourth section. The last section discusses important sectoral effects of EU accession and summarises conclusions. The appendices A, B, and C are linked to import and export estimations by geographical and commodity structure. Appendix 1 shows existing research findings on the relevant subject in existing literature.

The paper follows the empirical analysis of the aggregate paper *Trade Effects of EU Integration: The Case of the Slovak Republic* (P97-8134-R, Vagac – Palenik – Kvetan – Krivanska, 2001). The econometric analysis is based on quarterly data series of the Slovak Statistical Office.

1. Major Developments in the Slovak Foreign Trade in the 1990s

Slovakia is a small and very open economy. Like most of small economies, Slovakia strongly depends on foreign trade, with imports and exports each as a share of GDP ranging from 50 to 70 percent.³ That means that foreign trade plays a much more important role in Slovakia than in many other countries. The opening up of the country by means of liberalisation of foreign trade is at the same time inevitable for the creation of conditions for a more diversified and sustainable development. On one hand, it is the opening of a larger market and consequently the creation of conditions for a broader use of comparative advantages, which should lead to growth in the country's wealth; on the other hand, citizens have a broader range of mutually competing products and services to choose from.

The former Czechoslovakia was largely dependent on the former CMEA⁴ system, as indicated by a share of 63 percent of the former CMEA in total exports in 1990. This dependence on the former CMEA was particularly strong in the case of the Slovak Republic, which still directed more than 60 percent of its exports to former CMEA countries at the time of its independence in 1993. Since then, exports have been significantly redirected, as shown by a decrease in 17 percentage points in the CEFTA's share of total exports and a 31 percentage point increase in EU's share between 1993 and 1998 (Table 1). The declining share of the former CMEA (or CEFTA respectively) has been essentially due to decreasing trade with the Czech Republic. The increase in Western Europe's share in total exports was larger than the increase achieved by other Visegrad countries, although EU's share remains comparatively lower due to its low initial base. On the import side the trends are similar. Such a reorientation of trade took place initially in a situation of rapidly growing exports, as shown by average growth rates of 26 percent in the period following independence.

The renewal of growth started with export expansion and import contraction in 1993. Such a development was caused by several factors. Among the most influential on the export side were the devaluation of the Slovak Crown and the asymmetric character of the Association Agreement⁵; on the import side, it was the application of administrative barriers: the certification regime for goods imported was tightened, import deposits and quota on import of certain commodities were introduced, and most importantly, import surcharge was applied.⁶ However, at the end of 1995 exports started to slow down. The government tried to sustain high growth rates in excess of 6 percent by expansionary policies, in particular through large infrastructure investments financed by public debt. It was especially the foreign loans guaranteed by the government that had negative impacts on several economic indicators, which was often neglected. These very loans have contributed to the abrupt drop of the

³ While the sum of the exports and imports compared with the GDP (the so-called *openness of the economy*) of large countries varies around 20 percent, for small countries the value is much higher. The openness of the Slovak economy ranges around 120 percent.

⁴ Council of Mutual Economic Assistance, Comecon (1949 – 1991). Members were Albania, Bulgaria, Czechoslovakia, German Democratic Republic, Hungary, Poland, Romania, USSR, Mongolia, Cuba, and Vietnam.

⁵ Asymmetric abolition of tariffs refers to the abolition in the EU of its tariffs on manufactured goods before Slovakia and other CEE countries remove theirs. In fact, the EU already has removed these tariffs, although the CEE countries do not have to do so until 2001.

⁶ Based on the experience gained during the implementation of the above said steps we can say today that the restrictive measures did not solve the problem, instead they have just delayed the solution and allowed the deterioration of it.

foreign trade balance. This approach resulted in high fiscal and current account deficits in 1996-1998 (10-12 percent of GDP). Certainly, the curbed restructuring of the economy and the specific composition of exports based on low-quality products (they account for approximately 60 percent of the exports, higher quality products account for less than 20 percent of the exports)⁷ has added to the negative trade balance development. Finally, the trade deficit has also been due to the impact of a very strong domestic demand, reflected on an overall high growth of imports. As a result of this controversial factors, however, the Slovak Republic was among the first of the Eastern European countries, following Poland, to approach its pre-reform GDP level.

Table 1 Foreign Trade by Continents and Economic Groups in 1993-1999 (in SKK million FOB/FOB)

Indicator	1993	1994	1995	1996	1997*	1998	1999
Imports in total of which:	195 034	211 811	260 791	340 903	393 973	460 736	468 892
Europe	179 441	191 315	233 111	301 028	352 946	412 525	423 594
Asia	8 724	10 120	15 264	24 169	22 135	26 115	26 984
Africa	607	1 097	1 759	1 775	1 489	1 378	1 427
America	5 711	8 703	9 757	12 989	16 441	17 579	15 987
Australia	324	373	476	398	547	573	486
Oceania	5	12	32	56	5	1	8
Non-specified	221	190	392	487	410	2 565	406
CEFTA	76 623	72 055	86 329	101 307	107 406	114 687	109 676
EU	40 143	55 443	90 648	127 093	172 528	230 989	242 357
EFTA	17 274	18 714	4 938	5 601	6 118	7 297	7 027
OECD	64 482	83 990	107 920	254 455	303 697	371 797	375 839
Share on total imports (in %)							
CEFTA	39.3	34.0	33.1	29.7	27.3	24.9	22.5
EU	20.6	26.2	34.8	37.3	43.8	50.1	51.7
EFTA	8.9	8.8	1.9	1.6	1.6	1.6	1.5
OECD	33.1	39.7	41.4	74.6	77.1	80.7	80.2
Exports in total of which:	168 114	214 375	255 096	270 643	324 017	377 807	423 648
Europe	151 675	194 166	236 073	252 669	305 976	361 984	401 824
Asia	11 883	11 579	10 885	10 633	7 712	5 667	8 027
Africa	1 355	1 738	2 316	1 512	1 383	1 399	3 017
America	2 803	6 766	5 648	5 617	8 532	7 206	9 287
Australia	103	120	134	195	199	198	361
Oceania	144	4	5	6	111	14	16
Non-specified	152	2	34	11	106	1 338	1 115
CEFTA	83 692	98 012	112 962	113 844	119 727	122 120	126 078
EU	40 510	61 730	95 395	111 687	152 551	210 250	251 550
EFTA	10 543	15 036	2 526	3 250	4 155	6 974	8 147
OECD	54 834	83 615	103 670	229 890	278 984	339 812	387 657
Share on total exports (in %)							
CEFTA	49.8	45.7	44.3	42.1	37.0	32.3	29.8
EU	24.1	28.8	37.4	41.3	47.1	55.7	59.4
EFTA	6.3	7.0	1.0	1.2	1.3	1.8	1.9
OECD	32.6	39.0	40.6	84.9	86.1	89.9	91.5
Balance in total of which:	-26 920	2 564	-5 695	-70 260	-69 956	-82 929	-45 243
Europe	-27 766	2 851	2 962	-48 359	-46 970	-50 541	-21 769
Asia	3 159	1 459	-4 379	-13 536	-14 423	-20 447	-18 957

⁷ Aiginger, K. *Making Use of Unit Values for the Assessment of Competitiveness of Nations*. Vienna: Austrian Institute of Economic Research, 1990.

Africa	748	641	557	-263	-107	21	1 590
America	-2 908	-1 937	-4 109	-7372	-7 909	-10373	-6 699
Australia	-221	-253	-342	-203	-348	-375	-125
Oceania	139	-8	-27	-50	106	13	9
Non-specified	-69	-188	-358	-477	-305	-1 226	709
CEFTA	7 069	25 957	26 633	12 537	12 321	7 434	16 402
EU	367	6 287	4 747	-15 406	-19 976	-20 739	9 193
EFTA	-6 731	-3 678	-2 412	-2 351	-1 963	-323	1 120
OECD	-9 648	-375	-4 250	-24 565	-24 713	-31 985	11 817

Note: Change in methodology of data processing by the Decree of MF SR No. 82/1997.

Source: Statistical Office of the Slovak Republic

Figure 1 Imports by Major Trade Partners (in %)

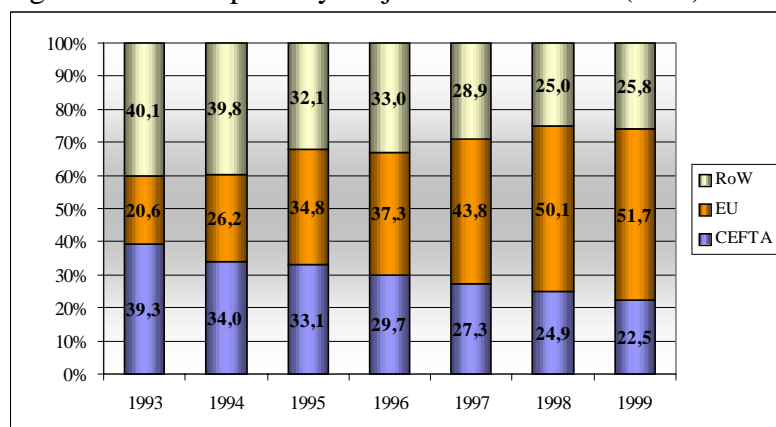
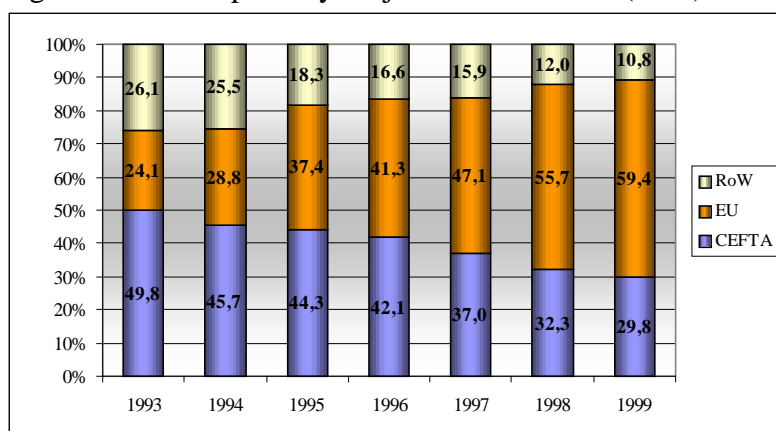


Figure 2 Exports by Major Trade Partners (in %)



Note: RoW = Rest of the world

Table 2 Imports by SITC groups in 1993-1999 (in SKK million FOB/FOB)

Code SITC	Commodity Groups	1993	1994	1995	1996	1997	1998	1999
0	Food and live animals	14 293	14 696	17 980	20 562	22 160	24 249	24 121
1	Beverages and tobacco	2 839	2 734	2 858	3 687	4 115	4 130	5 178
2	Crude materials	10 054	11 175	15 630	16 663	17 347	17 669	17 894
3	Mineral fuels	40 770	40 796	45 646	57 047	61 411	50 291	60 665
4	Oils, fats and waxes	481	608	523	595	722	967	882
5	Chemicals	22 168	27 928	35 360	39 293	45 517	48 843	52 869
6	Manufactures by material	29 457	35 681	46 410	52 117	64 857	82 984	85 765
7	Machinery and equipment	57 049	58 609	75 375	120 062	140 872	185 625	176 935
8	Miscellaneous articles	17 585	19 216	20 756	30 513	35 180	45 758	44 480
9	Others	338	367	252	364	186	211	104
	Total	195 034	211 811	260 791	340 903	393 973	460 736	468 892

Structure in %								
0	Food and live animals	7,3	6,9	6,9	6,0	5,6	5,3	5,1
1	Beverages and tobacco	1,5	1,3	1,1	1,1	1,0	0,9	1,1
2	Crude materials	5,2	5,3	6,0	4,9	4,4	3,8	3,8
3	Mineral fuels	20,9	19,3	17,5	16,7	15,6	10,9	12,9
4	Oils, fats and waxes	0,2	0,3	0,2	0,2	0,2	0,2	0,2
5	Chemicals	11,4	13,2	13,6	11,5	11,6	10,6	11,3
6	Manufactures by material	15,1	16,8	17,8	15,3	16,5	18,0	18,3
7	Machinery and equipment	29,3	27,7	28,9	35,2	35,8	40,3	37,7
8	Miscellaneous articles	9,0	9,1	8,0	9,0	8,9	9,9	9,5
9	Others	0,2	0,2	0,0	0,1	0,0	0,0	0,0
	Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Source: Statistical Office of the Slovak Republic

Table 3 Exports by SITC groups in 1993-1998 (in SKK million FOB/FOB)

Code SITC	Commodity Groups	1993	1994	1995	1996	1997	1998	1999
0	Food and live animals	9 216	9 717	12 826	10 153	11 164	12 144	12 849
1	Beverages and tobacco	1 480	2 011	2 229	1 948	2 207	2 046	2 185
2	Crude materials	8 251	10 974	13 001	12 055	13 761	13 565	16 276
3	Mineral fuels	8 254	9 944	10 780	13 311	14 946	13 235	20 126
4	Oils, fats and waxes	171	218	274	369	497	700	570
5	Chemicals	20 155	27 625	33 663	33 614	34 944	33 579	33 417
6	Manufactures by material	64 999	84 385	103 152	103 572	110 011	113 284	116 385
7	Machinery and equipment	32 560	40 735	48 014	62 735	92 018	141 144	166 899
8	Miscellaneous articles	22 492	28 634	31 088	32 664	44 758	47 967	54 543
9	Others	146	133	69	222	158	144	400
	Total	167 724	214 375	255 096	270 643	324 017	377 807	423 648
Structure in %								
0	Food and live animals	5,5	4,5	5,0	3,8	3,4	3,2	3,0
1	Beverages and tobacco	0,9	0,9	0,9	0,7	0,7	0,5	0,5
2	Crude materials	4,9	5,1	5,1	4,5	4,2	3,6	3,8
3	Mineral fuels	4,9	4,6	4,2	4,9	4,6	3,5	4,8
4	Oils, fats and waxes	0,1	0,1	0,1	0,1	0,2	0,2	0,1
5	Chemicals	12,0	12,9	13,2	12,4	10,8	8,9	7,9
6	Manufactures by material	38,8	39,4	40,4	38,3	34,0	30,0	27,5
7	Machinery and equipment	19,4	19,0	18,8	23,2	28,4	37,4	39,4
8	Miscellaneous articles	13,4	13,4	12,2	12,1	13,8	12,7	12,9
9	Others	0,1	0,1	0,0	0,1	0,0	0,0	0,1
	Total	100,0	100,0	100,0	100,0	100,0	100,0	100,0

Source: Statistical Office of the Slovak Republic

Figure 3 Slovak Imports and Exports by SITC groups – CEFTA (structure in %)

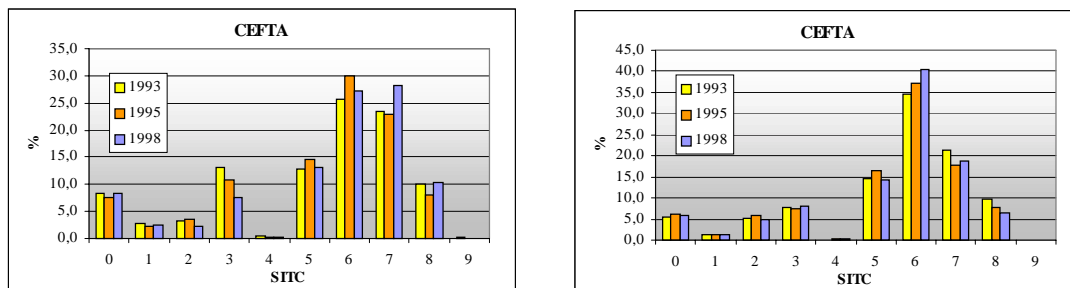


Figure 4 Slovak Imports and Exports by SITC groups – EU (structure in %)

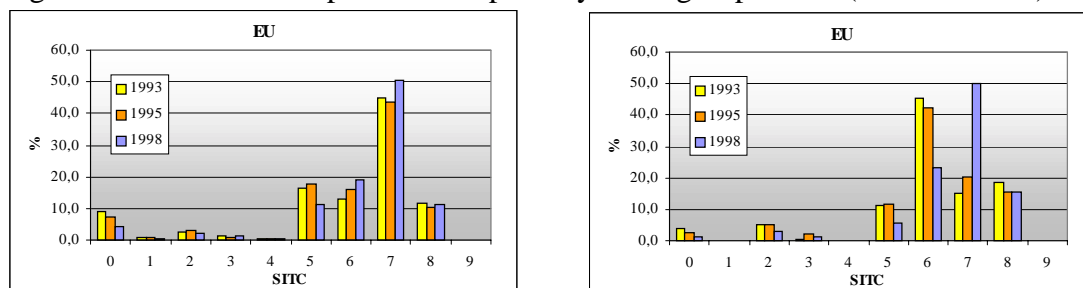
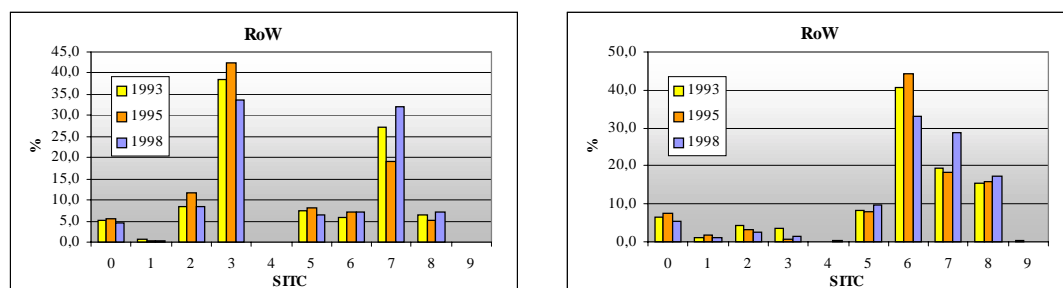


Figure 5 Slovak Imports and Exports by SITC groups – RoW (structure in %)



Source: Statistical Office of the Slovak Republic

The most significant growth in the commodity structure of Slovak exports according to SITC classification was recorded in machinery and transport equipment. This remarkable growth can be assigned to the successful strategy of the automobile producer VW Slovakia and its local supplier network. Export of transport equipment grew most dynamically in trade with the EU. In 1998, SITC 7 commodities generated half of total exports directed to EU member states. Exports to CEFTA countries in terms of commodity structure did not show any notable changes during 1993-1998. Manufactured products of SITC 6 constitute the biggest share in mutual trade, imports included.

Composition of imports was relatively stable in the examined period. With respect to future import structure, two observations are noteworthy: the growing volume and share of machinery and transport imports, and the gradual decline of mineral fuels and related products on total imports. After a slight decrease between 1993-1995, the import of SITC 7 components grew in the commodity structures of all trade partners, most vivid in imports from RoW countries (however, most importantly from EU countries: deliveries to VW plants). Fuels (SITC 3) maintain the position of the strategic commodity group in the import structure from the "rest of the world" countries (RoW, represented dominantly by Russia), however, the decreasing share is evident, also in imports from CEFTA member countries.

Table 4 Top Ten Foreign Trade Partners in 1993 and 1998 (in SKK million FOB/FOB)

Imports				Exports			
1993		1998		1993		1998	
Rank	%	Rank	%	Rank	%	Rank	%
1. Czech Rep.	35.9	1. Germany	25.7	1. Czech Rep.	42.4	1. Germany	28.8
2. Russia	19.5	2. Czech Rep.	18.4	2. Germany	15.2	2. Czech Rep.	20.3
3. Germany	11.4	3. Russia	10.4	3. Austria	5.0	3. Austria	7.5
4. Austria	6.2	4. Italy	6.5	4. Russia	4.7	4. Italy	7.1
5. Italy	3.0	5. Austria	4.7	5. Hungary	4.5	5. Poland	5.9
6. Ukraine	2.4	6. France	3.8	6. Poland	2.9	6. Hungary	4.4
7. Poland	1.9	7. USA	2.9	7. Italy	2.7	7. France	3.4
8. USA	1.8	8. Poland	2.5	8. Ukraine	2.6	8. Netherlands	2.3
9. France	1.5	9. Hungary	2.4	9. France	1.6	9. Belgium	2.1
10. Hungary	1.3	10. Netherlands	2.1	10. Netherlands	1.6	10. Russia	1.9
Total	100.0	Total	100.0	Total	100.0	Total	100.0

Source: Statistical Office of the Slovak Republic

Table 4 indicates the most important shifts in the geographical orientation of Slovak foreign trade in the past years:

Increase in trade with EU member states. Share of EU countries belonging to the group of top 10 importers grew from less than 16 percent to 43 percent during 1993-1998. A similar, perhaps more distinct increase happened in exports (from 21 percent to more than 51 percent share among the top ten destination countries). The highest increments among trade partners were reached by Italy, Austria (exports), Germany (imports), and France.

Decrease in trade with the Czech Republic. The Czech Republic was outrun by Germany as the biggest trade partner. The share of Czech trade partners on total imports and exports shrunk to half of the original share. This trend occurred despite the existing customs union between the Czech and Slovak republics.

Moderate growth of trade with neighbouring CEFTA countries. As opposite to the Czech Republic, trade with Poland and Hungary recorded moderate increases in terms of their share on total Slovak imports and exports. Both countries belong to stable trade partners of Slovakia. Ukraine, as the last to mention neighbour, lost its top ten position during the respective time period.

Diminishing trade volume with Russia. During the six years examined, the share of Russia on total imports and exports sank (likewise the Czech Republic) to half of its initial size. Despite this fact, the Russian Federation maintains its position of a strategic partner due to raw material imports.

2. Imports to Slovakia – Model Specification

In this empirical analysis we will focus on the evaluation of Slovak imports to income and relative prices for SITC groups. For the analysis we used quarterly time series from 1993q1 to 2000q2. Elasticities and statistical characteristics of econometric equations are in appendix B. The following import function is aggregated for all SITC groups and regions together. In this case the import function is defined as follows:

$$LM = f \left(LY, L \left(\frac{P_{import}}{P_{domestic}} \right), LIRI, LFDI, L \left(\frac{C}{Y} \right), L \left(\frac{I}{Y} \right), LE, \varepsilon \right) \quad (1)$$

where:

LM	- logarithm of import of goods, in constant prices 1995
LY	- logarithm of gross domestic product, in constant prices 1995
$L(P_{import}/P_{domestic})$	- logarithm of ratio between import price index and producer price index
LRI	- logarithm of loan interest rate
LFDI	- logarithm of inflow of the foreign direct investment, in constant prices
$L(C/Y)$	- logarithm of ratio of private consumption on gross domestic product
$L(I/Y)$	- logarithm of ratio of investments on gross domestic product
LE	- logarithm of export of goods, in constant prices 1995
ε	- random term

First we estimated this equation without the variable LE as shown in appendix B. The variables LFDI and $L(I/Y)$ did not appear significant and thus we tried to estimate this equation without the two variables. In this following equation, all variables were significant. The determination index R^2 (value 0.87) suggest that the chosen model of the aggregate import model function was able to explain the development of the aggregate import properly.

The price elasticity is -2.34. It means that a one percent increase in prices will result in an decrease in the aggregate import by 2.34%. Higher income elasticity (1.7) describes the worse position in competitiveness. Based on these two elasticities we can conclude that price competition and development of the gross domestic product were important factors of the development of the imports in the Slovak Republic during 1993-2000. Elasticity of the interest rate is -0.85. It indicates that the development of the interest rate had important influence on Slovak import as well.

We estimated also the equation of import with policy variables such as exchange rates and import surcharge, but these variables were insignificant. An equation with exogenous variables Y, prices, private consumption and export had also good characteristic, but price elasticity was positive (1.28). This fact was against this variant of equation.

The next function of aggregate import of goods and services for all Slovak economy was based on the following function:

$$MGS = f\left(\frac{P_{import}}{P_{domestic}}, DOP, EGS, T3, \varepsilon\right) \quad (2)$$

where

MGS	- imports of goods and services, in constant prices 1995
P_{import}	- imports price index
$P_{domestic}$	- producer price index
DOP	- domestic demand, in constant prices 1995
EGS	- export of goods and services, in constant prices 1995
T3	- dummy 0,1 variable (value 1 for 3. quarter)
ε	- random term

This function characterises total Slovak imports and is part of the complex model. The characteristics are in Appendix A.

2.1. Estimation for SITC Groups

In this section we tried to estimate the sensitivity of Slovak imports to prices and demand indicator. For this purpose we took domestic demand (private consumption + government consumption + investments, or industrial production, or only private consumption, or sum of private and government consumption, or GDP). We used three kinds of prices: ratio between import price index and producer price index or consumer price index, and some equations were dependent only on import price index. In the empirical analysis we tried to model the best equations, but in most cases it was not successful. The general specification of the import equation is the following:

$$LM_i^k = f(LDEM, LP, \varepsilon) \quad (3)$$

where

LM_i^k	- logarithm of import in k-th group SITC and i-th geographical group
$LDEM$	- logarithm of domestic demand
LP	- logarithm of prices
ε	- random term

We have created two joint SITC groups which were used in the following estimation:

SITC 0 +1	food and beverages
SITC 2+3+4	raw materials
SITC 5	chemicals
SITC 6	manufactured goods
SITC 7	machinery and equipment
SITC 8	manufactured articles

The group SITC 9 has an irrelevant share in Slovak imports, so it has been excluded from the computations. Total imports to Slovakia has been divided into four geographical regions: EU, CEFTA, RW - rest of the world and W - World. The equation for disaggregated imports is:

$$M_W^k = M_E^k + M_{CEFTA}^k + M_{RW}^k \quad (4)$$

The results of estimation are shown in Table 5 and statistical characteristics are in Appendix C. These equation were estimated by the OLS method.

Table 5 Relative price elasticities of Slovak imports⁸

Region	SITC												weighted average
	0+1		2+3+4		5		6		7		8		
EU	-0.03	**	1.61	***	-1.85	*	-4.15	*	-2.50	*	-4.10	*	-2.64
CEFTA	-0.99	*	0.76	*	-0.02	**	-0.03	**	-0.04	**	-0.64	***	-0.12
RW	-0.06	**	2.23	*	-2.93	*	-3.84	*	-0.86	*	3.32	*	0.68
W	-0.02	**	1.66	*	-1.46	*	-2.64	*	-2.49	*	-1.22	*	-1.39

Notes:

* - rate between import price index and producers price index

⁸ The regression coefficients that are statistically significant with the 5% significance level are in bold.

- ** - rate between import price index and consumers price index
 *** - import price index

Weights (in Table 6) used in computing weighted averages of relative price elasticities were calculated from average imports of years 1998, 1999, 2000. The particular weight w_i^k is the share of the particular group k on total imports within a geographical region i.

Table 6 Weights of imports by regions and SITC groups

Region	SITC					
	0+1	2+3+4	5	6	7	8
EU	0.04	0.04	0.12	0.20	0.50	0.10
CEFTA	0.12	0.11	0.14	0.26	0.27	0.10
RW	0.04	0.52	0.06	0.08	0.24	0.06
WORLD	0.06	0.18	0.11	0.18	0.38	0.09

Table 7 Average share of each group on total imports for years 1998-2000

Region	0+1	2+3+4	5	6	7	8	9	total
EU	2.12%	1.98%	6.14%	9.85%	24.90%	5.25%	0.01%	50.24%
CEFTA	2.66%	2.45%	3.19%	6.12%	6.26%	2.41%	0.02%	23.11%
RW	1.08%	13.75%	1.64%	2.04%	6.44%	1.70%	0.01%	26.65%
WORLD	5.87%	18.17%	10.96%	18.01%	37.60%	9.36%	0.03%	100.00%

Imports of SITC 0+1 which are food and beverages include almost 6%⁹ of total imports, which is a small share. Most of consumption imports come from CEFTA countries. Equations of these groups except for CEFTA were dependent on the rate between import prices and consumer prices. It means that consumers decide about imports of these commodities. If prices of Slovak goods are higher than imported, they will buy foreign goods, hence the demand for import grows. The sign of this price elasticity has to be negative, which was the case of all geographical regions. Imports from CEFTA has producers prices in the denominator of price rate. Private consumption was significant for EU and the world as domestic demand, while for CEFTA it was the sum of private and government consumption. It is understandable, because most of these imported goods are destined for people. Import from the rest of the world (RW) was dependent on industrial production. It means that from this region we import semi-products that are processed in Slovakia and then sold. In the equations is also another explanatory variable, seasonable variable, which has value 1 in the third quarters and 0 otherwise. It seems correct, because in autumn people are consuming vegetables and fruits from their own gardens, thus the need for importing these goods is low.

Eighteen percent of imports to Slovakia are imports of raw materials, group of SITC 2+3+4. The most of these materials come from the rest of the world region, particularly from Russia (import of gas and oil). The explanatory variables were import prices or rate between import prices and producer prices. All price elasticities were positive. Insufficient indigenous natural resources force Slovakia to import these commodities independently on prices. Only one price elasticity was not significant – for CEFTA and its value was 0.76. Other price elasticities have values more than 1. Other explanatory variables were as follows: for EU – domestic demand, CEFTA – GDP, and for rest of the world RW and WORLD – industrial production.

⁹ Share on total import was computed from average imports of years 1998-2000.

SITC 5 group covers chemicals. On average, we imported chemicals and chemical products for 165 bil. SKK in the last 3 years, which is around 11% of total imports. The most of them are from EU, 60 percent. Equation of this group was dependent on industrial production, thus we can conclude that most of chemicals imported from EU are processed in our country. On the other hand, chemicals imported from CEFTA and rest of the world were dependent on domestic demand. They are probably destined for consumers. Also, dependence of imports from CEFTA on the consumer price index points to this fact. Industrial production was significant for imports of SITC 5, which is correct, because of most chemicals being imported from EU countries. Except for CEFTA, import from all regions was dependent on the rate between the import price index and producer price index. All price elasticities were negative which is economically correct; the higher the prices of imports are, the less volume of products we import. On the other side, if producer prices are high, imports are cheaper, it is more useful to import these products. Price elasticity of chemicals from CEFTA was close to 0, which means that import from these countries is not very sensitive to changes in prices. We have tried to model it also with other price indexes, but the results were negligible.

Imports of group SITC 6 include 18% of all imports, which is a similar share as imports of raw materials. These equations were dependent in most cases on domestic demand, only imports from rest of the world has as explanatory variable industrial production. But this import covers only 11% of total SITC 6 imports. The most important partner is the EU with a half of imports of manufactured goods and 10% of total imports to Slovakia. In this equation, explanatory variables are domestic demand and the rate between import price index and producer price index. Elasticity of demand is 3.66% and is statistically significant. The positive value is economically correct and means that a one percent increase of domestic demand will result in a growth in the import of manufactured goods by 3.66%, which is a relatively high number. For SITC 6 imports all regions have as explanatory variable the rate between import prices and producer prices except for CEFTA, with a statistically more significant rate between import prices and consumer prices. All price elasticities have negative sign and statistically significant ones have value less than one. The highest sensitivity was in imports from EU (-4.15).

Imports of machines and equipment take over a third of all Slovak imports, 37.6%. The biggest share on SITC 7 imports have EU countries (66%), which represents 24.9% of total imports. SITC 7 is thus essential for Slovak imports. Equations of these imports were dependent on domestic demand or industrial production. Import from EU was dependent on domestic demand, which means that most of the imported goods are destined for consumers. Elasticity is 3.65. The other explanatory variable for this group is the rate between import prices and producer prices. Price elasticity is -2.49, which points above all to the high price sensitivity of imports of machines and equipment from the EU. All regions have negative price elasticities, and the variable was the rate between import prices and producer prices except for CEFTA. For imports from CEFTA, the variable uses consumer prices in denominator, but the elasticity is -0.038, which means low price sensitivity.

Imports of manufactured articles represent only 10% of total imports. The lowest share of SITC 8 with 18% has RW, which is 1.7% of total import. The highest share have EU countries, 56% in 1998-2000 (5.25% of total import). Explanatory variables of this group were private consumption plus government consumption (C+G), which is domestic demand without investments. Industrial production and C+G are significant in the equation of SITC 8 imports from CEFTA, which means that a part of these articles is destined for consumers and

a part is used for further production. Import from EU is also dependent on industrial production. Elasticities of these variables are all positive and higher than 1. Variables of prices are the same for all regions except for CEFTA. The most significant for CEFTA was the import price index, for other regions it was the rate between import price index and producers price index. All prices are statistically significant and have negative values except for rest of the world. But this equation is not very important, because imports of SITC 8 from this region representing only 1.7% of total imports to Slovakia.

The average price elasticity of import from the EU region has value -2.64, which is economically correct. Imports from EU take a 50% stake of total import, thus is very important. For EU, Slovakia reports the highest average price elasticity of all regions. Average price elasticity for import from the rest of the world has a positive sign. It is obvious, since half of imports from this region is SITC 2+3+4 commodities and elasticity for this region is also positive. Average price elasticity of all imports is negative, and its value is -1.38. Finally we can conclude that the best statistical characteristics were reached for the region of EU and the worst for CEFTA.

Table 8 shows the elasticities of demand and the variables which were used.

Table 8 Elasticities of demand

Region	SITC						
		0+1	2+3+4	5	6	7	8
EU	elasticity	1.87	2.58	2.77	3.67	3.65	3.70
	variable	<i>C</i>	<i>DOP</i>	<i>PIND</i>	<i>DOP</i>	<i>DOP</i>	<i>PIND</i>
CEFTA	elasticity	1.67	-0.58	0.40	0.42	1.18	1.49, 1.00
	variable	<i>CPG</i>	<i>Y</i>	<i>DOP</i>	<i>DOP</i>	<i>DOP</i>	<i>CPG, PIND</i>
RW	elasticity	-0.83	1.17	-0.62	1.28	1.29	1.58
	variable	<i>PIND</i>	<i>PIND</i>	<i>DOP</i>	<i>PIND</i>	<i>PIND</i>	<i>CPG</i>
W	elasticity	1.29	1.13	1.44	1.69	2.58	2.99
	variable	<i>C</i>	<i>PIND</i>	<i>PIND</i>	<i>DOP</i>	<i>DOP</i>	<i>DOP</i>

Notes:

- C - private consumption
- DOP - domestic demand
- PIND - industrial production
- CPG - private consumption + government consumption
- Y - gross domestic product

3. Exports from Slovakia – Model Specification

The purpose of this empirical analysis is the evaluation of Slovak exports to world income and relative prices for SITC groups. Similarly as for imports, we used quarterly time series from 1993q1 to 2000q2. Elasticities and statistical characteristics of econometric equations are in Appendix B. The following function is aggregated for all SITC groups and regions. The export function is defined as follows:

$$LE = f \left(LMDP, L \left(\frac{P_{world}}{P_{export}} \right), LEURSK, LUSDSK, LFDI, \varepsilon \right) \quad (5)$$

where:

LE - logarithm of export of goods, in constant prices 1995

LMDP	- logarithm of import of developed countries
P_{world}	- logarithm of unity price of imports of developed countries
P_{export}	- logarithm of export price index
LEURSK	- logarithm of exchange rate SK/EURO
LUSDSK	- logarithm of exchange rate SK/USD
LFDI	- logarithm of inflow of the foreign direct investment, in constant prices
ε	- random term

The next function of aggregate export of goods and services for the entire Slovak economy was based on the following function:

$$EGS = f(MDSK(-1), DPM, T1, \varepsilon) \quad (6)$$

$$IND = \frac{USDSK}{29,503} \quad (7)$$

$$PM = \frac{PEGS}{UIMD95 \times IND} \quad (8)$$

$$DPM = PM - PM(-1) \quad (9)$$

$$MDSK = MDP \times USDSK \quad (10)$$

where:

EGS	- exports of goods and services, in constant prices 1995
PEGS	- export price index
UIMD95	- unity price of imports of developed countries, 1995
USDSK	- exchange rate SK/USD
MDP	- import of developed countries
T1	- dummy 0,1 variable (value 1 for 1st quarter)
ε	- random term

This function characterises total Slovak export and is a part of the complex model. The results of estimation are in Appendix A.

3.1. Estimation for SITC groups

Generally, results of estimated export equations were in most cases poor. We have tested various explanatory equations, but it was not possible to obtain good results. For the analysis we used quarterly time series from 1994q1 to 2000q4. Elasticities and statistical characteristics are in Appendix C. The equation for each SITC group and geographical territory is following:

$$LE_i^k = f(LMDP, LP, \varepsilon) \quad (11)$$

where:

LE_i^k	- logarithm of exports in k-th group SITC and i-th geographical group
LMD	- logarithm of foreign demand

- LP - logarithm of prices
 ε - random term

Accordingly, total exports from Slovakia has been divided into four geographical regions: EU, CEFTA, RW - rest of the world and W - World. For disaggregated imports it is:

$$E_w^k = E_{EU}^k + E_{CEFTA}^k + E_{RW}^k \quad (12)$$

In the following Table 9 are average shares of exports for each group, for years 1998-2000:

Table 9 Average share of each group on total exports for years 1998-2000 ¹⁰

Region	SITC							
	0+1	2+3+4	5	6	7	8	9	total
EU	0.65%	3.24%	2.82%	12.90%	29.70%	8.97%	0.00%	58.28%
CEFTA	2.14%	5.30%	4.34%	11.17%	5.59%	1.93%	0.02%	30.49%
RW	0.58%	0.47%	1.03%	3.76%	3.60%	1.74%	0.05%	11.22%
W	3.37%	9.00%	8.20%	27.83%	38.90%	12.64%	0.07%	100.00%

Group SITC 9 has an irrelevant share in Slovak export (similarly to import), so it was excluded. Joint SITC groups are the same as for imports.

We will discuss only equations of the groups in which the share on total exports is more than 3%. The argument for this decision were the poor results of estimation. The indicated shares of each group are only average shares for last three years. But, if we took quarterly time series, they have various values, independent on time or other situation. Hence modelling of these time series is impossible. Groups which will be discussed are highlighted in Table 9. In case of exports we can not compute average weighted elasticities, because in some equations these variables were not significant; we used various price variables, which are not comparable.

For EU we took imports of developed countries as foreign demand. For all equations it was a significant variable and in all cases the demand elasticities have positive value, which is economically correct. If developed countries import more goods, it is most likely that Slovakia will export more goods to these countries. The elasticities are in the following table:

Table 10 Foreign demand elasticities for exports to EU

SITC	2+3+4	6	7	8
EU	3.64	1.85	4.49	1.55

It is evident from the table that all elasticities have value higher than 1. The highest elasticity is for SITC 7, which is machinery and equipment. Its value is 4.49. This group has the highest share on total Slovak exports, 29.7%. We can conclude that export of these goods is highly sensitive to imports of developed countries. The lowest elasticity was for SITC 8, 1.55. Now we will discuss price variables. Export prices of developed countries were a statically significant variable for SITC 2+3+4. The value of this elasticity is 2.56. The positive sign is not economically correct. However, the share of these exports is only 3.24% of the total volume of Slovak exports. Thus, there may appear the same problem with time series as for other groups that we don't discuss. For the export of manufactured goods, explanatory variable

¹⁰ In bold are shares which are higher than 3%.

is the rate between prices of imports of developed countries and Slovak producers prices. Value of this elasticity is 0.8. Sign of this elasticity is economically correct. If the import prices of foreign countries are higher, we will export more goods. And if our producers prices are higher, the price rate will be lower, hence we export less goods. The value of this elasticity has to be positive. In equation for SITC 7, no price variable was significant, but there was the explanatory variable exchange rate between EUR/SKK.¹¹ This elasticity has value 2.21, which means that export of machines and equipment is sensitive to changes in the exchange rate. And the last equation of exports to EU (SITC 8) uses as the explanatory variable the rate between import prices of developed countries and Slovak export prices. The other explanatory variable of this equation is likewise for SITC 7 the exchange rate SKK/EUR. The export to EU has a major share on total exports from the Slovak Republic (58%).

For the CEFTA region we don't have a time series for demand of these countries, so we had to use alternative variables such as Slovak industrial production and others, which will be discussed in next section. We will discuss four equations for this region. The first is the SITC 2+3+4 group. This item is not very important for Slovakia because of the lack of natural resources, we can export only imported raw materials. We tried to model this equation but statistical characteristics were not very telling. One explanatory variable was the Slovak gross domestic product. Sign of this elasticity was negative, which we can explain as follows: when the Slovak GDP grows, it means that we have processed more imported raw materials, hence we can export less of these resources. For the other three equations, there was the explanatory variable industrial production. It is clear, because if we produced more goods, we can export more of them. Thus the value of this elasticity has to be positive. These elasticities are in following table:

Table 11 Elasticities of industrial production for SITC 5, 6, 7 for export to CEFTA

SITC	5	6	7
CEFTA	0.37	0.44	0.49

As we can see, these elasticities are less than 1, but they are positive, what is economically correct. For SITC 6 and SITC 7 we tried to estimate these equations with various price indices, but no one was significant. So, in these equations were no prices as explanatory variables. For SITC 5 group, a significant variable was the rate between Slovak export prices and world import prices. This price elasticity has value -0.12. This value is economically correct. If Slovak prices of export are high, foreign countries will import these goods from countries where the products are cheaper.

The rest of the world is the destination of only 11% of total exports of the SR. For this region, we will discuss only two equations, namely for groups SITC 6 and SITC 7. But even the export of these two groups has only a small share on exports. They make up only 3.7% and 3.6%, respectively. Results of estimation of these two equations were the best of all commodity groups of this region, but they were not very significant. For SITC 6 there was only one significant variable – the rate between export prices of developed countries and our export prices. This elasticity has value 1.04. The sign of it is correct, because if the prices of developed countries are higher than Slovak prices, the countries of the rest of the world import rather goods from Slovak, because they are cheaper. Two variables were significant for SITC 7. One of them was import of developed countries. It means that within the group of

¹¹ Exchange rate SKK/EUR means how many of Slovak crowns cost one EURO

machinery and equipment we export mainly to the developed countries of rest of the world. The elasticity is 0.66, which is correct. Other explanatory variable of this equations is the exchange rate, computed as follows:

$$\text{exchange rate} = 0.4 * \text{SKK/USD} + 0.6 * \text{SKK/EUR}$$

Elasticity of this variable is 1. The sign of it is correct.

In the last section we will analyse exports to the WORLD by SITC groups. Demand of developed countries is the explanatory variable in all equations. The elasticities are shown in Table 11. Average elasticity is a weighted average of all the elasticities. Weights, which were used for computing elasticity are also in this table.

Table 11 Elasticities of imports of developed countries for exports to World

SITC	0+1	2+3+4	5	6	7	8	average
weight	0.03	0.09	0.08	0.28	0.39	0.13	
elasticity	0.11	0.62	0.56	0.54	1.85	0.75	1.07

All demand elasticities are positive. The highest value has elasticity for SITC 7, 1.85. This group has also the highest share on total export, 38.9%. The lowest elasticity was in equation for SITC 0+1. The share of this group on total exports is only 3.4%, which is negligible. The weighted average elasticity is 1.07, despite the SITC 7 being the only with a value above 1 (but this group has the highest influence). Price variables are various for each group. For exports of consumption goods there was no relevant price variable. Export of raw materials was dependent only on exchange rate. This elasticity is 1.23, it is positive and thus economically correct. For export of chemicals there is one price variable, the rate between import prices of developed countries and producers prices of the Slovak Republic. Value of this elasticity is 0.56. Import prices of developed countries was a significant variable for SITC 6, with the value of elasticity 0.54. The last two elasticities have correct signs. The best equation was for SITC 7. The price variable in this equation was computed as follows:

$$\text{price} = \text{prices of imports of developed countries} / (\text{exchange rate} * \text{Slovak export prices})$$

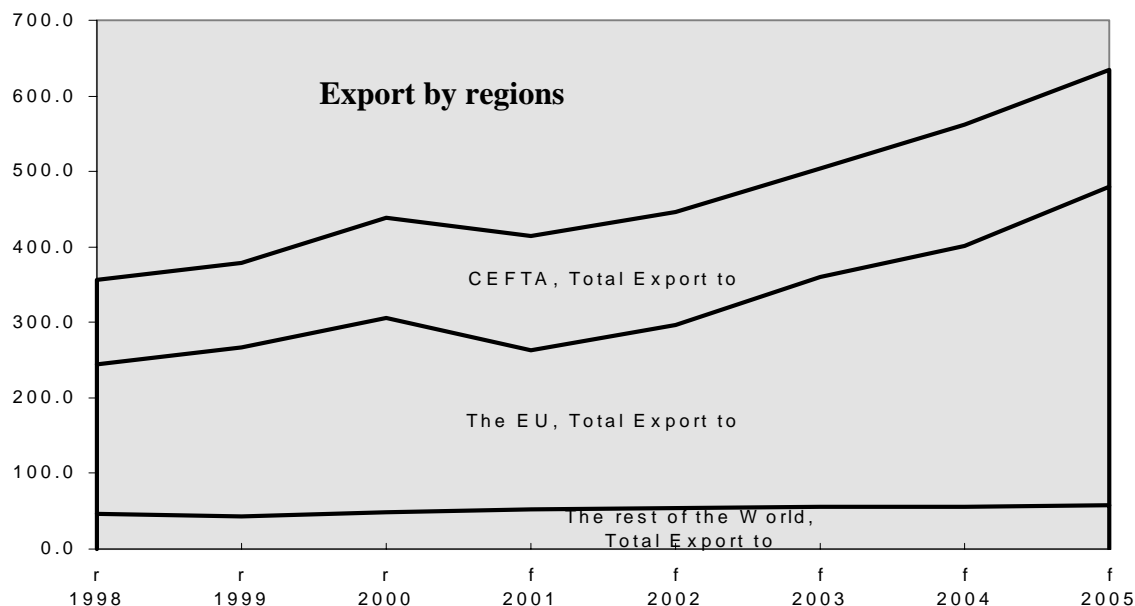
This elasticity has to be negative. In our case it was -1.01. We can conclude that the export of machinery and equipment is sensitive to prices and also to changes in exchange rate. The last group we discussed is the export of manufactured articles. This export was not dependent on any price index. As explanatory variable there was only exchange rate. Its elasticity is 1.15.

4. Forecast of the Foreign Trade of the Slovak Republic for Years 2001 to 2005

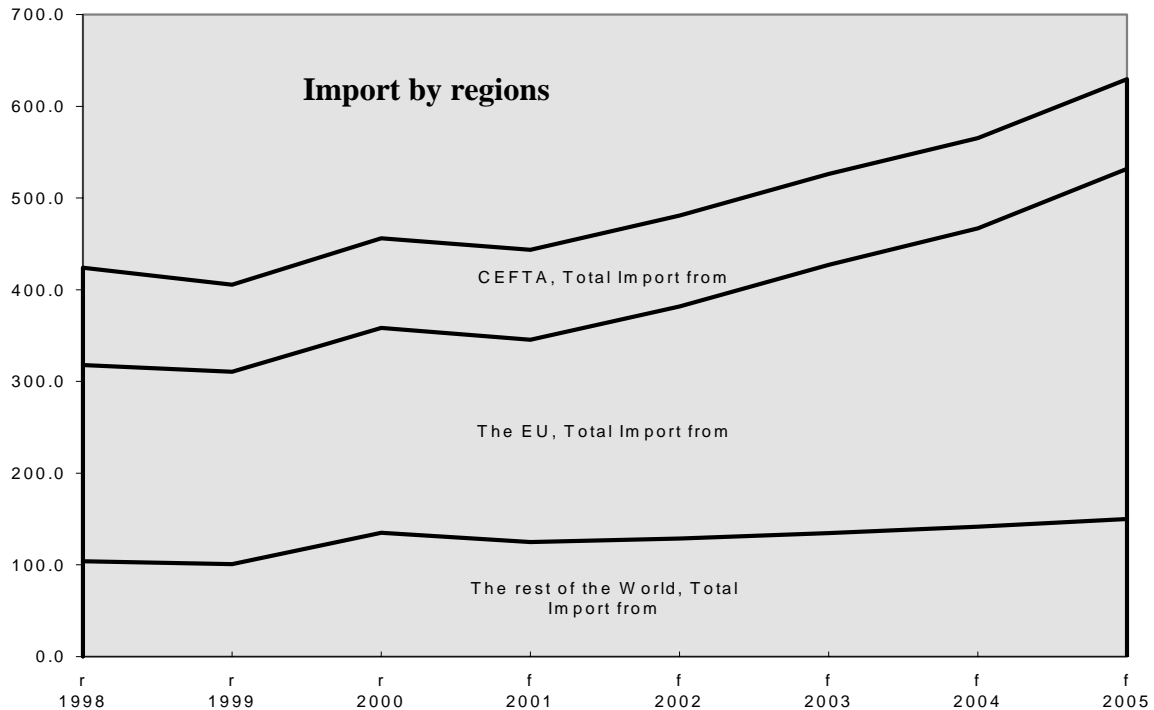
Based on the equations specified in the previous chapter we have prepared this forecast of the foreign trade of the Slovak Republic for years 2001 to 2005. All financial indicators are in billions of Slovak crowns, at fixed prices of 1995. Percentage shares are proportions of export or import (as appropriate) for the given year.

The export of the Slovak Republic will rise from 436 bil SKK in 2000 to 614 bil SKK in 2005. This represents roughly 10% growth per year in fixed prices. More than half of this export is aimed at the EU. This portion will gradually increase from current 59% to 64%. The

volume of export to the EU will increase from current 258 bil SKK to 394 bil SKK in 2005. The export to CEFTA will slightly increase from 132 bil SKK in 2000 to 161 bil SKK in 2005, with smaller rates of growth in 2002 and 2003. Its share will increase from 30% in 2000 to 32% in 2001 and then gradually decrease to 26% in 2005. The export to the rest of the world will be gradually rising from 49 bil SKK in 2000 to 58 bil SKK in 2005, which is an average 2% growth. The share of the rest of the world will decrease from 11% to 9% in 2005 with an expansion in 2001 to 13%.



The import of the Slovak Republic will increase from 456 bil SKK in 2000 to 629 bil SKK in 2005, which represents an average growth of 10% per year. Around half of these imports comes from the EU, in 2005 this share will grow to approximately 60%. The volume will grow from current 223 bil SKK to 382 bil SKK in 2005, which represents around 11% growth per year. The import from the rest of the world will decrease from 135 bil SKK in 2000 to 125 bil SKK in 2001, and hence correct the unreasonable rise from 100 bil SKK in 1999. After this decrease, the import will gradually increase to 150 bil SKK in 2005, which represents around 5% annual rise. Its share will similarly decrease from current 30% to 24% in 2005. The import from CEFTA will be at almost constant volume, slightly below 100 bil SKK. Therefore CEFTA's share will decrease from current 21% to 16% in 2005.



The trade balance will remain negative. From current -20 bil SKK it will grow to -31 bil SKK in 2002 and then slightly decrease to -16 bil SKK. These negative figures are caused mainly by the rest of the world, with which Slovakia has a high trade deficit. This deficit rose from -58 bil SKK in 1999 to -86 bil SKK in 2000. After this increase, it will drop back to -72 bil SKK and then gradually increase to -92 bil SKK. The trade balance with the EU has a more complicated development. It was -16 bil SKK in 1998, +15 bil SKK in 1999, +35 bil SKK in 2000. In 2001 and 2003 it will be 13 bil SKK, then 11 bil SKK in 2004 and 13 bil SKK in 2005. The trade balance with CEFTA is positive, it will rise from +7 bil SKK in 1998 to +36 bil SKK in 2001. After that there will be a slight increase to +43 bil SKK in 2003, and then stagnation at about +60 bil SKK in 2004 and 2005.

Table 12 Total foreign trade

Year		The EU			CEFTA			The rest of the World			The World		
		Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance
1998	r	213,8	197,8	-16,0	105,9	112,9	7,0	104,1	45,9	-58,2	423,8	356,6	-67,2
1999	r	209,9	224,4	14,5	94,9	111,8	16,9	100,9	43,1	-57,9	405,7	376,7	-29,0
2000	r	223,4	257,9	34,5	97,7	131,5	33,9	135,1	49,1	-86,0	456,1	436,2	-19,9
2001	f	220,3	233,6	13,3	98,3	134,4	36,2	124,9	52,9	-72,0	443,5	420,9	-22,6
2002	f	252,8	256,8	4,0	99,1	139,2	40,1	128,8	54,0	-74,8	480,6	450,0	-30,7
2003	f	292,4	305,6	13,2	99,1	142,3	43,2	134,7	55,4	-79,3	526,2	503,3	-22,9
2004	f	325,0	335,7	10,7	98,6	156,4	57,8	141,8	56,5	-85,3	565,4	548,6	-16,8
2005	f	381,5	394,4	12,9	97,7	161,2	63,5	150,1	57,9	-92,3	629,3	613,5	-15,8

Table 13 Total foreign trade (shares in %)

Shares on total exports-imports							
Year		The EU		CEFTA		The rest of the World	
		Import from	Export to	Import from	Export to	Import from	Export to
1998	r	50.4%	55.5%	25.0%	31.7%	24.6%	12.9%
1999	r	51.7%	59.6%	23.4%	29.7%	24.9%	11.4%
2000	r	49.0%	59.1%	21.4%	30.1%	29.6%	11.3%
2001	f	49.7%	55.5%	22.2%	31.9%	28.2%	12.6%
2002	f	52.6%	57.1%	20.6%	30.9%	26.8%	12.0%
2003	f	55.6%	60.7%	18.8%	28.3%	25.6%	11.0%
2004	f	57.5%	61.2%	17.4%	28.5%	25.1%	10.3%
2005	f	60.6%	64.3%	15.5%	26.3%	23.9%	9.4%

Food and beverages

One of the several foreign trade fields is the food and beverages commodity group. In this field, no rapid changes are occurring. Export to each region – EU, CEFTA and the rest of the world – will remain almost constant. The percentage share on total exports will gradually decline from 3% to 2%. The import, after a slight decline in 1999 and 2000, will be moderately increasing, from current 24 bil SKK to 27 bil SKK. The imports from each region will increase proportionally. The share on total imports will decrease from current 5% to 4%. The trade balance will be negative and increasing from 11 bil SKK in 2000 to 14 bil SKK in 2005. The food and beverages trade balance with the rest of the world will be almost balanced, but with the EU, it will be negative, between 6.5 and 7.5 bil SKK, with CEFTA between 4 and 6 bil SKK.

Since foreign trade with food and beverages is very "policy sensitive", many external factors may influence the development. Therefore, in case of Slovakia after EU accession and the removal of all foreign trade restrictions (such as import quotas, export dumping), the foreign trade with the EU and CEFTA will increase and the trade with the rest of the world will stagnate.

Table 14 Food and beverages

Year		The EU			CEFTA			The rest of the World			The World		
		Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance
1998	r	9.7	2.4	-7.2	11.6	8.1	-3.4	5.0	5.0	0.0	26.3	13.3	-12.9
1999	r	8.7	2.4	-6.3	12.0	8.7	-3.2	4.7	4.7	0.0	25.4	13.4	-12.0
2000	r	9.1	2.7	-6.4	10.9	8.3	-2.6	4.2	4.2	0.0	24.2	12.9	-11.3
2001	f	8.9	2.5	-6.5	10.7	6.3	-4.4	4.8	4.3	-0.5	24.4	13.0	-11.4
2002	f	9.1	2.5	-6.6	11.1	6.3	-4.7	4.8	4.2	-0.6	25.0	13.0	-12.0
2003	f	9.4	2.6	-6.8	11.4	6.4	-5.0	4.7	4.0	-0.7	25.6	13.1	-12.5
2004	f	9.7	2.7	-7.0	11.9	6.6	-5.3	4.7	3.9	-0.8	26.3	13.2	-13.1
2005	f	10.2	2.8	-7.4	12.4	6.7	-5.7	4.7	3.7	-1.0	27.2	13.2	-14.0

Table 15 Food and beverages (shares in %)

Shares on total exports-imports									
Year		The EU		CEFTA		The rest of the World		The World	
		Foods and beverages		Foods and beverages		Foods and beverages		Foods and beverages	
		Import from	Export to	Import from	Export to	Import from	Export to	Import from	Export to
1998	r	2.3%	0.7%	2.7%	2.3%	1.2%	1.4%	6.2%	3.8%
1999	r	2.1%	0.6%	3.0%	2.3%	1.2%	1.3%	6.3%	3.6%
2000	r	2.0%	0.6%	2.4%	1.9%	0.9%	1.0%	5.3%	3.0%
2001	f	2.0%	0.6%	2.4%	1.5%	1.1%	1.0%	5.5%	3.1%
2002	f	1.9%	0.6%	2.3%	1.4%	1.0%	0.9%	5.2%	2.9%
2003	f	1.8%	0.5%	2.2%	1.3%	0.9%	0.8%	4.9%	2.6%
2004	f	1.7%	0.5%	2.1%	1.2%	0.8%	0.7%	4.6%	2.4%
2005	f	1.6%	0.5%	2.0%	1.1%	0.7%	0.6%	4.3%	2.2%

Raw materials and mineral fuels

Since Slovakia has virtually no natural resources, it has to import almost all of them. The main partners for the import of raw materials, fuel and oil is Ukraine and Russia, in this model as the main portion of the rest of the world. The volume of this import was 45 bil. SKK in 1998 and 49 bil. SKK in 1999, which was around 70 and 72 percent of total import of raw materials, fuel and oil. In year 2000, there was a rapid rise of the import from the rest of the world, 79 bil. SKK, which was a share of 80 percent of this segment's total imports. In 2001, the import of natural resources from the rest of the world is to decrease to 66 bil. SKK, remain almost stable in 2002 and then increase steadily by 4% every year. The imports from CEFTA will decrease steadily from 11 bil. SKK in 2000 to 9 bil. SKK in 2005. Imports from the European union will increase more rapidly, from current almost 9 bil. SKK to almost 17 bil SKK, with 16% rise in 2001, almost 14% rise in 2002 and 2003 and again 16% rise in 2004 and 2005. The imports of raw materials, mineral fuels, oil, fats and waxes will rapidly decrease from current almost 100 bil SKK, and then gradually increase to roughly 100 bil SKK. The share on total imports will decrease to 16.2%.

For some of the imported natural resources the Slovak Republic serves only as a transit country. The re-export to the rest of the world is symbolical, less then 2 bil SKK, and that shall remain so, with a decreasing trend. The export to CEFTA rose a lot over the last three years, from 15 bil SKK in 1998, through 18 bil SKK in 1999 to 28 bil SKK in 2000. In 2001, the rapid increase of 2000 will be lowered to 25 bil SKK. In 2002 and 2003, it will reach almost 27 bil SKK and then decrease to 25 bil SKK in 2005. The portion of these exports on total exports increased from 4% in 1998 to more than 6% in 2000. In 2001 and 2002, it will be almost 6%, and then it will decrease to 4% in 2005. The exports of raw materials, mineral fuels, oils, waxes, and fats to the European union increased from 9 bil SKK (2.5%) in 1998, through 13 bil SKK (3.4%) in 1999, to 16 bil SKK (3.6%) in 2000. In 2001 it will slightly lower to almost 15 bil SKK (3.4%), and then rise to almost 16 bil SKK (3.5%) in 2002. After that, there will be a steady growth of 20% per year to 27 bil SKK in 2005.

Slovakia has had and will have a trade deficit in this area. In 1998, it was 38 bil SKK, in 1999 36 bil SKK, and in 2000 53 bil SKK. In the future, the deficit will be fluctuating between 45

and 50 bil SKK. This trade deficit was and will be caused by trade deficit with the rest of the world, which after a rapid rise in 2000 to 78 bil SKK will drop down to 66 bil SKK in 2001 and then steadily rise to 76 bil SKK in 2005. The trade balance with the European union is positive and will remain so, with a slight increase from 4 bil SKK in 1999 to 11 bil SKK in 2005, with a stagnation in 2001 and 2002. The trade balance with CEFTA will develop similarly, but with a stagnation in 2002 to 2005 (16 bil SKK).

If Slovakia enters the European union, it will have to adapt its import duties to match European Union standards. This will have a very direct impact on the import of raw materials and mineral fuels from Russia and Ukraine (the rest of the world), since currently there is minimal, if any, import duty on these imports. Import of raw materials and mineral fuels is in most cases – as shown by our empirical analysis – not price sensitive. Due to the fact that prices of the imported goods from outside the European union will be raised by the import duty, the imports from the rest of the world will tend to decrease (however, the trend is moderate) and the imports from European union (CEFTA being part of it) will tend to increase. The overall trade deficit will not change by lot.

Table 16 Raw materials and mineral fuels

Year		The EU			CEFTA			The rest of the World			The World		
		Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance
1998	r	8.0	8.8	0.9	10.9	15.0	4.2	44.8	2.0	-42.8	63.6	25.9	-37.8
1999	r	8.8	12.7	3.9	10.2	18.4	8.2	49.4	1.7	-47.6	68.5	32.9	-35.6
2000	r	8.7	15.9	7.1	10.5	27.6	17.0	79.4	1.8	-77.6	98.6	45.2	-53.4
2001	f	9.5	14.3	4.8	10.2	25.0	14.8	66.4	0.3	-66.1	86.1	39.6	-46.5
2002	f	10.8	15.6	4.8	9.9	26.5	16.6	67.6	0.2	-67.3	88.3	42.3	-45.9
2003	f	12.2	18.9	6.7	9.6	27.0	17.3	70.1	0.2	-70.0	92.0	46.0	-46.0
2004	f	14.3	22.8	8.5	9.3	26.4	17.1	73.0	0.1	-72.9	96.6	49.4	-47.3
2005	f	16.8	27.4	10.6	9.0	25.4	16.4	75.8	0.1	-75.8	101.6	52.9	-48.7

Table 17 Raw materials and mineral fuels (shares in %)

Shares on total exports-imports										
Year		The EU		CEFTA		The rest of the World		The World		
		Import from	Export to	Import from	Export to	Import from	Export to	Import from	Export to	
1998	r	1.9%	2.5%	2.6%	4.2%	10.6%	0.6%	15.0%	7.3%	
1999	r	2.2%	3.4%	2.5%	4.9%	12.2%	0.5%	16.9%	8.7%	
2000	r	1.9%	3.6%	2.3%	6.3%	17.4%	0.4%	21.6%	10.4%	
2001	f	2.1%	3.4%	2.3%	5.9%	15.0%	0.1%	19.4%	9.4%	
2002	f	2.2%	3.5%	2.1%	5.9%	14.1%	0.1%	18.4%	9.4%	
2003	f	2.3%	3.8%	1.8%	5.4%	13.3%	0.0%	17.5%	9.1%	
2004	f	2.5%	4.2%	1.6%	4.8%	12.9%	0.0%	17.1%	9.0%	
2005	f	2.7%	4.5%	1.4%	4.1%	12.1%	0.0%	16.2%	8.6%	

Chemicals

The group number five are chemicals and chemical products. The main import partner is the European Union with currently almost 60% share of the imports. Over time, European will even enlarge its share to 75% in 2005. The volume will rise from current 28 bil SKK to 69 bil

SKK in 2005, with a slight decrease in the rise in 2002. The share on total imports will increase from current 6.2% to 11% in 2005. The second biggest partner in the field of chemicals import is CEFTA, currently with 14 bil SKK after a rise from 13 bil SKK in 1999. In the future, the volume will fluctuate between 13 and 14 bil SKK, and the share on total imports will decrease from current 3% to 2% in 2005. The development of the imports from the rest of the world will have a similar development, the volume will decrease from current 8 bil SKK to 6 bil SKK and the share will decrease from current almost 2% to 1% in 2005. The volume of imports from the whole world will increase from current 50 bil SKK to 89 bil SKK in 2005, with accelerating yearly rise from almost 10% to 17% per year. The share on total imports will increase from current 11% to 14% with a stagnation in 2001 and 2002.

The main exporting partner for chemicals is CEFTA, in 2000 the volume was 18 bil SKK, and this value will not change a lot in the future. However, the share on total exports will decrease from current 4% to 3% in 2005. The development of the exports to the European union will be very similar, the volume will fluctuate between 10 and 12 bil SKK and the share will decrease from current 2.5% to 1.9% in 2005. Similarly, the exports to the rest of the world will be fluctuating between 3 and 4 bil SKK, and the share will be below 1%. The volume of exports to the whole world will compensate the rapid growth in 2000 to 35 bil SKK from 30 bil SKK in 1999, and in the future it will fluctuate from 32 to 33 bil SKK with a decreasing share on total exports from current almost 8% to 5% in 2005.

Trade balance in the field of chemicals is positive only with the CEFTA countries, it rose from 2.5 bil SKK in 1998 to almost 4 bil SKK in 2000. In the future, the balance will remain positive at the volume of 4 to 5 bil SKK. The trade balance with the EU is negative (16.6 bil SKK in 1999 and 15.9 bil SKK in 2000). It will steadily grow to 57 bil SKK in 2005. The trade balance with the rest of the world is slightly negative, and the development from the past will continue to future and then it will fluctuate between 2.5 and 3.5 bil SKK. The trade balance with the whole world will continue to be negative (15 bil SKK in 2000) and will rise to 56 bil SKK in 2005.

If Slovakia enters the European union, it will have only a slight impact on foreign trade with chemicals, since the rest of the world has a very small and decreasing share. However, in case of other CEFTA countries entering the EU before Slovakia, it will have a negative effect on the trade balance. The exports to CEFTA will be charged by higher duties, and since chemicals are relatively price sensitive, the volumes will decrease. The imports from CEFTA are relatively small, and they will not decrease dramatically.

Table 18 Chemicals

Year	The EU			CEFTA			The rest of the World			The World			
	Chemicals			Chemicals			Chemicals			Chemicals			
	Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance	
1998	r	24.4	11.2	-13.2	13.8	16.3	2.5	7.0	4.1	-3.0	45.2	31.6	-13.7
1999	r	26.3	9.7	-16.6	13.1	16.5	3.4	6.3	3.6	-2.7	45.8	29.8	-15.9
2000	r	28.1	12.2	-15.9	14.1	18.0	3.9	7.7	4.4	-3.3	50.0	34.7	-15.3
2001	f	34.9	10.6	-24.3	13.3	18.0	4.7	6.3	3.7	-2.5	54.5	32.4	-22.1
2002	f	39.6	10.8	-28.8	13.4	17.9	4.5	6.4	3.6	-2.8	59.4	32.3	-27.1
2003	f	46.2	11.1	-35.1	13.6	18.0	4.4	6.5	3.5	-3.0	66.3	32.6	-33.7
2004	f	55.3	11.4	-43.9	13.8	18.1	4.3	6.4	3.3	-3.2	75.6	32.8	-42.8
2005	f	68.5	11.7	-56.8	14.1	18.4	4.3	6.4	3.1	-3.3	88.9	33.1	-55.8

Table 19 Chemicals (shares in %)

Shares on total exports-imports									
Year		The EU		CEFTA		The rest of the World		The World	
		Chemicals		Chemicals		Chemicals		Chemicals	
		Import	Export to from	Import	Export to from	Import	Export to from	Import	Export to from
1998	r	5.8%	3.2%	3.3%	4.6%	1.7%	1.2%	10.7%	8.9%
1999	r	6.5%	2.6%	3.2%	4.4%	1.6%	0.9%	11.3%	7.9%
2000	r	6.2%	2.8%	3.1%	4.1%	1.7%	1.0%	11.0%	7.9%
2001	f	7.9%	2.5%	3.0%	4.3%	1.4%	0.9%	12.3%	7.7%
2002	f	8.2%	2.4%	2.8%	4.0%	1.3%	0.8%	12.4%	7.2%
2003	f	8.8%	2.2%	2.6%	3.6%	1.2%	0.7%	12.6%	6.5%
2004	f	9.8%	2.1%	2.4%	3.3%	1.1%	0.6%	13.4%	6.0%
2005	f	10.9%	1.9%	2.2%	3.0%	1.0%	0.5%	14.1%	5.4%

Market goods

The sixth group of commodities is the market goods. The main partner for imports is the European union. The volumes were 42 and 45 bil SKK in 1999 and 2000, which was a share of 10.2% and 9.8% on total imports, respectively. The volume of imports will increase to 69 bil SKK in 2005, with a slight decrease in 2001 to 36 bil SKK, with 15% to 19% of yearly rise. The share on total imports will increase to 11% in 2005 with a drop to 8% in 2001. The second biggest import partner is CEFTA, which volume was 26 bil SKK in 2000. This volume will increase to 28 bil SKK in 2001 and then steadily decrease to 19 bil SKK. The share on total imports will decrease from current 5.7% to 3% in 2005. The imports from the rest of the world will decrease from current 10 bil SKK to 9 bil SKK in 2001 and then will have a steady 10% rise to 13 bil SKK in 2005. The share on total exports will be stable, around 2%. The volume of imports from the whole world will decrease from current 81 bil SKK to 73 bil SKK in 2001. After that, there will be a steady 8% rise to 100 bil SKK in 2005. The share on total imports will drop from current almost 18% to 16% in 2001 and then remain almost stable.

There are two main export partners. The volume of exports to the European union will decrease from 55 bil SKK in 2000 to 48 bil SKK in 2001, maintain this volume in 2002 and then it will rise by 5% yearly to 56 bil SKK. The share on total exports will decrease from current 12.6% to 9% in 2005. The development of exports to CEFTA will be different. The volume of 2000, 46.6 bil SKK will hold till 2002, then there will be slight 3% yearly rise to 50 bil SKK in 2005. The share on total exports will decrease to 8% from current 10.7%. The exports to the rest of the world will increase from current 15.2 bil SKK to 24 bil SKK in 2001 and then remain almost stable, with slight 3% yearly rise. The share on total exports will increase from 3.5% in 2000 to 4.5% in 2005. The exports to the whole world will have a stable 3% increase from current 117 bil SKK to 138 bil SKK in 2005, with a slight stagnation in 2002. The share on total exports will increase from current almost 27% to 28% in 2001 and then steadily decrease to 22% in 2005.

The trade balance with the whole world is positive, 36 bil SKK in 2000. This will increase to 47 bil SKK in 2001 and then decrease to 37 bil SKK in 2005. The trade balance with the rest of the world will move from current 5 bil SKK to 14 bil SKK in 2005. With CEFTA, the trade

balance will decrease to 18 bil SKK in 2001 from 21 bil SKK in 2000, and then it will steadily increase to 32 bil SKK in 2005. The trade balance with the European union will gradually move from positive 10 bil SKK in 2000 to negative 12 bil SKK in 2005.

If Slovakia enters the European union, the market goods foreign trade turnover will increase and the prices will decrease, due to the final removal of duties and administrative obstacles.

Table 20 Market goods

Year		The EU			CEFTA			The rest of the World			The World		
		Market goods			Market goods			Market goods			Market goods		
		Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance
1998	r	40.2	46.6	6.4	28.8	44.6	15.8	7.7	15.3	7.6	76.7	106.5	29.8
1999	r	41.6	49.5	8.0	24.4	39.8	15.3	8.2	13.6	5.4	74.2	102.9	28.7
2000	r	44.8	54.9	10.1	25.9	46.6	20.8	10.2	15.2	5.0	80.9	116.7	35.9
2001	f	36.3	48.0	11.7	28.2	45.8	17.6	8.8	24.1	15.4	73.3	120.6	47.4
2002	f	42.2	48.7	6.5	27.4	46.5	19.1	9.6	25.0	15.3	79.2	122.9	43.7
2003	f	48.7	51.0	2.4	25.8	47.5	21.7	10.6	25.8	15.2	85.1	127.3	42.1
2004	f	58.1	53.5	-4.6	22.8	48.8	26.0	11.8	26.6	14.8	92.8	131.9	39.2
2005	f	68.6	56.3	-12.3	18.8	50.4	31.6	13.2	27.7	14.4	100.6	137.5	36.8

Table 21 Market goods (shares in %)

Year		Shares on total exports-imports							
		The EU		CEFTA		The rest of the World		The World	
		Market goods Import from	Market goods Export to	Market goods Import from	Market goods Export to	Market goods Import from	Market goods Export to	Market goods Import from	Market goods Export to
1998	r	9.5%	13.1%	6.8%	12.6%	1.8%	4.3%	18.1%	30.0%
1999	r	10.2%	13.1%	6.0%	10.6%	2.0%	3.6%	18.3%	27.3%
2000	r	9.8%	12.6%	5.7%	10.7%	2.2%	3.5%	17.7%	26.8%
2001	f	8.2%	11.4%	6.4%	10.9%	2.0%	5.7%	16.5%	28.0%
2002	f	8.8%	10.8%	5.7%	10.3%	2.0%	5.6%	16.5%	26.7%
2003	f	9.3%	10.1%	4.9%	9.4%	2.0%	5.1%	16.2%	24.7%
2004	f	10.3%	9.8%	4.0%	8.9%	2.1%	4.9%	16.4%	23.5%
2005	f	10.9%	9.2%	3.0%	8.2%	2.1%	4.5%	16.0%	21.9%

Machinery and equipment

The next commodity group is machinery and equipment. The export will, after a rapid rise in 2000, slightly decrease to 170 bil SKK in 2001 and then increase to 300 bil SKK in 2005. This growth will be made mainly by the EU, where the export will almost double, from 133 bil SKK to 230 bil SKK. Export to CEFTA will be fluctuating, but overall it will also double from 23 bil SKK to 53 bil SKK. The export to the rest of the world will be gradually increasing, from current 16 bil SKK to 20 bil SKK in 2005. The portion on total exports will increase from 40% in 2000 to 59% in 2005. The export of machinery and equipment to the EU will increase from current 30% to 47% in 2005, CEFTA will fluctuate up to 9%, and the rest of the world will be slightly above 3%.

The import of machinery and equipment from the whole world will grow from 157 bil SKK in 2001 to 216 bil SKK in 2005, with stagnation in 2000 and 2004. The main import partner for this commodity is the European Union, which figures will develop similarly. Import from CEFTA and the rest of the world will be constantly increasing from 26 bil SKK in 2000 to 30

bil SKK in 2005 and from 26 to 42 bil SKK. The share on total imports will decrease from current 36% to 34% in 2005. The share of EU will decrease from 24% to 23% in 2005, with slight rises in 2002 and 2003. The share of CEFTA will constantly decrease from 5.7% to 4.8% in 2005. The share of the rest of the world will rise from current 6% to 7% in 2005.

The trade balance moved to positive figures in 2000. This trend shall remain and will be even greater. The balance will be positive with both EU and CEFTA, however the rest of the world will be negative and increasing, reaching over 20 bil SKK in 2005.

Table 22 Machinery and equipment

Year		The EU			CEFTA			The rest of the World			The World		
		Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance
1998	r	108.0	98.6	-9.4	29.8	21.5	-8.4	31.8	12.2	-19.6	169.6	132.3	-37.4
1999	r	102.9	114.7	11.8	25.0	21.0	-4.1	25.4	13.3	-12.1	153.3	149.0	-4.3
2000	r	110.0	132.9	22.8	26.1	23.2	-3.0	26.3	16.4	-9.9	162.5	172.5	10.0
2001	f	100.6	122.3	21.7	25.4	31.5	6.1	30.9	15.4	-15.5	157.0	169.2	12.3
2002	f	114.8	138.2	23.4	26.3	34.0	7.7	32.8	16.3	-16.5	173.9	188.5	14.7
2003	f	130.4	172.3	41.9	27.3	35.6	8.3	35.2	17.6	-17.6	192.8	225.5	32.6
2004	f	129.1	187.0	57.9	28.6	48.9	20.4	38.3	18.7	-19.5	195.9	254.6	58.7
2005	f	143.8	227.4	83.6	30.0	52.7	22.7	42.2	20.0	-22.3	216.0	300.1	84.0

Table 23 Machinery and equipment (shares in %)

Year		Shares on total exports-imports							
		The EU		CEFTA		The rest of the World		The World	
		Import from	Export to	Import from	Export to	Import from	Export to	Import from	Export to
1998	r	25.5%	27.8%	7.0%	6.1%	7.5%	3.4%	40.0%	37.3%
1999	r	25.4%	30.4%	6.2%	5.6%	6.3%	3.5%	37.8%	39.5%
2000	r	24.1%	30.5%	5.7%	5.3%	5.8%	3.8%	35.6%	39.5%
2001	f	22.7%	29.1%	5.7%	7.5%	7.0%	3.7%	35.4%	40.2%
2002	f	23.9%	30.7%	5.5%	7.6%	6.8%	3.6%	36.2%	41.9%
2003	f	24.8%	34.2%	5.2%	7.1%	6.7%	3.5%	36.6%	44.8%
2004	f	22.8%	34.1%	5.1%	8.9%	6.8%	3.4%	34.6%	46.4%
2005	f	22.8%	37.1%	4.8%	8.6%	6.7%	3.3%	34.3%	48.9%

Industrial goods

The export of industrial goods will decline from 54 bil SKK in 2000 to its 1999 value of 49 bil SKK in 2001 and then gradually rise to 80 bil SKK in 2005. This is caused by export to the EU, which will rise from 40 bil SKK in 2000 to 69 bil SKK in 2005 with similar development as total exports. The export to CEFTA will be almost constant, at volume slightly below 8 bil SKK. The export to the rest of the world will decrease from current 7 bil SKK to 3 bil SKK in 2005. The percentage share of total exports will be around 12%. The share of the export to the EU will increase from 9% in 2000 to 11% in 2005. The CEFTA and the rest of the world shares of exports will decrease from 1.8% to 1.2% in 2005 and from 1.6% to 0.5% in 2005.

The import of industrial goods will more than double from 40 bil SKK in 2000 to 95 bil SKK in 2005. This development is caused by import from the EU more than tripling from 23 bil

SKK in 2000 to 74 bil SKK in 2005. This growth will be almost constant. The import of industrial goods from CEFTA will remain almost stable up to 2003 and then will grow to 13 bil SKK in 2005. The import from the rest of the world will be almost constant, with values slightly below 8 bil SKK. The percentage share will grow from 9% in 2000 to 15% in 2005, caused by import from the EU rising from 5% to almost 12%. In other regions, the share is almost stable (2% with CEFTA) or slightly decreasing (from 1.6% to 1.2% with the rest of the world).

The trade balance will gradually move from positive numbers to negative, reaching 15 bil SKK in 2005. The rest of the world trade balance will move from slightly negative numbers to -4 bil SKK in 2005. The trade balance with CEFTA will worsen from -2.2 bil SKK to -6 bil SKK. The greatest change will occur with the EU, where the trade balance will shift from positive 17 bil SKK in 2000 to negative 5 bil SKK in 2005.

Table 24 Industrial goods

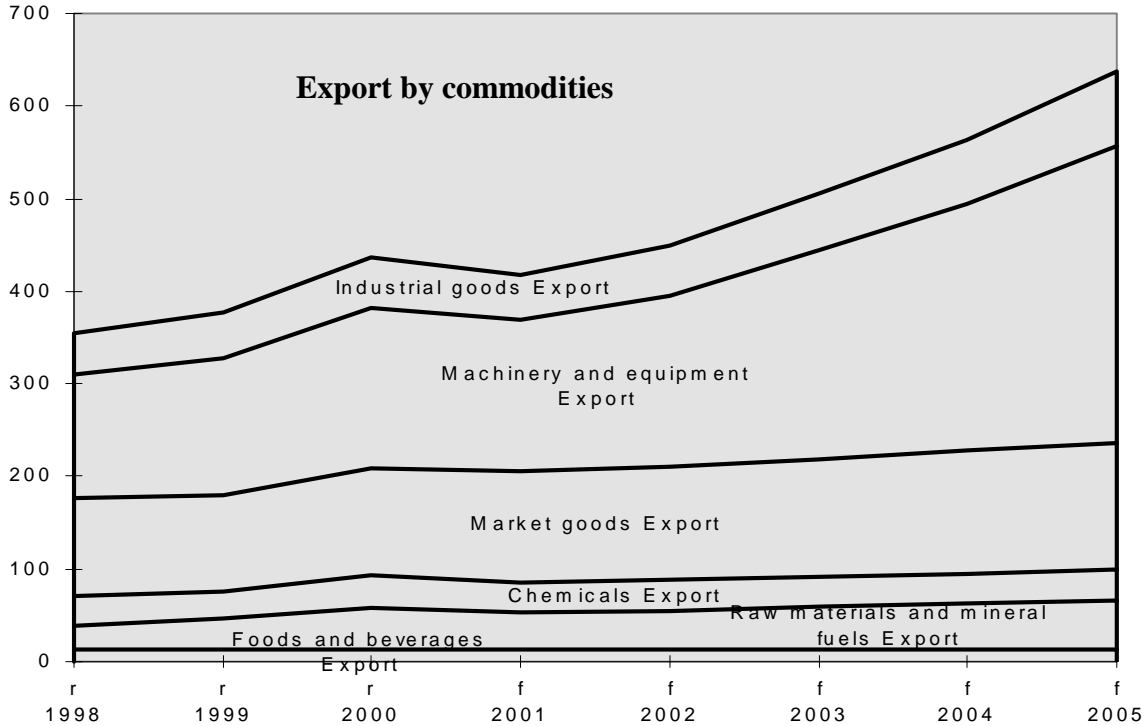
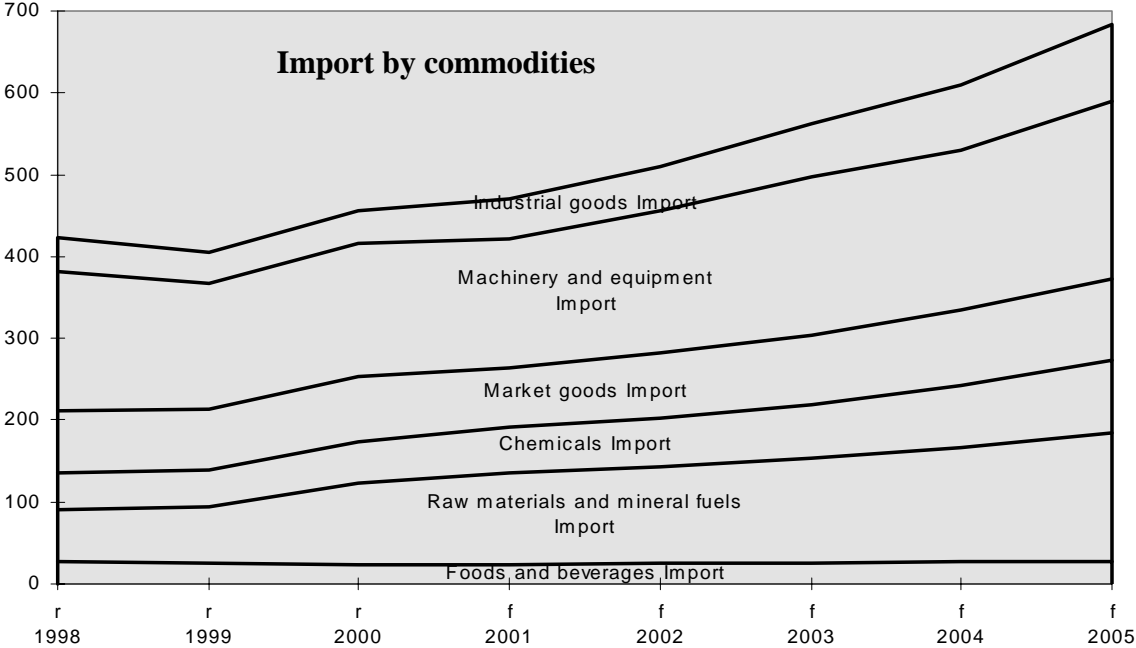
Year		The EU			CEFTA			The rest of the World			The World		
		Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance	Import from	Export to	Trade balance
1998	r	23.6	30.2	6.6	11.0	7.3	-3.7	7.7	7.4	-0.4	42.3	44.9	2.6
1999	r	21.6	35.3	13.7	10.1	7.4	-2.7	6.9	6.0	-0.9	38.5	48.7	10.2
2000	r	22.6	39.4	16.8	10.1	7.8	-2.2	7.3	7.1	-0.2	39.9	54.3	14.3
2001	f	30.1	35.9	5.8	10.5	7.9	-2.6	7.7	5.0	-2.7	48.3	48.8	0.5
2002	f	36.3	41.0	4.7	10.9	7.9	-3.0	7.6	4.7	-2.9	54.8	53.6	-1.2
2003	f	45.4	49.7	4.2	11.4	7.8	-3.7	7.5	4.3	-3.2	64.4	61.7	-2.7
2004	f	58.4	58.2	-0.2	12.3	7.6	-4.6	7.6	3.8	-3.8	78.3	69.7	-8.6
2005	f	73.7	68.8	-4.8	13.4	7.6	-5.8	7.8	3.3	-4.4	94.8	79.7	-15.1

Table 25 Industrial goods (shares in %)

Year		Shares on total exports-imports									
		The EU		CEFTA		The rest of the World		The World			
		Industrial goods Import from	Industrial goods Export to	Industrial goods Import from	Industrial goods Export to	Industrial goods Import from	Industrial goods Export to	Industrial goods Import from	Industrial goods Export to		
1998	r	5.6%	8.5%	2.6%	2.1%	1.8%	2.1%	10.0%	12.7%		
1999	r	5.3%	9.4%	2.5%	2.0%	1.7%	1.6%	9.5%	12.9%		
2000	r	4.9%	9.0%	2.2%	1.8%	1.6%	1.6%	8.8%	12.4%		
2001	f	6.8%	8.5%	2.4%	1.9%	1.7%	1.2%	10.9%	11.6%		
2002	f	7.6%	9.1%	2.3%	1.8%	1.6%	1.0%	11.4%	11.9%		
2003	f	8.6%	9.9%	2.2%	1.5%	1.4%	0.8%	12.2%	12.3%		
2004	f	10.3%	10.6%	2.2%	1.4%	1.3%	0.7%	13.8%	12.7%		
2005	f	11.7%	11.2%	2.1%	1.2%	1.2%	0.5%	15.1%	13.0%		

As is seen from the graphs below, there are no dramatic changes in the diversification of export and import to occur. Small changes may be expected in the field of machinery and equipment, where the share of import is to decrease from 36% to 34%, and the share of export is to increase from 40% to 50%. Also, there will be a slight decline in the foreign trade with market goods. The share of import will decline from 18% to 16% and the share of export from 27% to 22% in 2005. The import of industrial goods will increase from 9% to 15%, while the export will remain almost constant at 11-13% of total exports. The share of both import and export of food and beverages will decrease by 1%, to 4% and 2%. The import of raw materials and mineral fuels will be decreasing from 22% to 16%, while the export will slightly decrease

from 10% to 9% in 2005. In chemicals, the export has a slightly decreasing trend (from 8% to 5%), while the import increasing (11% to 14%).



5. Effects of EU Accession on Composition of Exports and Imports: Conclusions

The growing trade between the Slovak Republic and countries of the European Union in the 1990s underlines the intensity of mutual relations in the process of approaching the EU. The re-orientation of Slovak foreign trade on EU markets is striking, however, the share on total exports and imports (approx. 50-55 percent) does not reach the levels of other associated countries (65-75 percent).

The expected effects of a completed EU accession should increase the volume of mutual trade additionally. Based on experiences from integrated countries, the increase will consist in the definitive removal of trade barriers, i.e., at accession applied tariff and non-tariff barriers, duties, border controls, certificates, deposits, declarations, formularies, sanitary and other provisions, reduction of paperwork, etc. The level of cost reduction and consecutive trade increase is subject to numerous estimations. Statistical figures prove that along with the gradual opening of the EU market for Slovak producers, also the foreign demand for competitive Slovak goods grows. However, when entering the EU, one should not expect dramatic changes in the trade relations, since the prevailing part of production already enjoys free access to EU markets and vice versa.

The Common External Tariff (CET) of the EU, to be accepted at the moment of membership, may generate some changes already predictable today. As the EU and the CEFTA countries account for about 80 percent of the total trade of Slovakia, introduction of the CET will affect approximately 20 percent of total trade. Major effects can be calculated only for those products that have very different tariff rates, rates not expected to be gradually harmonised between now and the date of accession (e.g., agricultural goods).¹² *(For more details on implications of CET, see conclusions in the aggregate paper Trade Effects of EU Integration: The Case of the Slovak Republic).*

The changes in the commodity structure of Slovak foreign trade will react to the new supply-demand relations on the EU market. Also, decisive will be in which sectors Slovakia succeeds to achieve comparative advantages within the European Union. For less processed goods, which are the most exported from Slovakia, the comparative advantage in relation to the EU is mostly in labour costs. Slovak exports consist traditionally of machinery, textiles and apparel, various raw materials and related products (especially iron and steel products).¹³ These commodities enjoy already a relatively free access to EU markets. We can hence expect higher export increases in sectors and goods in which the entire removal of trade barriers will take place as late as with the EU entry. This certainly requires the ability of these sectors to cope

¹² Still, the major change is not expected from lowering tariffs to EU levels but from the rather sensitive area of raising tariffs to (generally relatively low) EU levels. In the case of Slovakia, the introduction of the CET may have potential implications with respect to the Czech-Slovak trade relations. Despite the moderately decreasing share of the Czech Republic on the foreign trade of Slovakia, it will undoubtedly maintain the position of the strategic trade partner in long-term horizon. The trade balance effects resulting from EU accession will to a major extent depend on the accession scenario (above all, whether both countries will join the EU en bloc). The abolition of the customs union due to an earlier accession of the Czech Republic would have far-reaching negative consequences on the trade balance (and whole economy) of the Slovak Republic. The most affected commodities would include food, beverages, agricultural goods, tobacco, textiles and apparel, i.e., commodities on which the EU tariff is higher than the average Czech tariffs applied. However, both the EU and the accession countries are committed to further trade liberalisation under WTO provisions.

¹³ Demand for many of these commodities is price sensitive, making export growth vulnerable to the ability of Slovak firms to maintain their competitiveness by controlling their input costs, including real wages.

with the tough competition on the common market, including competition from other accession countries.

Based on our empirical research, as well as the experience from integrated countries at an earlier stage, we expect a passive trade balance in the first phase of Slovakia's EU membership. Import increments from EU will thus most likely record a higher growth rate than reversibly. In line with this assumption, our forecast for the years 2001-2005 shows negative trade balance. The deficit is and will be caused mainly by the rest of the world, with which Slovakia has permanently a high trade deficit.

At the same time, imports from third countries will become more expensive than imports from EU members. This factor may significantly change our trade relations with CIS countries, above all Russia and Ukraine. Slovakia is dependent on imports of energy raw materials from these countries. This was confirmed by our empirical analysis, which showed positive price elasticity for import of raw materials (SITC 2+3+4) from the rest of the world countries (represented mainly by Russia). Raw materials are imported to Slovakia independent on changes in price. It appears rather unlikely that Slovakia will have an essentially different geographical import structure of raw materials in the time horizon of completed EU accession. Since the Slovak Republic applies zero or minimum tariffs on imports of mineral oil, natural gas and other mineral fuels from the Russian Federation and Ukraine, these will become more expensive after the adoption of the regulations of the CET policy of the EU (based on the assumption that Russia and Ukraine will not sign free trade agreements or similar arrangements with the EU, nor they will become EU members or candidates at the time of Slovakia's EU accession). The tariff protection of EU's common market may raise the import prices of raw materials from these countries, what can then reflect into overall growth of energy prices in Slovakia. Long-term policy recommendations in this area include:

1. Initiate steps to diversify the territorial structure of imports of raw materials. This measure is not conditioned only by the expected changes in trade with non-members, but it is also a matter of raw material security of the Slovak economy.

2. Support to energy-saving measures in the economy. Introduction of sustainable, cost-effective approaches in energy use would help to lower the demand for import of raw materials and therefore also balance the trade deficit.

The accession of the Slovak Republic into the European Union will conclude the process of mutual trade liberalisation. Foreign trade structure will become even more EU market-oriented, while the share of trade with the rest of the world is expected to drop down moderately. The estimation of future trade developments for 2001-2005 gives an insight in changes of the commodity structure and territorial distribution, which might take place in the course of pre-accession and, hypothetically, also accession period.

No dramatic changes in the composition of Slovak export and import are expected to occur. In the field of agricultural products (SITC 0+1), which belong to sensitive commodities, the most important shift will be the increase of trade with EU and CEFTA, and a stagnation of

"agricultural" trade with the rest of the world.¹⁴ However, the share of these commodities on total foreign trade exchange will decrease. The same applies to raw materials (SITC 2+3+4) – their share on total imports is expected to decrease by more than 5 percent in 2001-2005. As already mentioned, due to the high presence of the rest of the world countries in Slovakia's import of these commodities, the prices of a significant portion of traded goods may be raised by import duties. The importance of chemicals in Slovak foreign trade is evidenced by the growing share of SITC 5 goods on, particularly, Slovak imports. The trade deficit in this commodity group is tending to grow further, which might negatively impact the balance at the stage of entering the EU (EU is the main exporter of chemicals to Slovakia, while CEFTA the major importer of Slovak chemical production). The internal trade deficit in this commodity group may be reduced by a larger attraction of foreign partners to enter Slovak companies. Trade with SITC 6 (market goods) remains relatively stable; an increase is expected after all barriers will be removed. Machinery and equipment is the most progressive sector in terms of Slovak export orientation – the share of SITC 7 on total exports should grow by 10 percent in 2001-2005. Our paper analysed that the rapidly growing performance is driven mainly by the automotive industry, in particular the joint venture with VW. To further enhance the position of the industry on Slovak foreign trade it would be important to create conditions motivating local producers to join the supplier network of the successful car manufacturer. Here we encounter a number of problems faced by especially small and medium sized enterprises in Slovakia, which are caused by both internal reasons and the overall business environment. The trade with industrial goods (SITC 8) will constantly grow, mainly due to the steadily growing imports from the EU. This will lead to a negative balance of trade with industrial commodities.

Slovak enterprises will be facing tougher competition in the common market, which in turn will require further structural changes. The creation of conditions for a broader use of comparative advantages (not only labour costs) would positively influence the competitiveness of Slovak production and hence also the trade balance. To compensate the expected trade deficit, a broader inflow of foreign investments is inevitable. Attracting foreign investors should not consist in the creation of preferential conditions offered to them, but rather in the development of a well-functioning business environment.

The pre-accession period should be utilised for approximation of trade-related legislation and procedures as a tool for minimisation of future costs of trade deterioration. In this preparatory stage for EU membership, a key task for policy makers will be the removal of all protective measures and thus a better adjustment of fiscal policies to the conditions of EU's common market. A high openness of the Slovak economy is crucial for its growth, even if there was no EU enlargement.

¹⁴ A more transparent system of licenses issued by state authorities on import and export of sensitive and protected goods (not only agricultural) would improve Slovakia's foreign trade performance in the pre-accession period.

Bibliography

Altmann, F-L.: The Accession of the Countries of Central and Eastern Europe into the European Union: Problems and Perspectives. In: Weidenfeld, W. (ed): Central and Eastern Europe on the Way into the European Union. Bertelsmann Foundation, Gütersloh, (1996)

Benacek, V.: Foreign Trade Balance Effects in the Czech Economy – Impacts of the EU Opening-up. Analysis of the Trade Creation and the Trade Diversion by Groups of Products in 1993-97. P97-81334-R.

Fidrmuc, Jan – Fidrmuc, Jarko: The Slovak Republic. In: Winners and Losers of EU Integration. Policy Issues for Central and Eastern Europe, World Bank, Bertelsmann Stiftung, Washington, (2000)

Fidrmuc, Jarko: Application of Gravity Models to Commodity Groups and Trade Projections between the EU and the CEEC. Paper presented at European Meeting of Econometric Society, Berlin (1998)

Fidrmuc, Jarko: Trade Diversion in "Left-Outs" in Eastward Enlargement of European Union, The Case of Slovakia. Europe-Asia Studies 5, (1999)

Foreign Trade of the Slovak Republic in the Year 1998 and 1999. Statistical Office of the Slovak Republic, Bratislava, (1999)

Inotai, A.: The Czech Republic, Hungary, Poland, the Slovak Republic, and Slovenia. In: Winners and Losers of EU Integration. Policy Issues for Central and Eastern Europe, World Bank, Bertelsmann Stiftung, Washington, (2000)

Milo, W. and Wdowinski, P.: EU Enlargement and the Foreign Trade Effects in the Polish Economy: Empirical evidence in the SITC cross-section yearly data during 1993-97. P97-81334-R.

Monitoring of Periodical Press.

Russo, M.: The Transition Countries of Central and Eastern Europe: Why EMU Matters. Presented at the 53rd Session of the UN's Economic Commission for Europe, IMF (1998)

Statistical Yearbook of the Slovak Republic. Statistical Office of the Slovak Republic, Bratislava, editions 1993-2000 (1993-2000)

Tang, H. (ed): Winners and Losers of EU Integration. Policy Issues for Central and Eastern Europe. World Bank, Bertelsmann Stiftung, Washington, (2000)

The World Bank: Slovak Republic. A Strategy for Growth and European Integration. World Bank Country Study, Washington, (1998)

UNDP: National Human Development Report Slovak Republic, editions 1998-1999, United Nations Development Programme, Center for Economic Development, Bratislava (1998-1999)

Vagac, L. – Kovacs, D.: Integration of Slovakia to the EU - Pros and Cons. Center for Economic Development, Friedrich Ebert Stiftung, Bratislava (1996)

Appendix 1 Analysis of Sectoral Effects in Existing Literature

To assess the potential implications of different enlargement scenarios on foreign trade, Fidrmuc (1999) simulated the development of Slovak trade with six EU countries (Austria, France, Germany, Italy, the United Kingdom, and the Netherlands) and three Central European neighbours (Czech Republic, Hungary, and Poland, CEE3). These nine countries together accounted for 78 percent of total Slovak exports in 1996; the six EU countries (EU6) accounted for 91 percent of Slovak exports to the EU in the same year. The simulations considered three different scenarios:

- enlargement, in which Slovakia joins the EU at the same time as other CEE countries;
- no enlargement: none of the CEE countries joins the EU;
- exclusion: the Slovak Republic does not participate in the enlargement (or does later).

Exports to the EU6 averaged a 25.8 percent annual growth in 1995 and 1996. Simulations of aggregate trade flows showed that export growth from the Slovak Republic to the EU6 is estimated to slow, which is not surprising because countries cannot sustain such high growth rates in exports in the long term. With no Eastern Enlargement, export growth is estimated to reach 9 percent per year between 1997 and 2010. In the enlargement scenario in which Slovakia joins the EU at the same time as the other CEE countries, export growth is estimated to reach 15 percent per year between 1997 and 2010. (All estimations on trade flows (in Fidrmuc 1999) refer to the annual growth between 1997 and 2010).

Simulations of trade flows by commodity groups between the Slovak Republic and the EU show significant variation across commodity groups. The highest growth is estimated for exports of agricultural products and raw materials (35 percent per year under the enlargement scenario and 22 percent under the no-enlargement scenario). It is reasonable to expect, however, that actual growth for these products will be substantially lower, given the lack of a sound production basis for these categories, even in the time horizon of accession. Exports of intermediate products, consumer products, and chemicals could grow by about 15 to 20 percent under the enlargement scenario, while about 10 percent per year without no enlargement. Growth of machinery exports is estimated to be the lowest (10 percent per year under the enlargement scenario, and just below 1 percent under no-enlargement), though this sector is recording the highest growth rates in the past years (53 percent in 1998) mostly due to the export boom in the automotive industry (Volkswagen Slovakia). The strategy of VW Slovakia (17 percent share on total exports in 1999) will also largely co-determine the trade balance effects in the accession and post-accession period.

Projections of Slovak Exports to EU6 (average annual growth rates in %)

SITC Groups	Description	Realised 1995-1996	No enlargement 1997-2010	Enlargement 1997-2010	Exclusion 1997-2010
SITC 0-8	Total exports	25.79	9.24	15.26	9.24
SITC 5-8	Industrial products	19.45	8.83	16.73	8.83
SITC 0	Agricultural products	-4.93	22.39	34.77	22.39
SITC 2	Raw materials	10.61	14.42	17.14	14.42
SITC 5	Chemicals	6.83	9.13	14.76	9.13
SITC 6	Intermediate products	3.28	10.91	18.93	10.91

SITC 7	Machinery	55.79	0.72	9.95	0.72
SITC 8	Consumer products	17.10	10.28	20.42	10.28

Note: EU6 includes Austria, France, Germany, Italy, the United Kingdom, and the Netherlands. The simulations produced the same results for the no-enlargement and the exclusion scenarios because the model does not take into account possible trade diversion effects of the other CEE countries joining the EU before Slovakia does.

Source: Fidrmuc (2000).

Projections of Slovak Exports to EU6 and CEE3 (average annual growth rates in %)

SITC Groups	Description	Realised 1995-1996	No enlargement 1997-2010	Enlargement 1997-2010	Exclusion 1997-2010
SITC 0-8	Total exports	15.60	5.98	10.88	5.48
SITC 5-8	Industrial products	8.70	5.93	12.39	5.55
SITC 0	Agricultural products	-5.84	15.42	24.83	12.33
SITC 2	Raw materials	1.89	10.30	12.73	10.20
SITC 5	Chemicals	4.69	3.28	8.14	2.91
SITC 6	Intermediate products	-2.14	7.78	13.95	7.23
SITC 7	Machinery	27.81	-0.71	6.97	-1.03
SITC 8	Consumer products	12.45	8.05	16.86	7.64

Note: The selected countries include Austria, France, Germany, Italy, the United Kingdom, the Netherlands, Hungary, Poland, and the Czech Republic.

Source: Fidrmuc (2000).

The trade relations between the Czech Republic and the Slovak Republic, facilitated by their customs union, continue to be intensive despite the decreasing volume. In fact, the customs union is largely comparable to the trade liberalisation within the EU. This trade intensity has been converging gradually to that prevailing among the EU countries. Fidrmuc (1999) concludes it could stabilise at this level with no further relaxation of economic relations. Trade flows between the two countries in 1997 were estimated to be five times higher than normal, compared with 13 times higher than normal in 1991 and 7 1/2 times higher in 1994.

If the Slovak Republic joins the EU after the Czech Republic, analysis shows that there will be a large drop in Slovak exports to the Czech Republic for all commodity groups. The most dramatic difference between joint enlargement and exclusion is predicted for agriculture: Slovak agriculture exports to the Czech partners could fall by 7.3 percent annually under the exclusion scenario, instead of a significant growth of 11 percent per year under joint enlargement. If the Slovak Republic joins the EU at a later stage than its neighbouring CEE countries, following further trade liberalisation, the Slovak market would be invaded by agricultural products from these countries.

Projections of Slovak Exports to the Czech Republic (average annual growth rates in %)

SITC Groups	Description	Realised 1995-1996	No enlargement 1997-2010	Enlargement 1997-2010	Exclusion 1997-2010
SITC 0-8	Total exports	4.61	-0.96	-0.96	-6.07
SITC 5-8	Industrial products	-3.98	-2.69	-2.69	-6.14
SITC 0	Agricultural products	-10.66	11.03	11.03	-7.27
SITC 2	Raw materials	-6.98	4.29	4.29	-1.64
SITC 5	Chemicals	1.42	-5.73	-5.73	-11.52
SITC 6	Intermediate products	-10.88	-2.08	-2.08	-5.14
SITC 7	Machinery	0.20	-6.64	-6.64	-8.81
SITC 8	Consumer products	2.67	-0.19	-0.19	-3.80

Source: Fidrmuc (2000).

The Association Agreement between EU and Slovakia does not include any provisions excluding or limiting trade relations with third countries. On contrary, intensification of trade and mutual approach of CEFTA (and other association countries) is considered an important

tool towards EU accession strategy. However, the co-ordination of political and economic interests with respect to EU integration is limited. So are economic ties, perhaps with the exception of trade relations between Slovakia and the Czech Republic. Nevertheless, it is obvious that every EU candidate needs partners helping to enforce political and economic interests. According to Inotai (2000), EU membership may result in more dynamic intraregional trade than trade with present EU member countries. In consequence, the share of first-wave CEFTA countries in each other's total trade can increase by several percentage points (from the present 8 percent to about 11 to 12 percent). The relation between the Czech Republic and Slovakia could be the only exception.

The process of EU enlargement can also change the relationships among Central and Eastern European countries significantly. According to Fidrmuc (1999), Slovak exports to Hungary are predicted to increase by about 3 percent annually without enlargement. If Hungary joins the EU prior to Slovakia, however, trade between the two countries will liberalise and Slovak exports to Hungary could increase by an additional 1 percentage point annually. Nevertheless, growth gains are much higher if the Slovak Republic joins the EU with Hungary. Then, Slovak exports are to increase by about 6 percent per year (3 percent higher than with no enlargement). The results are similar in the case of the exports to Poland. Estimates are that the annual growth of Slovakia's exports to Poland will be the highest under the enlargement scenario (10 percent), followed by the scenario in which Poland joins the EU before Slovakia (about 8 percent).

Projections of Slovak Exports to Hungary (average annual growth rates in %)

SITC Groups	Description	Realised 1995-1996	No enlargement 1997-2010	Enlargement 1997-2010	Exclusion 1997-2010
SITC 0-8	Total exports	5.01	2.97	6.10	3.97
SITC 5-8	Industrial products	1.56	6.59	7.16	6.36
SITC 0	Agricultural products	2.72	10.31	26.85	12.43
SITC 2	Raw materials	-4.56	-0.92	2.42	2.40
SITC 5	Chemicals	4.52	2.79	8.97	4.82
SITC 6	Intermediate products	-1.82	7.72	4.90	5.93
SITC 7	Machinery	10.57	3.66	6.37	3.29
SITC 8	Consumer products	-4.18	13.23	13.91	12.23

Source: Fidrmuc (2000).

Projections of Slovak Exports to Poland (average annual growth rates in %)

SITC Groups	Description	Realised 1995-1996	No enlargement 1997-2010	Enlargement 1997-2010	Exclusion 1997-2010
SITC 0-8	Total exports	50.17	6.94	10.18	7.98
SITC 5-8	Industrial products	34.27	7.54	8.11	7.30
SITC 0	Agricultural products	68.52	8.24	24.47	10.33
SITC 2	Raw materials	36.45	13.26	17.08	17.05
SITC 5	Chemicals	15.53	-1.34	4.59	0.61
SITC 6	Intermediate products	36.45	11.98	9.04	10.11
SITC 7	Machinery	62.84	3.49	6.21	3.12
SITC 8	Consumer products	41.29	7.21	7.86	6.27

Source: Fidrmuc (2000).