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Enlarging the EU: The Trade Balance Effects

TRADE EFFECTS OF EU INTEGRATION: THE CASE OF THE SLOVAK REPUBLIC

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Introduction

The purpose of the research project is to assess the impact of EU accession on the foreign trade performance of four Central and Eastern Europan (CEE) transition economies. The main aim of the project is the identification and analysis of the different effects of EU enlargement both on EU and new members.

The first section of this aggregate paper introduces the issues of foreign trade and the theorem of critical elasticities. The econometric analysis of Slovak foreign trade and a description of the model used in the analyses is described in the second section. Ex post simulations of different scenarios of foreign trade developments are presented in the third section. A discussion of the current state and future implications of EU accession on foreign trade of Slovakia is included in the fourth section. Conclusions and recommendations for policies are summarised in the last section of the paper.

There is an evident lack of empirical literature on the trade effects of EU integration in Slovakia, both in terms of origin and focus. This may be somehow surprising, when taking into consideration the key role of EU accession for the Slovak economy, which is strongly dependent on foreign trade. The reasons may be searched for in the shortage of research capacities dealing with this specific issue. Generally, the use of econometric models in the recent scientific literature on Slovak trade flows is but minimal, while reflecting the rather low demand for econometric analyses in the area of research. This project should help to improve the econometric focus of research and contribute to the ongoing discussion on the effects of EU integration on applicant countries.

The econometric analysis of the foreign trade of the Slovak Republic follows the empirical research of Slovak foreign trade (Vagac – Strapec, 2000). Quarterly time series from 1993q1 to 2000q2 were used for this econometric analysis. While constructing the econometric equations, the authors used the theoretical approaches shown in the part on foreign trade and the theorem of critical elasticities. The authors also tried to consider the specifications of the Slovak economy – an economy in transition. They also made use of their experience from previous econometric research (see e.g., Palenik et al. 1998).

1. Foreign Trade and the Theorem of Critical Elasticities

Questions of specification and analysis of equations of foreign trade are an important part of questions of enlarging the European Union (Karadeloglou et al, 2000). A special attention is paid to the impact of various determinants on import and export such as: interior and exterior demand, import and export prices, custom policy, commodity and regional disaggregation, etc. In this section we will focus on the impact of exchange rate on the foreign trade. Exchange rate policy is an important part of economic policies, which has a direct impact on foreign trade (Brown, 1970). Exchange rate, with which the V4 countries will enter the European union and consequently the monetary union, will be an important parameter of quantifying the profits and the expenses of this process.

We will show specifications of equations of export and import as well as prices of import and export. These will be used to study the direct effects of devaluation and to discuss the theorem of critical elasticities or the Marshall-Lerner condition. (Malgrange et al, 1998, Muet, 1990).

1.1. Aggregate Import and Export Demand

Used formulations are in general log-linear. They connect the volume of foreign exchange (in constant prices) with price competition and the volume of gross domestic product (or interior demand):

$$\mathrm{Im} = (\mathrm{Q})^{\alpha_m} \left(\frac{\mathrm{p_m}}{\mathrm{p}} \right)^{-\varepsilon_m} \tag{1}$$

$$\mathrm{Ex} = (\mathrm{Q_e})^{\alpha_x} \left(\frac{\mathrm{e\,p_x}}{\mathrm{p_e}} \right)^{-\varepsilon_x} \tag{2}$$

This formulation comprehends the connections of foreign trade as functions of demand usually dependent on prices and incomes. The volume of gross domestic product (foreign Q_e for exports, national Q for imports) can be seen from two points of view: a) as incomes which immediate demand for imported consumer goods b) as the volume of production which creates demand for imported production (investments and intermediate consumption).

The second determinant is price competition which specifies the substitution between national products and imported goods. In case of import, it is measured as the ratio of import prices p_m (in local currency) to the prices of local production p (of course in local currency). In case of export it is the ratio of export prices in foreign currency ($e.p_x$) to foreign prices p_e (also in foreign currency). Export prices p_x in local currency are converted into the foreign currency by multiplying by exchange rate e. The exchange rate is one unit of local currency in units of foreign currency.[3]

The elasticity of export on the competition ability (γ_x) is usually higher than in case of import (γ_m). This elasticity (γ_x) shows two effects of substitution: a) substitution of foreign market

[3] For example 1 SKK= 0,023 EUR

between imported and national products (equivalent to γ_m), b) competition among various exporters on the same export market.

In empirical models, exchange rate (e) and foreign prices (p_e) are considered as weighted average of exchange rate and prices of main trade partners. Each weight is the ratio of foreign trade.

1.2. Supply, or Specifying Prices of Foreign Trade

Let us consider a company, producing a homogenous product for both domestic and foreign markets. In case of truth of perfect competition hypothesis, export prices of the company in local currency and prices in domestic market are identical and equal to marginal costs ($p_x = p = C'$). If shown in foreign currency, then export prices are equal to marginal cost (prices of production) multiplied by exchange rate (e.p). Analogically, import prices are equal to prices of foreign production in local currency ($p_m = p_e/e$). Currency depreciation (lowering e) increases proportionally import prices in local currency and proportionally lowers export prices in foreign currency.[4]

The response of the change of exchange rate or foreign prices will not consist only in mentioned changes of foreign trade prices. In this case the response is also in the econometric model through the prices of foreign exchange. The equilibrium prices will stabilise between the prices of domestic production and foreign prices:

$$p_x = \left(\frac{1}{e} p_e\right)^{a_x} (p)^{1-a_x} \qquad 0 \le a_x \le 1 \qquad (3)$$

$$p_m = \left(\frac{1}{e} p_e\right)^{a_m} (p)^{1-a_m} \qquad 0 \le a_m \le 1 \qquad (4)$$

This empirical equation makes it possible for several interpretations. First, the profit on the account of equilibrium between the supply and the demand of export leads to, as well as the hypothesis of perfect competition, equilibrium prices p_x, which depend on foreign prices and exchange rate. But if the company exports homogenous production on both interior and exterior market, then these prices will be identical (in local currency) and equal to marginal costs.[5]

1.3. The Prices and the Volume of Foreign Trade

Trade among industrialised countries consists mainly of sophisticated products. In other words, differentiation of products and nonperfect competition play an important role, which makes it possible to explain the development of export prices. They represent a medium equilibrium between marginal costs and foreign prices. In case of nonperfect competition, prices of goods for foreign market are also determined by foreign prices (or foreign marginal costs).

[4] In real life each company has different prices for different markets. Considering these determinants would be against the conditions of this work, for example condition of perfect competition.
[5] To explain different prices due to destinations, hypothesis of nonperfect, monopolistic and oligopolistic competition would have to be discussed.

If we substitute marginal costs by prices of production for domestic market, equations, that specify the prices of foreign trade, will be as shown in relations (3) and (4). In industrialised countries, an important part of imports is import of raw material. The prices of raw materials are created at the international market. From this we can assume that import prices will be more sensitive on foreign prices than export prices. Econometric estimations show that a_m is usually close to 1 and a_x is in general under 0,5.

To simplify following discussion let us return to relations (1) and (2) into which we substitute import prices p_m for (4) and export prices p_x for (3). From that we obtain:

$$Im = Q^{\alpha_m} \left(e \frac{p}{p_e} \right)^{a_m \varepsilon_m} \tag{5}$$

$$Ex = \left(Q_e\right)^{\alpha_x} \left(e \frac{p}{p_e} \right)^{-\left(1 - a_x\right)\varepsilon_x} \tag{6}$$

The relations establishing the volume and the prices of foreign trade will be precised continuously. That process will make it possible to study the direct impact of exchange rate change on the trade balance.

1.4. Direct Effect of Devaluation: Theorem of Critical Elasticities or Marshall-Lerner Condition

The depreciation of exchange rate improves competition ability, increases the volume of exports and lowers the volume of imports. Thus it always leads to an improvement in trade balance. But due to the fact that the exchange relations decline (relative prices p_x/p_m rise), the effect on nominal trade balance is not unambiguous. An analysis like this leads to the relative condition of price elasticities of foreign trade. It was named "the theorem of critical elasticities" or "Marshall-Lerner condition".

Let us assume that the prices of foreign trade are fixed in national currency. From (3) goes $p_x = p$ and from (4) $p_m = p_e/e$. Mentioned facts show that depreciation of local currency at 1% will have these effects:

	Local currency	Foreign currency
Import prices	+ 1 %	0
Export prices	0	-1 %

The volume of export will go up by γ_x %, as well as the volume of import will go down by γ_m %. The effect on nominal trade balance BC can be indicated as follows:

$$BC = p_x Ex - p_m Im \tag{7}$$

	p_x	Ex	p_m	Im
Price effect	0	-	-1%	-
Effect of competition ability	-	γ_x %	-	γ_m %

The depreciation of exchange rate improves the nominal trade balance only under condition that the sum of elasticities is higher than one: $(\gamma_m + \gamma_x) > 1$. In other words, the competition ability overruns raising the prices of imports.

From the relation for nominal trade balance (7) we obtain this relation by differentiation:

$$dBC = p_m Im\left(\varepsilon_m + B\varepsilon_x - 1\right)\left(-\frac{de}{e}\right), \qquad B = \frac{p_x Ex}{p_m Im} \tag{8}$$

Mentioned condition $(\gamma_m + \gamma_x) > 1$ is a special case of this condition if B = 1 (balanced nominal trade balance). An interesting fact is that the condition for elasticities toughens if the deficit of trade balance increases (B < 1).

If we make similar calculations using the equations for prices (3 and 4), we will obtain generalised Marshall-Lerner condition:

$$\frac{dB}{B} / \frac{de}{e} = -\left[\varepsilon_x\left(1 - a_x\right) + a_m\varepsilon_m + \left(a_x - a_m\right)\right] \tag{9}$$

Where the first member $\gamma_x.(1-a_x)>0$ is the volume effect and the third member $(a_x - a_m)\leq 0$ is the price effect. In case $a_m = 1$ and $a_x = 0$ we will obtain a special case:

$$\frac{dB}{B} = -\frac{de}{e}\left(\varepsilon_x + \varepsilon_m - 1\right) \tag{10}$$

which is the original condition $(\gamma_m + \gamma_x) > 1$. Let us return to 1% devaluation of local currency in a generalised case:

	Local currency	Foreign currency
Import prices	$+a_m$ %	$-(1-a_m)$%
Export prices	$+a_x$%	$-(1-a_x)$ %

The effect on nominal trade balance is:

$$BC = p_x Ex - p_m Im \tag{7}$$

	p_x	Ex	p_m	Im
Price effect	a_x	-	$-a_m$	-
Effect of competition ability	-	$+\gamma_x (1-a_x)$	-	$+\gamma_m a_m$

The analysis of equations (18) to (21) leads to these results:

$\alpha_m = 0,68$ $\gamma_m = 0,18$
$\alpha_x = 0,74$ $\gamma_x = 0,36$ (?)
$a_x = 0,11$ (?) $a_m = 0,60$ (?)

Let us try to apply the theorem of critical elasticities (Marshall-Lerner condition). It is in equation (8) and a generalised version in equation (9). Due to the fact that three of six elasticities are estimated very approximately, we cannot draw any exact conclusion. However, the analysis brought some results. The demand elasticity of export ($\alpha_x = 0,74$) is higher than that of import ($\alpha_m = 0,68$). We can this inequality ($\gamma_m + \gamma_x$) > 1 disprove because (0,18+0,36)<1. Also, it is very likely that $\gamma_x.(1-a_x)>0$; $0.36.(1-0.11)>0$ and $(a_x - a_m)\leq 0$; $(0.11-0.60)\leq 0$ hold true. According to equation (9) of generalised Marshall-Lerner condition, the volume effect $\gamma_x.(1-a_x)>0$ and the price effect $(a_x - a_m)\leq 0$ work against each other in the terms of trade balance, but from these approximations we are not able to say which one prevails.

This econometric analysis showed that in case of Slovak foreign trade we can neither confirm nor disprove whether Marshal-Lerner condition is met, that is if depreciation of the exchange rate has a positive influence on both real and nominal trade balance. Unequivocal result can be taken from simulated quantification of possible depreciation of the exchange rate using complex econometric model ISWE00q4.

2. Econometric Analysis of Foreign Trade

2.1. Description of the Econometric Model

In our simulations we used the econometric model ISWE00q4. This model was developed by the Institute of Slovak and World Economics of the Slovak Academy of Sciences, at the Dept. of mathematical modelling and analyses. This model is being developed and upgraded four times a year since 1997[6]. Models are used for midterm forecasting of macroeconomic indicators, and ex post or ex ante scenarios. These forecasts are prepared mainly for the Ministry of Finance of the SR and the National Bank of Slovakia.[7, 8]

From the formal point of view it can be characterised as a complex, simultaneous, demand oriented, macroeconometric model, with a real economy/money policy relation. The model consist of six ideological blocks of equations:

1. Block of income and expenditures of households
2. Block of prices and labour market
3. Monetary block
4. Block of state budget
5. **Block of foreign trade**
6. Block of GDP use

[6] Bors, L. – Kvetan, V. – Vokoun, J. – Palenik, V.: Construction and verification of macroeceonomic model ISWE 97q3, Journal of Economics, Bratislava, Nr. 46,3/1998, p 428 - 466
[7] Kvetan, V. – Vokoun, J. – Palenik, V.: Forecast of Slovak Economy development in the year 2001 with an outlook till 2004, Biatec, (Journal of National Bank of Slovakia) Feb. 2001, p. 2 - 5, 29 - 32
[8] Kvetan, V. – Vokoun, J. – Palenik, V.: Variant projection of development of economy of the SR till year 2005, Institute of Slovak and World Economics SAV, Bratislava, Nov. 2000, (study for the Ministry of Finance)

These blocks are interconnected to one big robust model. In the following section some parts of the model will be described with the focus on the foreign trade block.

1. Block of income and expenditures of households

The main variable calculated in this block is the nominal monthly wage. It is calculated in the following equation:

$$W=(-2.4769454)+9.9952407*CPI+1.208221*T4 \quad (11)$$

Where:
W - nominal monthly wage
CPI - consumer price index (1995 = 1)
T4 - time variable (4^{th} quarter)

This equation shows that wages are highly dependent on inflation. It can be explained by the power of trade unions and their effort to compensate the discrepancies in wages and price level. In this block also variables for other income (social income, insurance income, etc.) are calculated, together with expenditures (social payments, etc.).

2. Block of prices and labour market

Key variables calculated in this block are: consumer's price index (CPI), producer's price index (PPI) and labour demand. In producer's price index, the main factors of price making (material and work) are included.

$$PPI=.296240226+.484106868*PM\{-1\}+.000027404613*WI\{-1\} +.054110985*DEREG \quad (12)$$

Where:
PPI - Producers' price index (1995=1)
PM - Price of import (1995 = 1)
WI - Nominal wage in industry sector (SKK)
DEREG - government impact on producer prices

Material inputs are represented by prices of import, because of the high openness of the economy. Price of work is presented by the nominal wage in the industry. Consumers' price index is explained by the following equation:

$$CPI=(-.787746801)+1.6882433*PPI\{-1\}+.00030384055*M2\{-1\} +.071803041*DEREG2 \quad (13)$$

Where:
CPI - Consumers' price index (1995=1)
PPI - Producer's price index (1995=1)
M2 - Money aggregate M2
DEREG2 - government impact on consumer prices

This equation explains the consumer price index by producers' price index what represents the supply side of inflation. Demand inflation is represented by the M2 aggregate, which describes all liquid liabilities. Some prices are still controlled by the government (electricity, gas, transport etc.). Increases of these prices are described by variables DEREG and DEREG2.

Other price equations calculated in this block are GDP deflator, private consumption deflator and investment deflator. All of them are described by CPI or PPI. In the investment deflator, import prices have been significant.

Other part of this block concerns the labour market. Most important is the labour demand equation:

LN(L)=1.1968186+.735186698*LN(L{-1})
+.197626569*LN(0.5*ACEHB+0.5*ACEHB(-1)) +(-.156738841)*LW{-1} (14)

Where:

L	- Number of employed people
ACEHB	- credits given to enterprises and households
W	- Nominal monthly wage

As we can see from equation (14), labour demand has a strongly inertia character (L(-1)). Variable ACEHB represents the support to starting or developing business. When entrepreneurs obtain credits they can afford to hire more employees. Nominal wage decreases labour demand, since it increases the labour costs.

From this equation and exogenous labour supply we in following calculate the number of unemployed and the unemployment rate. Labour productivity is calculated as a fraction of GDP and number of employed.

3. Monetary block

This block follows the principle of monetary survey. It calculates all deposits and aggregates to particular monetary aggregate (M1, M2, etc.).

Among these equations the most important is the equation for time and savings deposits of the households.

DMTHB=(-11.939527)+.763154985*HUD+1.2336175*IRTH (15)

Where:

DMTHB	- Change of time and savings deposits of the households
HUD	- Gross savings of households
IRTH	- Interest rate

This equation shows that time and savings deposits of the households depend on the amount of household savings and interest rate.

From the M2 aggregate the amount of credits to enterprises and households is calculated. Monetary block is highly developed and as we mentioned, it consists the structure of monetary surveys made by the National Bank of Slovakia.[9]

4. Block of state budget

In this block all tax revenues of state budget are calculated. Key tax revenues include income tax from physical entities (private income), income tax of legal entities (profit of enterprises), value added tax and excise tax.

Income tax of physical entities is calculated by the following equation:

$$LN(TW)=(-4.1217798)+1.4793992*LN(YW\{-1\})+.008575214*LN(DYW) +(.131646972)*T3+(-.306538414)*U001 \quad (16)$$

Where:

TW	- Income tax
YW	- Wage income of population
DYW	- DYW=YW-YW(-1)
T3	- Time variable (3rd quarter)
U001	- Dummy variable

This income tax is explained by the wage income of population. Wage income represents nominal wage times number employed persons.

$$TC=1.5088127+.038804107*CP+.180600905*(HDD-HDD(-1)+1.2374475*T3 \quad (17)$$

Where

TC	- Excise tax
CP	- private consumption (current prices)
HDD	- Gross disposable income of households
T3	- time variable (3rd quarter)

Equation (17) describes excise tax income. It is explained by private consumption and difference in gross disposable income of households. Interesting is the significance of 3rd quarter – the usual holiday period, when the consumption of alcohol and cigarettes is higher, and people use more gas for travel.

In the VAT equation main explainable variables are private consumption and government consumption. In income tax of legal entities (enterprises) the profit of enterprises is significant.

5. Block of foreign trade – the volume of foreign trade of the Slovak Republic

While estimating the equations of the foreign trade volume specifications of equations (1) and (2) were used. Equations of behaviour of Slovak export and import of goods and services in fixed prices were estimated. Due to the necessity to connect equations of foreign trade with other parts of the complex econometric model, time series of import and export of goods

[9] For more details please see Bors - Kvetan - Vokoun - Páleník 1998.

together with services in fixed prices were used.[10] The authors experimented with a broad spectrum and specifications of equations of import and export. For this work they chose this linear ***equation of import***:

$$MGSR=(-17.45)+.6162*DOP+0.5141*EGSR+(-23.34)*CEPOD+ +1.111*UM+(-6.762)*T3 \quad (18)$$

The import equation (18) is represented by economic indicator ***MGSR*** - the import of goods and services in fixed prices, in bil. SKK. Gross domestic product ***Q*** as one of the determinants for import is in equation (18) substituted by two indicators. Interior demand in fixed prices (1995=1), in bil. SKK: ***DOP= C+G+DK***, which is consumption demand for imports (***C***-private consumption, ***G***-public consumption) together with investment demand for imports (***DK*** - production of gross capital). The estimated absolute elasticity[11] means that 1 bil. SKK rise of interior demand ***DOP*** leads to the increase of import by 0.62 bil. SKK. This quite large import intensity of interior demand is, in our opinion, caused mainly by the specialisation of Slovak producers, which do not produce a whole broad range of products demanded.

The second determinant of import demand is export of goods and services in fixed prices ***EGSR*** (bil. SKK). The estimated absolute elasticity means the 1 bil. SKK increase of export leads to 0.51 bil. SKK import increase. That is close to the relative elasticity by which 1% increase of export leads to 0,53 % raise of import[12]. It is caused by the fact that Slovak economy has virtually no raw materials and so exports result in imports of raw materials and intermediate products. Also, Slovak export consists mainly of intermediate products and products with small added value.

As the price determinant in equation (18) we used relative price: ***CEPOD = PMGSR/PXI95***, where ***PMGSR*** is deflator of import of goods and services and ***PXI95*** are prices of domestic producers. Estimated elasticity means that one unit increase of relative prices ***CEPOD*** results in decrease of imports into SR by 23 bil. SKK. In terms of relative elasticities, 1% rise of relative prices leads to 0.18 % decrease of imports.

In equation (21) there is also a dummy variable *UM*, which represents irregular impacts on foreign trade, for example tightening import certificates. To estimate the equations we used seasonally unadjusted quarterly time series. Therefore, in equation (21) there is also a seasonal variable ***T3,*** which represents statistically significant decrease of demand in the third quarter.

Equation of the export volume:

$$EGSR=28.81+0.002320*MDSK\{-1\}+(-57.79)*DPM+10.37*UE+(-6.994)*T1 \quad (19)$$

This equation respects the distinctiveness of Slovak export. The export demand is characterised by the industrialised countries' imports in SKK: ***MDSK = MDP . USDSK***, where ***MDP*** is the import by industrialised countries (in bil. USD) and ***USDSK*** is the

[10] All indicators of economic development are in fixed prices, 1995=1.

[11] The relative elasticity for an equation like this (linear) is counted as:

$$E_{y,xi} = \frac{\delta y}{\delta x_i} \cdot \frac{x_i}{y}$$

[12] Relative elasticities are counted for the second quarter of 2000.

quarterly average exchange rate USD/SK. It is delayed {-1}, which signals that Slovak export reacts to increase in exterior demand around one quarter later. The absolute demand elasticity of export is 0,0023 and the relative elasticity is 0,74.

Another explaining variable respecting price determinants is ***DPM***. Its construction is more complicated:

IND=USDSK/29.503
PM=PEGSR/(UIMD95*IND)
DPM=PM-PM(-1)

IND is the ***USDSK*** exchange rate counted on base year 1995, p_m are export prices (***PEGSR***) recounted by exchange rate (***IND***) and modified by dummy variable (***UIMD95***[13]). ***DPM*** is the change of modified export prices. The absolute price elasticity of export is –57.79 and the relative elasticity is 0.00080. In comparison to specification (2) the effect of foreign prices p did not appear as intensive and the effect of the change (not value) of modified export prices did show significant. Therefore the obtained price elasticity of export from equation (19) is not the same as price elasticity of export from equation (2). Dummy variable ***UE*** stands for irregular influences on export and seasonal variable ***T1***, which quantifies regular decrease of demand in first quarters.

The following ***equation of export prices*** was chosen:

$$PEGSR=0.1266+0.8582*PXI95+0.0990*UPE \qquad (20)$$

The main explaining variable is local prices of industrial producers ***PXI95***, which represents local prices. The absolute elasticity is 0.85 and the relative elasticity is 0.89.

The influence of exterior prices p_e did not show as significant.

Equation of import prices should specify equation (4). The following was chosen:

$$PMGSR=(-0.4236)+0.01609*KURZ+0.7967*DCENA+ +0.1909*UM97+0.1029*UPM \qquad (21)$$

where ***KURZ*** is exchange rate of a basket of currencies (***KURZ=0,25.USDSK+0,75.EURSK***). Absolute exchange rate elasticity of import prices is 0.02 and the relative elasticity is 0.60. In variable ***DCENA = UEXD95.(1+TIS/10)*** the dummy variable ***UEXD95*** is constructed similarly as variable ***UIMD95*** in equation (20). Variable ***TIS*** quantifies the effect of import surcharge, which in some periods directly influenced import prices (it has much greater influence than tariffs, which are very low and statistically insignificant). This absolute price elasticity is 0.80 and relative elasticity is 0.60.

[13] Dummy variable UIM95 stands for the stabilisation of Slovak export from 1993 and for the effect of the change of currency basket. In 1993, it was 0.9, increased to 1.0 in 1995 and slightly decreased to 0.9 in 2000.

6. Block of GDP use

In this block all the components of domestic demand are calculated. Connection with the block of foreign trade makes it possible to calculate GDP.

$$GDP=C+I+G+(X-M) \quad (22)$$

Where:
GDP - Gross domestic product (constant prices 1995)
C - Private consumption (constant prices 1995)
I - Gross capital formation (constant prices 1995)
G - government consumption (constant prices 1995)
X - Export (constant prices 1995)
M - Import (constant prices 1995)

Particular components of GDP are calculated by the following equations:

Private consumption:

$$CP=7.1327035+.833852459*HDD+(-11.172865)*T4+.023617021*(l-l(-1)) \quad (23)$$

Where:
CP - Private consumption (current prices)
HDD - Gross disposable income of households
T4 - Time variable (4^{th} quarter)
L - Number of employed persons

Government consumption:

$$GP=8.2548822+.693124684*FE+4.4353281*T4+6.1816329*U982 \quad (24)$$

Where:
GP - Government consumption (current prices)
FE - Current expenditures of state budget
T4 - Time variable (4^{th} quarter)
U982 - dummy variable (1998q2)

Gross fixed capital formation:

$$DFKP=(-37.183426)+.275282708*ACEHB+(-.676023287)*YZ1+.980378469*CE+.171317257*CFP+(-6.2881704)*T1 \quad (25)$$

Where:
DFKP - Gross fixed capital formation (current prices)
ACEHB - Credits to households and enterprises
YZ1 - Enterprises' profit
CE - Capital expenditures of state budget
CFP - Foreign credits

Gross capital formation:

$$IP=DFKP+DJP \quad (26)$$

Where:

IP	- Gross capital formation (current prices)
DFKP	- Gross fixed capital formation (current prices)
DJP	- Stock building (current prices)

With the use of deflators calculated in the bloc of prices and labour productivity we can calculate all GDP components in fixed prices 1995.

This was a simple description of the model we used for the simulation. The model is more robust of course. We have chosen the key equations only to let the reader know which main relationships we deal with.

3. Ex Post Simulations

Initially, we have created several scenarios, in which we tested the reactions of the model on the changes in particular variables in the equations for import and export.[14] Afterwards we designed scenarios with a closer focus on the possible impacts on the foreign trade due to joining EU. Our final decision lead us to focus on two scenarios. In the first one we wanted to show the reactions of foreign trade – and the economy at large – in the case of not existing import surcharge. The assumption is that in the case of joining the EU, import surcharge as a tool for protection of internal market can not be applied anymore. The second scenario describes higher openness of the Slovak economy. Joining the EU shall lead to higher openness of the economy due to better cross-border co-operation, higher level of labour mobility. One can expect that joining EU will bring a higher level of investment and consumption goods imported on one side, but also higher demand for Slovak business partners on the other side. In this scenario we actually simulated two cases. One deals just with increasing openness on the import side of foreign trade. In the second case we have been trying to find the optimal reaction of export to decrease the imbalance occurred by the growth of import.

All scenarios were made for the period 1996q1 to 2000q4. Some fresh data for year 2000 has been used as well. We kept the condition ceteris paribus (the remaining variables stay the same), so in each scenario we deal just with one issue. We did not try to combine impacts. These scenarios are made for illustration and description of the situation of foreign trade.

The calculated values of indicators have been compared with historical data, which are listed in Table 1. These values were used as a base in the evaluation of changes.

[14] For descriptive purposes there is a scenario with different exchange rates development in the annex.

Table 1 Historical data

Indicator	Historical data of economic indicators					Simulated values				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
Y	579.9	615.9	641.1	653.3	667.7	580.5	605.1	648.8	652.4	676.9
C	300.1	317.0	333.8	334.2	322.7	294.5	324.8	342.6	334.4	330.8
G	131.6	136.4	143.6	132.9	131.8	130.8	133.4	142.3	135.0	134.5
I	190.3	213.1	236.8	192.2	190.9	194.0	186.0	235.8	217.3	216.2
X	328.6	386.3	433.3	448.0	519.2	333.7	388.6	433.5	447.5	527.2
M	371.1	419.7	503.0	472.8	520.8	372.5	427.6	505.3	481.8	531.8
(X-M)	-42.5	-33.4	-69.9	-24.8	-1.6	-38.8	-39.0	-71.8	-34.3	-4.6
EPI	1.018	1.030	1.060	1.119	1.255	1.011	1.036	1.063	1.112	1.193
MPI	1.089	1.109	1.077	1.153	1.291	1.081	1.106	1.083	1.154	1.244
CPI	1.027	1.090	1.163	1.286	1.440	1.041	1.096	1.161	1.286	1.449
PPI	1.025	1.068	1.103	1.145	1.257	1.025	1.072	1.103	1.136	1.225
FDEF	25.6	12.0	19.2	14.8	27.6	31.6	14.3	19.1	13.3	32.9
FP	166.3	180.8	177.8	216.7	213.5	160.3	178.6	177.9	218.2	208.3
UR	12.6	12.9	13.8	17.5	18.2	11.5	11.9	13.8	17.5	18.1
W	8.2	9.2	10.0	10.7	11.4	8.0	8.9	10.2	10.9	11.8

where

Y - GDP (constant prices 1995, SKK billion)
C - Private consumption (constant prices 1995, SKK billion)
G - Government consumption (constant prices 1995, SKK billion)
I - Gross capital formation (constant prices 1995, SKK billion)
X - Export (constant prices 1995, SKK billion)
M - Import (constant prices 1995, SKK billion)
(X-M) - Foreign trade balance (constant prices 1995)
EPI - Export prices (export deflator)
MPI - Import prices (import deflator)
CPI - Consumer price index
PPI - Producer price index
FDEF - State budget deficit (SKK billion)
FP - State budget revenues (SKK billion)
UR - Unemployment rate (%)
W - Nominal wage (SKK thousands)

In particular scenarios we calculated the difference between the simulated values and scenario values. Real data given by the scenario has been calculated from historical data and the difference given by scenario.

3.1. Scenario with Non Existing Import Surcharge

In this scenario (scenario 1) we simulated the case of no import surcharge. Import surcharge is a special type of duty causing restrictions of imports; it is a state budget income.

We expected a growth of imports due to the decline of import prices. On the other hand we also expected a decrease of the state budget revenues, what will lead to a higher budget deficit. Historical data on the level of the import surcharge rates are shown in Table 2.

Table 2 Historical levels of import surcharge (%)

	1996				1997				1998				1999				2000			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Import surcharge level (%)	10	10	7.5	7.5	0	0	7	7	5	3	0	0	0	7	7	7	5	5	3	3

As we can see from the table, highest levels of import surcharge have been set in 1996. During the respective time, the surcharge was introduced, lowered and abolished several times to solve problems with foreign trade. Since the import custom duties of the SR are rather low and their causal increasing is rather complicated, the only tool for protection of import used to be the import surcharge. The last time it was introduced again in the summer of 1999, when the new government[15] started a package of economic reforms. In the following periods we expect again zero import surcharge.

We expect a very limited possibility, even impossibility, to use such instruments of internal market protection in the future (especially in the case of joining the EU). Results of this scenario are in Table 3.

Table 3 Results for scenario 1

	Differences from historical values					Real values given by scenario				
	1996	1997	1998	1999	2000	1996	1997	1998	1999	2000
Y	0,16%	0,79%	0,60%	0,38%	0,79%	580,8	620,8	645,0	655,8	673,0
C	-0,35%	1,23%	0,99%	0,78%	1,83%	299,0	320,9	337,1	336,8	328,6
G	4,04%	3,75%	3,03%	1,92%	2,73%	136,9	141,5	148,0	135,4	135,4
I	2,04%	1,03%	0,31%	2,40%	2,31%	194,2	215,3	237,5	196,8	195,3
X	0,67%	-0,16%	-0,22%	0,06%	-0,06%	330,8	385,7	432,4	448,3	518,9
M	2,56%	1,38%	0,71%	1,61%	1,64%	380,6	425,5	506,6	480,4	529,3
(X-M)	*	*	*	*	*	-49,8	-39,8	-74,2	-32,1	-10,4
EPI	-2,61%	-2,60%	-2,17%	-1,34%	-1,98%	0,992	1,003	1,037	1,104	1,230
MPI	-6,35%	-2,24%	-1,25%	-3,08%	-2,27%	1,020	1,084	1,064	1,117	1,262
CPI	-3,11%	-5,33%	-4,47%	-1,58%	-2,64%	0,995	1,032	1,111	1,266	1,402
PPI	-3,00%	-2,93%	-2,44%	-1,53%	-2,25%	0,994	1,037	1,076	1,127	1,229
FDEF	24,00%	73,30%	37,33%	50,59%	19,97%	31,7	20,8	26,4	22,2	33,2
FP	-4,73%	-5,86%	-4,02%	-3,08%	-3,15%	158,5	170,2	170,7	210,0	206,7
UR	-1,10%	-15,12%	-10,82%	-6,81%	-10,66%	12,5	11,0	12,3	16,3	16,3
W	-4,05%	-6,54%	-5,09%	-1,87%	-3,24%	7,8	8,6	9,5	10,5	11,1

In the case of not existing import surcharge import the difference is most marked in 1996. This is the year, when the import surcharge has been on the highest level. The difference in imports is 0.7%-2.6%. Import surcharge has no direct influence on exports. On the export side we can see an increase in the years 1996 and 1999 (0.7% and 0.1%). In the remaining periods the export showed a decrease of 0.1% - 0.2%. Changes in export seem to be irrelevant, considering the data. The situation in export and import will lead to a higher foreign trade balance deficit.

Cutting down the import surcharge would certainly affect income of the state budget. In this case it would be reduced by 3.1% - 5,9%. Since we assumed budget expenditures as a constant (given by law), budget deficit would increase in the interval of 20% – 73%. The

[15] Government of Prime Minister Mikulas Dzurinda.

price effect of a reduced (abolished) import surcharge is significant as well. Reducing the import prices will directly affect CPI and PPI. As mentioned in the part on model description, there is a significant relationship between CPI and the wage level. Lower CPI will lead to a slower wage growth. When wages are low, labour demand grows and unemployment declines (16% in the year 2000).

3.2. Scenario with a More Open Economy

This scenario describes the situation of more open economy. In the case of joining the EU we expect closer cross-border cooperation, which will increase our demand for import, as well as the demand of other EU countries for our exports.

In fact it consists of two sub-scenarios. In the first one (scenario 2.1) we estimated the growth of elasticity in the import equation (18). We assumed a growth of elasticity by 0.01 SKK for domestic demand (DOP) and for export (EGSR). The growth by 0.01 SKK is just for illustration. At present it is difficult to determine how high the actual growth of elasticity will be.

In the second sub-scenario (scenario 2.2) we examined the optimal growth of elasticity in the export equation (19). We tried to find an increase of export that would not spawn extreme disturbances in the foreign trade balance. We increased elasticity by 0.001 in MDSK variable. This variable describes our share on the import of developed countries. We assumed that joining EU will lead to an increase in the demand of developed countries for our exports, hence the Slovak share on world import will increase.

Table 4 Results for scenario 2.1

	Differences from historical values					**Real values given by scenario**				
	1996	**1997**	**1998**	**1999**	**2000**	**1996**	**1997**	**1998**	**1999**	**2000**
Y	-1,64%	-1,69%	-1,75%	-1,73%	-1,80%	570,4	605,5	629,9	642,0	655,7
C	0,01%	0,02%	0,04%	0,03%	-0,01%	300,1	317,1	333,9	334,3	322,7
G	0,00%	0,00%	0,00%	0,00%	0,01%	131,6	136,4	143,6	132,9	131,8
I	0,04%	0,10%	0,14%	0,06%	-0,06%	190,4	213,3	237,1	192,3	190,6
X	0,00%	0,00%	0,00%	0,00%	0,00%	328,6	386,3	433,3	448,0	519,2
M	2,57%	2,46%	2,34%	2,38%	2,23%	380,7	430,0	514,8	484,1	532,4
(X-M)	*	*	*	*	*	-52,1	-43,7	-81,5	-36,1	-13,2
EPI	0,00%	0,00%	0,00%	0,00%	0,00%	1,018	1,030	1,060	1,119	1,255
MPI	0,00%	0,00%	0,00%	0,00%	0,00%	1,089	1,109	1,077	1,153	1,291
CPI	0,00%	0,00%	-0,01%	-0,02%	-0,04%	1,027	1,090	1,163	1,286	1,440
PPI	0,00%	0,00%	0,00%	0,00%	-0,01%	1,025	1,068	1,103	1,145	1,257
FDEF	-0,86%	-2,71%	-1,83%	-2,70%	-0,70%	25,3	11,7	18,8	14,4	27,5
FP	0,17%	0,22%	0,20%	0,16%	0,11%	166,6	181,2	178,2	217,1	213,7
UR	-0,04%	-0,18%	-0,31%	-0,23%	-0,03%	12,6	12,9	13,8	17,4	18,2
W	0,00%	0,00%	-0,01%	-0,02%	-0,05%	8,2	9,2	10,0	10,7	11,4

From Table 4 we can see the consequences of higher sensitivity of domestic demand and exported production on import. We increased elasticity of the variable DOP – domestic demand (C+I+G) from 0.616 in the original import equation to 0.626 in the "scenario" import equation. In the case of elasticity of variable EGSR – exports of goods and services in constant prices, we increased the value from 0.514 to 0.524. We can see minimal impact on the export, prices and government consumption. The main impact of this scenario is on the

import side, which has been higher by more than 2% comparing with historical data. This would lead to high imbalance of foreign trade; in 1998 more than 81 billions SKK.

The moderate decrease in the unemployment rate may be caused by the slight growth in labour demand. It is caused by the slightly increasing volume of credits given to households and enterprises, calculated in the monetary block. (The influences and behaviours in the monetary block is complex and is not the purpose of this paper. For detailed description of the model see Palenik et al., 1998)

For this reason we accepted 0.001 higher elasticity in the share of Slovak exports on the imports of developed countries – MDSK (scenario 2.2). From the analysis of the export equation we can see that keeping the trade balance at a moderate level would require an increase of our share on import of developed countries from 0.002 to 0.003. Results are in Table 5.

Table 5 Results for scenario 2.2

	Differences from historical values					**Real values given by scenario**				
	1996	**1997**	**1998**	**1999**	**2000**	**1996**	**1997**	**1998**	**1999**	**2000**
Y	8,33%	10,51%	11,54%	14,06%	15,13%	628,2	680,6	715,1	745,1	768,7
C	1,27%	3,12%	4,91%	5,82%	7,00%	303,9	326,9	350,2	353,7	345,3
G	-0,05%	-0,34%	-0,61%	-0,77%	-0,77%	131,5	135,9	142,7	131,9	130,8
I	8,92%	17,03%	22,57%	30,71%	29,55%	207,3	249,4	290,2	251,2	247,3
X	31,55%	30,58%	29,45%	34,69%	33,71%	432,3	504,4	560,9	603,4	694,2
M	20,90%	23,95%	24,27%	29,72%	29,53%	448,7	520,2	625,1	613,3	674,6
(X-M)	*	*	*	*	*	-16,4	-15,8	-64,2	-9,9	19,7
EPI	0,04%	0,24%	0,44%	0,56%	0,57%	1,018	1,032	1,065	1,125	1,262
MPI	0,00%	0,00%	0,00%	0,00%	0,00%	1,089	1,109	1,077	1,153	1,291
CPI	0,30%	1,16%	1,82%	2,07%	1,94%	1,030	1,103	1,184	1,313	1,468
PPI	0,04%	0,27%	0,49%	0,63%	0,65%	1,025	1,071	1,108	1,152	1,265
FDEF	-24,2%	-76,1%	-69,8%	-125,1%	-46,8%	19,4	2,9	5,8	-3,7	14,7
FP	4,76%	6,08%	7,51%	7,62%	7,38%	174,2	191,8	191,2	233,2	229,2
UR	-8,65%	-29,34%	-42,67%	-42,22%	-46,62%	11,5	9,1	7,9	10,1	9,7
W	0,39%	1,42%	2,07%	2,45%	2,38%	8,2	9,4	10,2	11,0	11,7

This scenario shows very positive results. In the case of higher share of our export on import of developed countries, export would increase by approximately 30% compared to historical data. It is necessary to say that we still have increased elasticity in the import equation. Increased level of export automatically brings additional imports. But only to the level that foreign trade would not lead to radical imbalance.

All this will lead to the growth of private consumption and investment. We can see also a small decrease of government consumption. The decrease of government consumption is caused by the negative price effect. The government consumption in current prices remains unchanged but because of higher inflation the government consumption in constant prices declines. The described impact on the particular GDP components will lead to a higher GDP growth. GDP would reach the level 768.7 bil. SKK in 2000.

Higher export will lead to a better usage of economic factors and it will increase the industry output. Expected reactions include an increase of the labour demand, and thus a significant decrease of the unemployment rate and increasing of the nominal wage.

3.3. Conclusions

- Slovak economy is small and characterised as very open. It is sensitive to changes in foreign trade. From econometric analyses we can see that for each 1 SKK of domestic demand we need 0.616 SKK of import. Each 1 SKK of export requires 0.514 SKK of import.
- Joining the EU will restrict the use of import surcharge as a tool of protecting domestic market from imports, restricts exchange rate policy and make economy more open.
- Cancelling the import surcharge in the years 1996 - 2000 would have lead to a higher imbalance in foreign trade. It would have also increased the state budget deficit. However, the use of this tool for protection of domestic market and state budget revenues in the future is rather unlikely.
- A more open economy means not only higher import demand. In such case a high foreign trade imbalance would lead to a slower growth of GDP.
- Adequate export efficiency of Slovak economy would bring better results, including higher GDP growth, higher domestic demand, lower foreign trade imbalance and budget imbalance, lover unemployment.

4. Trade Effects of EU Accession – Discussion of Current State and Future Prospects

EU membership implies free trade with other Member States and the transfer of trade policy to the EU. Free intra-EU trade consists not only of the elimination of tariffs and contingent measures of protection such as anti-dumping, but also of quantitative restrictions and other equivalent measures. The existing Customs Law and the implementation of regulations are already harmonised with EU legislation and procedures to a significant extent. Under the Europe Agreement, elimination of tariffs on trade with the EU is to be achieved by January 1, 2001, and quantitative restrictions are to be removed by 2002. Thus, full implementation of the Europe Agreement will result in the elimination of trade barriers before accession negotiations are likely to be completed.

The Slovak Republic's import regime is liberal, with much of its trade occurring under preferential trading arrangements, most importantly the customs union with the Czech Republic, the Association Agreement with the EU, the Central European Free Trade Area (CEFTA), and bilateral free trade agreements. These agreements cover over 80 percent of exports and 70 percent of imports. Indeed, the only major trading partners without a free trade agreement are Russia and Ukraine, which cover about 20 percent of total imports (mostly fuels and natural resources that enter the country free of duty). The applied Most-Favoured Nation (MFN) tariffs are bound under the WTO.

Tariffs on industrial products are generally very low (e.g., in 1996, the total tariff revenue was equivalent to only 3 percent of the total value of imports, of which about one third was generated by a temporary import surcharge on certain consumer goods). Effective tariff rates are being further reduced in compliance with the implementation of tariff reduction commitments embodied in the Europe Agreement with the EU and the WTO. Therefore, the implementation of the Europe Agreement and the abolition of tariffs at accession implies some further trade opening, but its impact on imports and the performance of most branches of industry should be moderate because the low level of tariff protection. The fiscal impact of tariff reductions shall also be moderate for the same reason.

Accession to the EU will imply the adoption of the Common External Tariff (CET) of the EU by Slovakia. A comparison of the Slovak and EU MFN tariff rates suggests that adoption of the common external tariff should not give rise to any major difficulties. The average difference of tariff rates in the cases where the Slovak Republic has duties above EU levels is only 4 percentage points. A similar difference exists in the cases where Slovak rates are below EU rates. The industries that tend to have tariffs exceeding EU tariffs include wood products, pulp and paper, glass and cement, machinery and equipment, transport equipment, furniture, and toys.[16] Reducing the tariffs on these items would help increase competition, enhance productivity, and lower prices for consumers (some of these sectors are major export industries – e.g., transport equipment, pulp and paper, glass). The fiscal impact of further tariff reductions would be moderate. Moving MFN duties down to EU levels would result in a revenue loss of the order of 0.3 percent of GDP.[17]

Full compliance with the Europe Agreement and other trade arrangements will also require the eventual elimination of all non-tariff, mostly administrative measures (import surcharge, licensing, etc.). Export restrictions, such as non-automatic licensing, are an implicit subsidy to domestic industries and may raise their level of effective protection. Under the Europe Agreement, all such restrictions are to be eliminated by 2002. The elimination of these barriers will have a relatively important impact on the budget, since these measures have the potential to generate considerable revenues. This indicates the need for fiscal corrections in other areas of the budget in order to enable the elimination of these measures without generating fiscal imbalances.

The Association (Europe) Agreement has and will importantly determine the shape of Slovak trade policy in the next few years. However, the Government still faces some policy options during the pre-accession period, which will most probably influence effects on foreign trade after entering the Union. The main policy issue (which will be decisive for post-accession trade developments also) is whether to start moving towards the CET before accession, or whether to maintain the tariffs on goods imported from outside the EU until accession. There would be economic justification for adopting the CET immediately, if it implied a lower average rate of protection with less dispersion. The comparison of MFN tariffs applied by the EU and the Slovak Republic suggests that the two tariff structures are generally similar, but in number of instances adoption of the EU's CET would increase protection. Examples include beverages and tobacco, textile and clothing and food items (these commodity groups hide significant degree of dispersion, as there are 1,300 items at the SITC 8-digit level where EU tariffs are 5 to 20 percentage points higher than in Slovakia). The adoption of the CET will significantly influence the imports of mineral oil and gas, currently almost exclusively imported from Russia and Ukraine virtually free of duty. Raising tariffs on these commodities even by fragments of percentage points would be economically very harmful for Slovakia with respect to the strategic importance of these resources for the economy and the lack of territorial diversion of these imports (*see also disaggregated paper Sectoral Analysis of the Slovak Foreign Trade*). The fact that the Slovak Republic has bound its tariffs in the WTO further supports this argument, as any increase in bound rates as part of a strategy to gradually converge to the CET may give rise to compensation claims in the WTO. This is less likely to occur in the accession context, as a result of the WTO rules in this connection.[18]

[16] National tariff schedules.
[17] World Bank estimates.
[18] Slovak Republic - A Strategy for Growth and European Integration, The World Bank (1998)

The decision about the adoption of the CET will largely determine the trade balance effects, whether before, or after EU accession. According to the World Bank (1998), the best option with regard to tariffs would be to maintain an independent tariff policy until accession, and limit any changes to reducing those that are now significantly above the EU's MFN level. Although in many cases the free trade agreements that the Slovak Republic has signed implies that traders pay lower duty rates, consideration should be given to the possible trade diversion that may be induced by higher tariffs. This suggests it would be beneficial to reduce tariffs on these items to the EU level.

5. Conclusions and Policy Implications

In the past decade, the countries of Central and Eastern Europe have been undergoing a unique change. They have been affected by at least three overlapping and, in many cases, intertwining developments: socio-economic transformation, catching up and adjusting to the EU, and the challenges of globalisation.

As a result, in most cases, it is extremely difficult or impossible to separate the effects of EU integration from other components of the process. Most of the effects of preparing for EU membership can be attributed to those of transformation or globalisation. They would have appeared, even if accession to the EU was not a priority task. It is also difficult to differentiate between the gains and losses arising from the various stages of relations with the EU. The effects of the Association Agreements, those of the pre-accession period and those expected after reaching full membership, influence each other and partly overlap each other. (Tang, 2000)

Every EU enlargement in the past brought about specific problems and consecutive also the need for adequate measures to be taken with respect to trade, fiscal, exchange rate and other policies. In general, the eastern enlargement of the EU is expected to be the most demanding, both for EU members, as well as the EU candidates from Central and Eastern Europe.[19]

Our ex post simulation analysis concluded that changes in foreign trade relations are decisive for small economies, such as Slovakia. Restrictive measures (e.g., import surcharge, certificates) will have to be eliminated at EU accession, while some protective tools shall be abolished already in the pre-accession period. The economy will become even more open, which will put additional pressure on domestic enterprises to cope with competition, and also affect the state budget and certain policies of the state. It will be important to create a motivating business environment which will enhance domestic production and raise the competitiveness of Slovak exports. It is not only direct support to exporters in form of loans and credits, but also a wide range of measures aimed at improving the business environment in Slovakia (bank and enterprise restructuring, improved law enforcement, simplified procedures regarding establishment of companies, adjusting tax and transfer burden to levels

[19] Measuring direct effects of the accession process may be relatively easy, but it is much more difficult to identify indirect consequences, which may be often more relevant because of substantive multiplier effects of the adjustment that nations must take to prepare sufficiently for membership in the EU. These multiplier effects include economic multiplier effects of economic adjustment, such as the longer term budgetary consequences of redistributing resources in favour of integration. They also include cross-sectoral multiplier effects, for instance, when the economic adjustment process leads to non-economic multiplier effects, such as on the political, legal, social, and institutional spheres.

which have motivating effects on the development of enterprises, and other measures which are not directly related to the scope of the paper).

Accession to the EU shall not dramatically change the trade balance of the Slovak Republic. This was suggested also by our sectoral analysis of trade effects of EU integration.[20] Protective measures on EU imports will be abolished, while some additional protection may be grow in the area of imports from third countries. However, the overall importance of tariffs and other restrictive measures will decline further. To keep the trade deficit in moderate levels, specific policy implications can be summarised:

Support to FDI inflow. One of the factors that would enhance positive effects of EU accession and contribute to reducing the negative impacts of the process for several sectors of economy is increased inflow of foreign direct investment. It appears that intensified capital flow has greater chances to reduce regional economic disparities within the EU than labour force migration.

Capital inflow, particularly FDI, increases the absolute volume of trade, mainly by creating conditions for higher exports than preceding imports (in case of export-oriented and specialised investments). Our econometric analyses were based on past developments, when the effect of FDI in Slovakia was insignificant. During the analysed period, Slovak Republic recorded substantially lower FDI per capita inflow than Hungary, Poland and the Czech Republic. The current economic policy of applying measures to attract FDI creates conditions for a higher participation of foreign capital in the Slovak economy already in the pre-accession period. After EU accession, we expect additional increase of FDI inflow. After the wave of participation of strategic investors in indigenous utilities (telecommunication, energy, etc.) we may expect a higher involvement of foreign investors in the manufacturing industry and particularly in the process of re-assessing and deepening the specialisation of production within the EU. Based on this assumption, the mutual trade should grow, resulting in improved net exports of the Slovak Republic.[21]

Enhancing cross-border cooperation. Regional cooperation should be a target in its own because it will undoubtedly improve overall competitiveness and thus also the readiness of the applying countries for deeper integration. Slovakia should gain economically from neighbourhood opportunities and enhanced cross-border cooperation with Austria, Hungary, Poland, and the Czech Republic (e.g., supported by EU's interregional programs). In the EU itself one can also very clearly observe how much easier, and therefore more intensive, cooperation among neighbouring countries or regions and districts is. According to Altmann (1996), lower transportation costs, better knowledge of demand and supply structures in neighbouring regions, proficiency in languages of the population living in border areas, and often also ethnic kinship across the border provide unused opportunities in the eastern countries, as well. A variety of policy instruments would support cross-border cooperation: enlargement and improvement of infrastructure connections, support to tourism, regional development strategies, decentralisation of public administration, etc.

[20] Vagac – Palenik – Kvetan – Krivanska: *Sectoral Analysis of the Slovak Foreign Trade (P97-8134-R)*

[21] The beneficial effects of FDI on the trade balance of the host country mainly occur via increased exports due to the production of more competitive products and to the utilization of the distribution networks and the marketing-related know-how of the foreign investor. Foreign direct investments may mean a relief of the pressure on foreign exchange funds of the host country also in cases when the production of goods is taken care of which previously had to be imported. The Slovak experience suggests that foreign investors doing business in our country have beneficial effects on exports as well as on the balance of payments.

Adoption of the euro. While there is not a full consensus on the medium-term implications of the European monetary union (EMU) for the euro-area growth, it is generally understood that EMU enhances productivity and growth within that area by reducing transaction costs, increasing allocative efficiency, eliminating exchange risk premia in interest rates, and boosting demand. The degree to which changes in economic activity will affect export growth in the CEECs will obviously depend on the degree of trade openness of CEECs and on the share of CEECs' exports directed to the EU. Both indicators suggest a rather high exposure of Slovakia to changes in the euro-area's GDP.[22] By eliminating currency risk and currency-related transaction costs, EMU is reducing the costs of intra-euro-area trade. In sum, EMU has the potential to bring important trade benefits to Slovakia, although it will also pose new challenges. To boost the positive effects of a single currency union, the most convenient for Slovakia would be to adopt the euro and enter the EMU at the earliest possible date.

Use of structural funds. After membership, Slovakia will be entitled to access EU's structural funds. The allocation of these funds, not only in terms of geographical location – but also related sectoral distribution – will co-influence Slovak foreign trade. Sectors and commodities which will be listed among priorities to receive support from structural funds will tend to gain larger benefits and growth rates than sectors without assistance. A rational use of EU's financial assistance may strengthen the export potential of domestic production and positively influence the trade balance.

Negotiating a "restriction-free" trade with EU. It appears likely that EU will impose some temporary restrictions to labour mobility from CEE countries. Similar measures applied to trade flows from new members would deteriorate their trade balance. As our ex post analyses confirmed, a higher openness of the Slovak economy (expected after EU accession) may worsen the trade deficit, if it is not balanced by exports. Pre-accession negotiations with EU should serve as a convenient ground for concluding a definitive removal of trade barriers at entry to the European Union.

[22] The results of IMF's econometric model MULTIMOD (applying income elasticities of imports) using 1996 data on trade shares indicate that a one percent increase in the euro-area real GDP would increase Slovakia's exports by 0.6 percent, implying an increase of GDP (excluding multiplier effects) by 0.3 percent. Because of the growing share of EU in Slovak trade, the benefits of the EMU should even increase.

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Annex 1
Ex post simulations: Scenarios with changes in the exchange rate

In these scenarios we simulated the situation of different exchange rates. We simulated 1% higher and lower exchange rates of SKK to USD and EUR. In the reality, the average exchange rates have been 31.01 USD/SKK and 38.64 EUR/SKK in 1996, and 47.07 USD/SKK and 43.1 EUR/SKK in 2000. In the scenario with higher exchange rate (scenario S1) we assumed 31.32 USD/SKK and 39.03 EUR/SKK for 1996 and 47.55 USD/SKK and 43.53 EUR/SKK for 2000. In the scenario with lower exchange rate (scenario S2) we assumed 30.7 USD/SKK and 38.26 EUR/SKK for 1996 and 46.61 USD/SKK and 42.67 EUR/SKK. Overview of exchange rates is shown in Table 1. Exchange rate CZK/SKK was not included because of stabilised relations and lower importance in the foreign trade of Slovakia.

Table A.1 Exchange rate figures in the particular scenarios

Year	**Scenario S1**		**Reality** [23]		**Scenario S2**	
	EUR/SKK	USD/SKK	EUR/SKK	USD/SKK	EUR/SKK	USD/SKK
1996	39,03	31,32	38,64	31,01	38,26	30,70
1997	38,36	34,10	37,98	33,76	37,60	33,43
1998	40,59	35,69	40,19	35,34	39,78	34,98
1999	44,42	42,67	43,98	42,25	43,54	41,82
2000	43,53	47,55	43,10	47,08	42,67	46,61

We expected following reactions: firstly, all the changes in exchange rates will cause changes in the price level. High exchange rate (depreciation) will reflect in higher price levels. Higher level of prices will cause decline of domestic demand, since prices of importing goods and services will increase. Lower domestic demand will result in lower imports. On the export side, we may expect positive effects in the case of depreciated exchange rate. The situation in the scenario with lower exchange rate (appreciation) will the opposite of the aforementioned scenario. The results of scenarios S1 and S2 are presented in Table 2.[24]

Table A.2 Percentage changes in scenarios S1 and S2

	Scenario S1					Scenario S2				
	1996	**1997**	**1998**	**1999**	**2000**	**1996**	**1997**	**1998**	**1999**	**2000**
Y	-0,02%	-0,08%	-0,12%	-0,12%	-0,09%	0,02%	0,08%	0,12%	0,12%	0,09%
C	0,01%	-0,15%	-0,28%	-0,30%	-0,29%	-0,01%	0,15%	0,28%	0,30%	0,29%
G	-0,23%	-0,37%	-0,46%	-0,49%	-0,44%	0,23%	0,37%	0,46%	0,50%	0,46%
I	-0,28%	-0,22%	-0,27%	-0,23%	-0,11%	0,28%	0,23%	0,27%	0,25%	0,13%
X	-0,06%	-0,01%	0,00%	0,00%	0,01%	0,06%	0,01%	0,00%	0,00%	-0,01%
M	-0,24%	-0,22%	-0,29%	-0,29%	-0,21%	0,24%	0,23%	0,29%	0,30%	0,22%
(X-M)	-1,79%	-2,29%	-2,01%	-4,37%	12,96%	1,80%	2,31%	2,03%	4,48%	-13,46%
EPI	0,21%	0,40%	0,44%	0,47%	0,46%	-0,21%	-0,40%	-0,44%	-0,47%	-0,46%
MPI	0,55%	0,54%	0,58%	0,61%	0,57%	-0,55%	-0,54%	-0,58%	-0,61%	-0,57%
CPI	0,23%	0,71%	0,78%	0,79%	0,75%	-0,23%	-0,71%	-0,78%	-0,79%	-0,74%
PPI	0,24%	0,45%	0,49%	0,54%	0,52%	-0,24%	-0,45%	-0,49%	-0,54%	-0,52%
FP	0,13%	0,28%	0,22%	0,21%	0,24%	-0,13%	-0,28%	-0,23%	-0,21%	-0,24%

[23] Year 2000 only preliminary data.
[24] There are certain percentage changes when comparing reality and particular scenario in the tables.

M2	0,03%	0,04%	0,01%	0,02%	0,09%	-0,03%	-0,04%	-0,01%	-0,02%	-0,08%
UR	0,16%	1,76%	2,56%	2,14%	1,97%	-0,16%	-1,77%	-2,60%	-2,18%	-2,02%
W	0,30%	0,87%	0,89%	0,93%	0,92%	-0,30%	-0,87%	-0,89%	-0,93%	-0,91%

The expectations of results in the scenarios S1 and S2 have proved to be correct. A depreciation by 1% would affect the import prices described by the import deflator (MPI) directly in interval 0,54% - 0,61%. This would cause CPI growth in interval 0,23% - 0,79% and growth of the nominal wage by 0,3% - 0,93%. We can see a negative impact on the unemployment rate. In the case of 1% depreciation, ceteris paribus, unemployment grew comparing with the actual situation by 0,16% - 2,6%. Considering the components of domestic demand, we can see a decline in each element of GDP. All these particular influences will lead to 0,22% - 0,29% decline of import in constant prices. However, we expected a stronger influence on the export side as occurred in the scenario. The reason may be found in the ceteris paribus condition.

Appreciation of Slovak currency led to an opposite reaction as the depreciation scenario. Decrease of import prices led to the decrease of CPI, of nominal wages, and of the unemployment rate. This resulted in a growth of domestic demand, followed by a growth of imports and the worsening of the foreign trade balance.

The conclusion from these two scenarios may be as follows: depreciation may be considered a tool for solving problems of foreign trade imbalance. But, the price will be a higher inflation, higher unemployment and restriction in domestic demand.