6. THE INTRODUCTION OF THE COMMON CURRENCY IN SLOVENIA

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Abstract

The inflation in the first and half year after the introduction of Euro in Slovenia was of a short-term nature, conditioned also by a favorable economic growth. The cumulative (retail) price level growth was also conditioned by internal factors (a weak competition in certain sectors and an increase in domestic demand) and external factors (some originate from the increase in food and energy product prices on the world market and from relative high GDP growth in Slovenia due to export growth) in the observed time period.

Keywords: inflation, demand, prosperity, common currency

JEL Classification: E21, E31, C13, C2

1. Introduction

Economies that have introduced the common currency faced higher inflation after the introduction that before the introduction of the common currency. In the introduction chapter, we present only the factors that are in the scope of our analysis.

Inflation could be assessed on the basis of the divergence between the growth rate of nominal wages/salaries and the growth of productivity. In most economic activities, prices are determined by the method based on the principle of extra payment (marked-up pricing) per labor cost unit. Changes in the share of labor and capital in the national income also change the common price level. The increasing prices of raw materials, the growth of state expenditures or the growth of investment expenditures by the state lead to a decrease in real wages. The resulting difference between a cost unit of wages and prices is taken into account by workers when negotiating their future wages. A future rate of inflation is thus determined by the faster growth of nominal wages over the average productivity of labor (Moore, 1979).

The neoclassic approach explains inflation by factors of demand, while the post-Keynesian approach exposes the cost viewpoint of inflation. Monetarians explain

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inflation as the result of an excessive growth of monetary stock. The post-Keynesian economic theory speaks of conflict inflation and explains it as the consequence of a conflict resulting from the allocation of income among the capital and labor production factors (Palley, 1996). We also must not forget the institutional characteristics of economies that co-form the inflation rate (endogeneity of monetary mass, income policy and policy of regulated prices, market structure and monopoly). Price trends in developed capitalist economies coincide with business cycles. The surplus aggregate demand over aggregate supply triggers off inflationary divergence, which causes an increase in prices. The surplus demand on the product market is transferred into derivative demand for production factors, which consequently leads to price increases of production factors as well as products.

Price growth as a consequence of the excessive growth of monetary stock, over the level of growth of real production, is also subject to the inflexibility of markets. The reaction of production to increased demand is slow, rigid and delayed, with surplus demand being transferred into rising prices. The longer the period of adaptation is, the stronger the reaction of production and the weaker the intensity of rising prices are.

Cost inflation is a phenomenon manifested through nominal costs growth because the prices of production factors increase at their unchanged productivity or because of increased import prices. In this way, cost inflation is the result of certain production factor tendencies to retain their level of real income (McNabb and McKenna 1990). As for the second cause of inflation, theories indicate: a rise in the import price of raw materials or a depreciation of the national currency. The increased prices of raw materials reflect negatively on the dynamics of domestic production, thus inducing inflation of demand. In this way, cost inflation and inflation of demand generate each other..

The exogenous rise of import prices or wages triggers off continuous cost inflation because of the retaliatory measures of other income groups. Thus, cost inflation is preserved as an endogenous process of inflation, sustained by the interests of income groups or groups that are in control of relative prices and wages respectively (Gylfason and Lindbeck, 1982). Also, past experiences with inflation are the condition for expected inflation.

Institutional market conditions with the oligopolistic market structure also contribute to the growth of the common price level, as prices do not form in a competitive way (Norčič, 1990). The surplus supply of money does not drive inflation as the supply of money responds to the demand for money (Lavoie, 1992). Post-Keynesians have an alternative explanation for price growth and, therefore, for them the role of money is endogenous: (i) the quantity of money in circulation is the result of the allocation of wages among the employed, (ii) the economy -- as a system of money and wages -- is vertically integrated, with costs being the main factor of inflation growth and with wages having the highest share in the cost structure. Inflation as an allocation conflict is, therefore, a consequence of two different conflicts: the conflict among different groups of workers on one side, and different production factors on the other.

An introduction of common currency in the euro area (EU-15) might had an impact on inflation and the discrepancy between inflation perceptions and the official statistics, emphasizing the role of psychological factors (Traut-Mattausch *et al.*, 2004). Cornille

(2003) and Hoffmann *et al.*, (2006) showed that the changeover led to a substantial and persistent increase in price diversity, which further complicated information-processing in the new regime. Angeloni, Aucremanne and Ciccarelli (2006) found for a broad set of consumer goods and services in the euro area, where a very large clearly pronounced spike in the number of price increases was seen at the time of the changeover and showed an asymmetric pattern in the less competitive services sector. Dziuda and Mastrobuoni (2006) found evidence of changeover-induced price increases for lower priced items and in sectors, where price transparency is low and market concentration high. Del Giovane and Sabbatini (2005) argue that inflation perceptions were mainly affected by the prices of goods that are cheaper and more frequently purchased. Despite the occurrence of some identifiable inflationary shocks, which were orthogonal to the changeover, such as increases in crude oil prices, increases in food prices, increases in indirect taxes and administered prices and the lagged transmission of the depreciation of the euro in the period 1999-2000 (Aucremanne, 2007), the inflation pressure was of transitory importance for inflation in the euro area in the EU-15 (Deutsche Bundesbank, 2004).

This paper analyzes the factors behind rising prices in Slovenia after the introduction of the euro. In the next chapter, we review the inflation dynamics after the introduction of euro in Slovenia. In the third chapter, the results of the econometric analysis on the inflation after the introduction of euro are analyzed. In the empirical chapter, we also analyze by means of an input-output analysis how the price growth of food and energy product prices has influenced costs in the different branches of the economy in Slovenia after the introduction of euro. A conclusion and commentary on the empiric results are provided for in the last chapter.

2. Inflation in Slovenia after the introduction of the common currency

Following stable price developments, Slovenia adopted the euro in January 2007. In Slovenia, a weak jump in prices was already felt at the end of 2006 and after April 2007 a more noticeable rise followed. The conversion to euro notes and coins increased the risk of inflation, because price-setters used the opportunity of rounding the "new" euro prices upwards.

The government and the Bank of Slovenia took measures to ensure a smooth transition to the euro, notably the dual pricing that was introduced nine months prior to the euro changeover, and an information campaign aimed at informing the broad public about the possible risk in the process of the currency changeover. A higher rate of economic growth in the New EU Member States and the process of restructuring were the cause of both inflationary differentials and the Balassa-Samuelson effect, respectively (the latter ceased with the years in the New EU Member States). We must also add that admission into ERM II, with the final goal of adopting the euro as a common currency, required a gradual cutting of interest rates in Slovenia and the achievement of nominal convergence, which was followed by volume credit growth and growth in demand.

There are several (external and internal) reasons for an increase in prices at the end of 2007 and in the beginning of 2008 in Slovenia. The most important external factors that influence inflation are definitely the conditions of the world markets. Some originate from the increase in food and energy product prices on the world market and from relative high GDP growth in Slovenia. A major contribution to inflation is also an accelerated increase in food prices. In the trade boom period -- together with the favorable effects of liberalization in foreign trade -- the necessary completion of the long-term motorway construction project and the start of an intensive development policy dictated by the use of EU cohesion and structural funds, economic growth is additionally increasing through the accelerator effect by stimulating new investments intended to increase final demand.

The internal factors that contributed to inflation were weak competition in certain sectors and an increase in demand. The trade boom thus increased the income of the population and made possible "marked-up pricing", based on the principle of extra payments to the suppliers of certain goods (food products in particular). The response of all economic subjects that in any way affect inflation was of crucial importance for the inflation rate. Various authors have written that the global reason for price increase in Slovenia is underdeveloped competition and the market behavior of all participants. In addition to this, the effect of upwards price adjustment can be added. Some additional reasons for inflation can be found in an underdeveloped and innovatory-oriented economy. In recent years, Slovenian enterprises started to fall behind in development as the share of labor costs in gross domestic product strongly exceeded the average of all EU Member States, as well as of the United States and Japan (SURS, 2008). The depreciation of the US dollar was followed by ECB measures to cut down interest rates, which acted as an incentive for consumption. The above-stated facts reveal that "extra payment" inflation (mark-up pricing) was followed by inflation of "demand".

Rising food prices on the world market is the result of demand for these goods in China and India, while the increase in demand is the result of an increase in the income of a population due to effective economic development. From our point of view, it causes problems we must deal with (it was similar with the growth of energy, raw materials, especially oil, from 1999 onwards and with the growth of metal prices from the middle of this decade onwards).

3. Empirical evidence on inflation in Slovenia after the introduction of the Euro

In order to evaluate the impact of singular explanatory variables (the production prices of twelve singular food products, import prices, food prices according to the Economist, diesel fuel prices, food-vendor earnings before interest and tax (EBIT), loans granted to the private sector and real GDP) on retail price changes of alimentary products, a panel regression was used ("cross-section weights") as the first model.

We evaluated the impact of diesel fuel prices, food prices on the world market, GDP, the (real) value of bank loans to the private sector, import prices, the earnings and

EBIT of major merchants[3] and the production prices for retail prices of alimentary products. A "dummy" variable was included in order to explain the inclination change of the retail price average (after May 2007). Variables were de-seasoned by applying the X-12-ARIMA method.[4]

According to the relatively short time span and similarities between the food products, we decided to use panel regression ("cross section weights") (Hsiao, 2003), and subsequently obtain more information on the analyzed parameters (Wooldridge, 2002). The advantage of the applied method is that it lowers co-linearity between explanatory variables (Davidson and MacKinnon, 1993) as well as dismisses heterogeneous effects (Western, 1998). We analyzed the model with permanent effects, which controls for the impact of neglected and changing variables among observed units that are constant within a time period (Stock and Watson, 2003).

Since the dynamics of inflation are sometimes considerable - this approximation would produce a significant downward bias in the simulation - all the time series were transformed into percentage changes in the original time series (Moffatt and Salies, 2003). After deriving the transformed time series, the stationarity of all the selected time series was obtained at 1% significance level and then proven by the ADF - Fischer Test (Esaka, 2003). The lag length selection in the specified model was based on the Schwarz information criterion.

We accepted the hypothesis of no autocorrelation of residuals - with high probabilities and low Q-statistics (Iwaisako, 2004). Using fixed effects within the estimation, we assumed a slope common to each of the products (b_i), while intercepts varied across each of the product (c_i) (Beck and Katz, 2004). Fixed effects were included to account for possible unobserved heterogeneity across products. According to the results of the cross-section F-test (Table 1), the system responded well within the fixed effects estimations in our model.

Using monthly data,[5] we contributed to the existing empirical evidence on the impact of the macroeconomic environment on retail prices dynamics by using panel estimates to explain inflation in Slovenia after the introduction of the euro by estimating the following equation (where: D(x) denotes the percentage change of the variable as measured in percentage points, b_x regression coefficient and CD "threshold level").

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[3] *Earnings before interest and tax. Only the earnings of merchants and their production units in Slovenia were taken into account.*

[4] *For model evaluations, monthly data from January 2006 to May 2008 was taken from EIPF (2008) and SURS (2008) database.*

[5] *Time series of the following products were used as factors for inflation: soft (carbonated and uncarbonated) beverages; coffee, tea and cocoa; bread and other corn products; meat; milk, milk products and eggs; oils and fats; beer; fruit - fresh and processed; sweets and confectionary products; wine; vegetables - fresh and processed; spirits. The above listed provisions were used as retail prices and as production prices. Loans to private sector are expressed as index in real terms, GDP expressed as index in real terms, EBIT as earnings of merchants in Slovenia before interest and taxes; diesel fuel prices and import prices are expressed as index in the world market. For model evaluations, monthly data from January 2006 to May 2008 was taken from EIPF (2008) and SURS (2008) database.*

$$D(Retail\ prices)_t = c + b_1 \cdot D(Production\ prices)_{t-n} + b_2 D(Diesel\ fuel\ prices)_{t-n} +$$
$$b_3 \cdot D(Food\ prices\text{-}The\ Economist)_{t-n} + b_4 \cdot D(EBIT\ total)_{t-n} + b_5 \cdot D(GDP)_{t-n} + b_6 \cdot D(Import$$
$$prices)_{t-n} + b_7 \cdot D(Loans\ to\ private\ sector)_{t-n} + b_8 \cdot D(Production\ prices(0)_{t-n}\text{-}CD\_$$
$$Production\ prices(0)_{t-n})*DUMMY + b_9 \cdot D(Diesel\ fuel\ prices(-2)_{t-n}\text{-}CD\_\ Diesel\ fuel$$
$$prices(-2)_{t-n})*DUMMY + b_{10} \cdot D(Food\ prices\text{-}The\ Economist\ (-3)_{t-n}\text{-}CD\_\ Food\ prices\text{-}$$
$$The\ Economist\ (-3)_{t-n})*DUMMY + b_{11} \cdot D(GDP(-3)_{t-n}\text{-}CD\_GDP(-3)_{t-n})*DUMMY +$$
$$b_{12} \cdot D(Import\ prices(-3)_{t-n}\text{-}CD\_\ Import\ prices(-3)_{t-n})*DUMMY + b_{13} \cdot D(Loans\ to\ private$$
$$sector(-3)_{t-n}\text{-}CD\_Loans\ to\ private\ sector(-3)_{t-n})*DUMMY + b_{14} \cdot D(EBIT\ total(6)_{t-n}\text{-}CD\_$$
$$EBIT\ total(6)_{t-n})*DUMMY + AR(1) \tag{1}$$

In the second model, we estimated the influence of food and energy (electricity, gas, hot water and liquid fuel) prices on the costs of economic branches and through them on inflation in Slovenia. We analyze the inflationary pressure of the increased food and energy prices by means of an input-output analysis (Babić, 1987) evaluation of indirect and direct cost increases in single branches, taking into account the increased prices of food or energy. The influence of rising food and energy product prices on local prices came up in several stages. The first one was the direct increase of food and energy prices during the moment of import, while the second one was the indirect impact of incoming raw materials and food-industry products on other economic branches.

Besides the direct price growth effect of a given input (food or energy) we have also taken into account the fact that the prices of these inputs have increased for the suppliers of direct suppliers too, and so on. When evaluating the cumulative, aggregate impact on the national economy, we took into consideration the consumption structure of the population and evaluated the index of consumer goods prices. Besides the influence that is exerted through costs, here the direct impact of a given price increase on inflation is also taken into consideration. In the analysis, an equal increase in the costs of food and energy was taken for national suppliers as well as for imports. Therefore, we presumed that the local suppliers of these goods were adapting to growing world prices.

The effect of rising prices in a given economic branch (electricity, gas and water supply or trade) or a given group of economic branches (agriculture and food industry) was evaluated by:

$$Pos = pu * (Au * (I\text{-}Ad)^{-1}) + pd * ((diag\ GDP/X) * (I\text{-}Ad)^{-1}) \tag{2}$$

Pos is the vector of the indirect influence on prices or on cost pressure;

pu is the row vector of the import price rise in different branches;

$(Au * (I\text{-}Ad)^{-1})$ is the matrix of global influence on imports with *Au* being an import component of the technological matrix acquired by the allocation of imports to different industries while $(I\text{-}Ad)^{-1}$ is the matrix multiplicator, *Ad* is the matrix of technical quotients - national inputs for a given sector according to the column divided by the production of this sector; *I* is the unified matrix;

pd row vector of the national price change;

$((diag\ GDP/X) * (I\text{-}Ad)^{-1})$ is the matrix of the global impact on a national product, where $(I\text{-}Ad)^{-1}$ is again the matrix multiplicator and diag *GDP/X* is a diagonalized matrix of direct quotients of added value (*GDP*) in the branch production (*X*).

The influence of price increases is simulated by assigning the value of one to all the components of pd and pu vectors and then placing, in the adequate position of the pd and pu vectors, the price increase factor for a given economic branch or more economic branches (agriculture, food industry, etc.). The impact on a national economic level is calculated by means of price change weighting of single branches and their share in the cumulative (of national origin and imported) personal consumption.

The indirect impact to Slovenian inflation caused by the increase in costs because of the price rise in given branches, leads to a Pdir direct impact being added, in which an adequate increase in prices in a given economic branch is taken into consideration (or a group of economic branches) and their share in the covering of cumulative personal consumption in Slovenia. In this way, we obtain the cumulative impact (P) of the increased price of consumer goods due to the increased prices of a given economic branch or a group of economic branches (Babić, 1987).

The impact evaluation of increased prices of food and energy to the costs of economic branches and to Slovenian inflation is based on the Leontieff production function and presumes constant yields of economic factors, elasticity of substitution equal to 1, and a homogeneity of production within sectors. The results of an input-output analysis can be understood as initial tendencies with an indicated direction.

In the analysis of the influence of food and energy price growth on the costs of the Slovenian economy and on Slovenian inflation we:

- took into consideration the agriculture prices (branch A) and food industry prices (branch DA), when evaluating the impact of food price growth;

- took into consideration the price of electricity, gas and water supply (branch E), when evaluating the impact of electricity, gas and hot water price growth;

- took into consideration an adequate (18.35%) share that these goods have in the total value of Slovenian trade sales (branch G - trade, repair of motor vehicles and household devices).

3.1. Panel regression model results

The production price impact on retail prices of alimentary products[6] and the impact of other explanatory variables can be observed in two periods. The results display a stronger production price impact on retail prices in the first period, where a 1 percentage point increase in production prices contributed to an average 0.03 percentage point increase in retail prices for all products under observation. The impact intensity of the stated relation fell to 0.00 percentage points during the second observation period. In the first period, the EBIT[7] probably depended more on market share expansion, lowering costs, and other sales rationalization measures and less on retail price growth (0.35 percentage points). After May 2007, EBIT becomes an

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[6] *The consumption basket includes soft (carbonated and uncarbonated) drinks; coffee, tea and cocoa; bread and other corn products; meat; milk, milk products and eggs; oils and fats; beer; fruit - fresh and processed; sweets and confectionary products; wine; vegetables - fresh and processed and spirits (strong drinks).*
[7] *EBIT can be the cause or consequence of retail price growth.*

important determinant of retail price growth, with a 2.82 coefficient, which - ceteris paribus - means a 2.82 percentage-point change (e.g., if working costs, wages and salaries, rents and other operative costs, taxes, etc., remain unchanged). A conclusion can be drawn from the previously stated facts, showing that production prices made no contribution to retail price growth, which therefore had to be generated somewhere else (Table 1).

Table 1

The impact of inflation from the producer to the merchant for a total of all food products

Dependent variable/retail prices for period January 2006 - May 2008
Cross-sections included: 12; Total pool (balanced) observations: 348; Iterate coefficients after one-step weighting matrix.

Variable	Lag	Coefficient	Std. Error	t-Statistic	Prob.
C	-	0.360093	0.106913	3.368091	0.0008
Production prices	(-1)	0.028016	0.006096	4.595430	0.0000
Diesel fuel prices	(-2)	0.044470	0.018722	2.375260	0.0181
Food prices - The Economist	(-3)	0.066877	0.014476	4.619949	0.0000
EBIT total	(-4)	0.346831	0.081996	4.229804	0.0000
GDP	(-3)	0.152267	0.051640	2.948626	0.0034
Import prices	(-3)	0.193518	0.084177	2.298933	0.0221
Loans to private sector	(-3)	0.099141	0.030469	3.253815	0.0013
Production prices *DUMMY	(0)	-0.027836	0.007168	-3.883326	0.0001
Diesel fuel prices *DUMMY	(-2)	0.361009	0.083272	4.335289	0.0000
Food prices–The Economist *DUMMY	(-3)	0.352226	0.095063	3.705174	0.0002
GDP *DUMMY	(-3)	-0.083851	0.012972	-6.463858	0.0000
Import prices *DUMMY	(-5)	-0.055283	0.007885	-7.010421	0.0000
Loans to private sector *DUMMY	(-4)	0.353379	0.145231	2.433212	0.0155
EBIT total *DUMMY	(-4)	2.471976	0.560953	4.406746	0.0000
AR(1)		-0.106876	0.052285	-2.044107	0.0417

Fixed Effects (Cross)	
soft beverages	-0.089375
coffee, tea and cocoa	-0.148768
bread and other corn products	0.160108
meat	-0.074561
milk, milk products and eggs	0.322055
oils and fats	-0.045767
beer	-0.336794
fruit	0.153965
sweets	-0.302146
wine	-0.011067
vegetables	0.284664
spirits (=strong drinks)	-0.312313

Effects Specification; Cross-section fixed (dummy variables)	
Weighted Statistics	
R-squared	0.464051
Adjusted R-squared	0.422205
S.E. of regression	1.006594
F-statistic	11.08951
Prob(F-statistic)	0.000000
Mean dependent var	0.474327
S.D. dependent var	1.372869
Sum squared resid	337.4059
Durbin-Watson stat	1.947097
Redundant Fixed Effects Tests	
Cross-section F (11, 333)	41. 907165 (0.0008)

Source: Own calculations (2008).

A one percentage point diesel fuel price increase contributed to a 0.41 percentage point retail price increase after May 2007, while in the first observation period the diesel-fuel price impact (and transportation costs respectively) on food products retail prices (coefficient 0.04) was nearly imperceptible. The impact of world food prices likewise contributed to retail price growth in the second analyzed period (coefficient 0.42); before this no significant impact was noticed (0.07 percentage points). Loans granted to the private sector added 0.1 percentage points to retail price growth in the first period and 0.45 percentage points in the second period. Credit volume growth contributed to more consumption in the economy, which, as a consequence, probably also contributed to the increase of trade margins.

The influence of GDP was stronger in the first observation period (coefficient 0.15), when economic growth was favorable; this corresponds to the Okun law. After May 2007, the dynamics of GDP contributed less to retail price growth (coefficient 0.07). As far as import prices are concerned, we can say that they contributed more to retail price growth, with a coefficient of 0.19 in the first period and 0.14 in the second (Table 1). On this basis, retail prices were still growing, but at a lower rate. We discovered that the cause for the inclination increase of the evaluated function after 2007 can be attributed to EBIT (and trade margins) respectively; to credit volume growth to the private sector; to food prices on the world market; to diesel fuel prices and to the import prices of products, while the production price impact on retail prices was equal to zero after May 2007.

We can confirm the obtained results by other relevant studies: The catching-up process and nominal convergence - combined with the credit growth around the EU accession - have increased demand for leveraging amongst companies and boosted private consumption (Brzoza-Brzezina, 2005). Loans to the private sector have been growing at a rapid pace in Slovenia in the period from 2002 to 2008. Further, the dynamics of energy product price movements depend on the demand for industrial products and their movements are procyclical (Kilian, 2007). A considerable rise in food prices was partly on account of the growth of the Chinese and Indian economy and a smaller volume of corn produce in the world economy. Dziuda and Mastrobuoni (2006) found evidence of changeover-induced price increases due to lower competitiveness between suppliers of frequently bought products.

3. 2 Input-output model results

The analysis was carried out in two steps. First, we analyzed the 1% impact of food price increase (branches A and DA), then the 1% price increase of electricity, gas and water and, finally, the 1% price increase of liquid fuels as an adequate share of trade activity (branch G). In the same way, we analyzed the impact of food and liquid fuel price increases from the first half of 2007 to the first half of 2008, and the impact of electricity, gas and hot water price increases from the first five months of 2007 to the same period in 2008.[8] First, the results are displayed as a percentage increase of cumulative costs in single economic branches, and later on also on an aggregate level.

In Table 2, one may see that the growth of food, electricity and liquid fuel prices particularly affects the costs of the branch where price increases occurred. For food price increases, these are the agriculture and food industry, for electricity and natural gas it is the supply of electricity, gas and water supplies and for liquid fuels it is trade.

Rising food prices strongly affect the costs of tourism and in, to certain measure, also the costs in the sectors of education, healthcare, trade, as well as the fishing, leather, textile and rubber industries. Since agriculture also includes forestry, the impact expands also to the industry of wooden products and furniture.

The growth of electricity and gas prices has above-average effect on the costs of the mining industry, non-metallic industry and metallic industry; however, this impact is insignificant.

Liquid fuel price growth has an above-average effect on the costs of oil industry; there is a slightly above-average impact on the fishing, food, leather and electrical industries.

In Table 2, one may see that, on the presumption that the increased costs are transferred completely:

- A 1% increase in food prices leads directly and indirectly to a 0.26% growth in the common inflation rate,

- A 1% increase in electric power, gas and water supply prices, directly and indirectly leads to a 0.06% higher common level of Slovenian prices, and that

- A 1% increase in liquid fuel prices similarly leads to a roughly 0.07% higher level of Slovenian inflation.

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[8] *The price of electricity is expressed in EUR per MWh in index; the prices of natural gas in EUR/MBtu as index; and hot water supply (price per tonne of oil equivalent (toe) as the amount of heat equivalent to the heat of combustion of one tonne of oil) in index; liquid fuels (brent, in EUR per barrel) in index; the prices of products and services in different economic branches are expressed as retail index.*

Table 2

Direct and indirect impact of food and energy price raise on the costs of Slovenian economic branches (results in %), January 2006 - May 2008

		1% rise of food prices (branches A and DA)	1% rise of energy and water prices (branch E)	1% rise of liquid fuel prices (branch G)
A	Agriculture	0.68	0.01	0.01
B	Fishing industry	0.13	0.01	0.02
CA	Coal	0.01	0.03	0.00
CB	Minerals	0.01	0.03	0.01
DA	Food	0.59	0.01	0.01
DB	Textile	0.02	0.01	0.01
DC	Leather	0.06	0.00	0.01
DD	Wood	0.11	0.02	0.01
DE	Paper and print	0.01	0.01	0.01
DF	Oil and coke	0.00	0.00	0.01
DG	Chemicals	0.00	0.01	0.00
DH	Rubber	0.04	0.01	0.01
DI	Non-metals	0.01	0.03	0.01
DJ	Metals	0.01	0.03	0.01
DK	Machinery	0.01	0.01	0.01
DL	Electric equipment	0.01	0.01	0.01
DM	Vehicles	0.01	0.01	0.01
DN	Furniture, recycling, other	0.03	0.02	0.01
E	Electricity, gas, water	0.01	0.58	0.01
F	Building industry	0.02	0.01	0.01
G	Trade	0.04	0.01	0.10
H	Tourism	0.18	0.02	0.01
I	Traffic	0.02	0.01	0.01
J	Financial agencies	0.01	0.00	0.00
K	Business services	0.01	0.01	0.00
L	Public administration	0.01	0.01	0.00
M	Education	0.03	0.01	0.00
N	Health care	0.02	0.01	0.00
O	Other services	0.01	0.01	0.00

Direct and indirect impact of food and energy price raise on Slovenian inflation (Results in %), January 2006 - May 2008

	1% raise of food prices (branches A and DA)	1% raise of energy and water prices (branch E)	1% raise of liquid fuel prices (branch G)
Direct impact	0.14	0.03	0.04
Direct and indirect impact	0.26	0.06	0.07

Source: Own calculations (2008).

Our evaluation of the increased cost pressures resulting from food and energy price increases in the first half of 2007 to 2008 is displayed in Tables 2 and 3. In the analysis, a 13% increase in food and non-alcoholic drinks prices and a 5.2% rise in alcoholic drinks and tobacco prices were taken into account (considering the shares in the index structure of consumer goods prices it amounts to a cumulative 11.1% increase in food prices), a 9.6% increase in electricity, gas and water supply prices (considering the index of industrial product prices of the producers for the first five months of 2007 and 2008) and a 38.1% increase in liquid fuel prices (taking into consideration their share in the structure of trade sales – 18.35% - it means a 7% price increase for this economic branch.)

Table 3

Direct and indirect impact of food and energy price raise from 2007 to 2008 on the costs of Slovenian economic branches (results in %), January 2006 - May 2008

		11.1% rise of food prices (branches A and DA) [1]	9.6% rise of energy and water prices (branch E) [1]	7 % rise of liquid fuel prices (branch G) [2]
A	Agriculture	7.58	0.07	0.39
B	Fishing industry	1.42	0.11	0.70
CA	Coal	0.06	0.27	0.18
CB	Minerals	0.10	0.29	0.21
DA	Food	6.56	0.12	0.52
DB	Textile	0.20	0.10	0.32
DC	Leather	0.64	0.05	0.25
DD	Wood	1.21	0.22	0.24
DE	Paper and print	0.08	0.13	0.25
DF	Oil and coke	0.04	0.03	0.28
DG	Chemicals	0.05	0.11	0.19
DH	Rubber	0.43	0.13	0.26
DI	Non-metals	0.10	0.31	0.37
DJ	Metals	0.09	0.25	0.26
DK	Machinery	0.08	0.13	0.30
DL	Electric equipment	0.08	0.08	0.27
DM	Vehicles	0.08	0.07	0.33
DN	Furniture, recycling, other	0.28	0.19	0.27
E	Electricity, gas, water	0.06	5.55	0.21
F	Building industry	0.24	0.12	0.38
G	Trade	0.41	0.12	3.95
H	Tourism	2.00	0.19	0.42
I	Traffic	0.18	0.09	0.29
J	Financial agencies	0.08	0.04	0.07
K	Business services	0.14	0.08	0.13
L	Public administration	0.12	0.07	0.15
M	Education	0.29	0.08	0.10
N	Health care	0.19	0.09	0.13
O	Other services	0.11	0.14	0.16

Direct and indirect impact of food and energy price raise from 2007 to 2008 on Slovenian inflation (results in %), January 2006 - May 2008

	11.1% raise of food prices (branches A and DA) [1]	9.6% raise of energy and water prices (branch E) [1]	7 % raise of liquid fuel prices (branch G) [2]
Direct impact	1.57	0.32	1.45
Direct and indirect impact	2.84	0.61	2.49

[1] *Considering equal price growth velocities for domestic and import prices.*
[2] *Considering the price hikes of local suppliers; import costs affect the Slovenian economy indirectly (through the import costs of Slovenian merchants).*
Source: Own calculations (2008).

The jump in food prices during the first half of 2007 and 2008 brought about a 7% increase of costs for the agriculture and food industry, a 2% increase in the cost of tourism and a more than 1% increase of costs in the fishing and timber industries. The total indirect and direct impact on inflation amounted to almost 3% (Table 3).

The increase of electricity, gas and water supply prices from the first five months of 2007 to the same period in 2008 engendered an almost 6% higher cost pressure in this sector, whilst in other economic branches this influence was less than 1%. In mining, the non-metallic and metallic industry it was about 0.3%. Here, big differences between the level - and particularly the dynamics - of electric power prices for different customers must be taken into account. For some of them, these prices remained unchanged and were defined by contracts that will stay in force for many years, for some, they were rising moderately and for some of them exceptionally. The results of our analysis display the average effect. When interpreting them, we must bear in mind that the main "wave" of electric energy price increases has not yet come. Be that as it may, the cumulative direct and indirect impact of food and energy price increases on Slovenian inflation in the first five months of 2008 was only about 0.6 percentage points (Table 3).

The increase of liquid fuel prices from the first half of 2007 to the first half of 2008 would - in case of a full transfer of increased costs to the buyers - cause a 2.5% growth of Slovenian inflation in this period (Table 3). The cost effect and the cost pressure, respectively, were the strongest in the trade sector (4%) whilst it did not exceed 1% in other economic branches. It was strongly above average in the fishing industry (0.7%), the food industry (0.5%) while in tourism, agriculture, the construction industry, the automobile and textile industry, the non-metallic industry and traffic it was between 0.3% and 0.4%.

The increase in food and energy prices in recent years has affected cost inflation. On one hand, it has cut down the real income of households and their standard of living, while on the other hand it has increased the costs to the economy and its competitive position. It depends on the market conditions and on monetary policy to what extent, or if at all, economic subjects can transfer the increased costs to their prices and, consequently, to the consumers. If there is keen competition on the market and if monetary policy cannot accommodate the increased costs with an additional supply of

money, the economy must compensate these costs with the increased productivity of its production factors or by cutting down income (wages, profits, perhaps rent as well). If the economy can rise its prices and transfer the cost increase to consumers, inflation will grow.

5. Conclusion

On the basis of empirical analysis (for the period from January 2006-May2008) we have established that the dynamics of food price trends in Slovenia was influenced by the EBIT of merchants, the import prices, the growth of GDP, the price of diesel fuel and world food prices. Based on econometric tests, the period of the whole "pool" under observation was divided into two parts with the breaking point in May 2007. The findings of the analysis state that the cause of the increased incline of the evaluated function after May 2007 can be attributed, mostly to EBIT, volume of credit, world food prices, the price of diesel fuel and import prices. The impact of producers' prices was insignificant.

The results demonstrate that the impact of production prices on retail prices was stronger in the first period, when a production price increase of one percentage point contributed to an increase of retail prices by 0.03 percentage points (on average) for all products under observation; and the impact intensity of the mentioned relation diminished to 0.00 percentage points in the second period under survey. The increase of diesel fuel prices for 1 percentage point contributed 0.41 percentage points to retail price increases after May 2007, while in the first period under survey, no significant impact of diesel fuel prices was felt on retail prices (with a 0.04 quotient). The influence of world food prices also contributed to the growth of retail prices in the second analyzed period (with a 0.42 quotient); before this period no significant impact was noticed (0.07 percentage points). The growth of credit volume contributed to a larger consumption of the economy. After May 2007, the one percentage point growth of credit volume contributed to the retail price increase of 0.45 percentage points. After May 2007, the dynamics of GDP growth was slowing down the growth of retail prices (with a 0.07 quotient).

The increase of food prices and the cumulative measures of local and import prices in agriculture with both the forestry and food industry, respectively, influences by 1% the 0.3% growth of Slovenian inflation. This is with the assumption of a full cost transfer from supplier to buyer. The impact of this price hike was the strongest in the agriculture and food industry and above average in tourism. The 1% food price increase effect is stronger and has a more significant effect on the costs of several economic branches than an equal price increase in the electricity, gas and water supply and an equal price increase in liquid fuels.

The inflation pressure after the conversion to the euro was of transitory importance in the euro area. The hypothesis that price increases were observed in frequently bought items has been proved on the case of Slovenia. The cumulative (retail) price level growth was also conditioned by internal factors (a weak competition in certain sectors and an increase in domestic demand) and external factors (some originate from the

increase in food and energy product prices on the world market and from relative high GDP growth in Slovenia due to export growth) in the observed time period.

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SURS. Indicators of inflation. 2008. http://www.stat.si/ SI-STAT podatkovni portal/ Ekonomsko področje/ cene / Index of consumer products. [21.07.2008] and http://www.stat.si/ SI-STAT podatkovni portal/ Ekonomsko področje/ cene / Index of industrial prices and producers prices. [21.07.2008] and SURS internal data base.

Software: Eviews 6.0 and SPSS 15.0.

Appendix

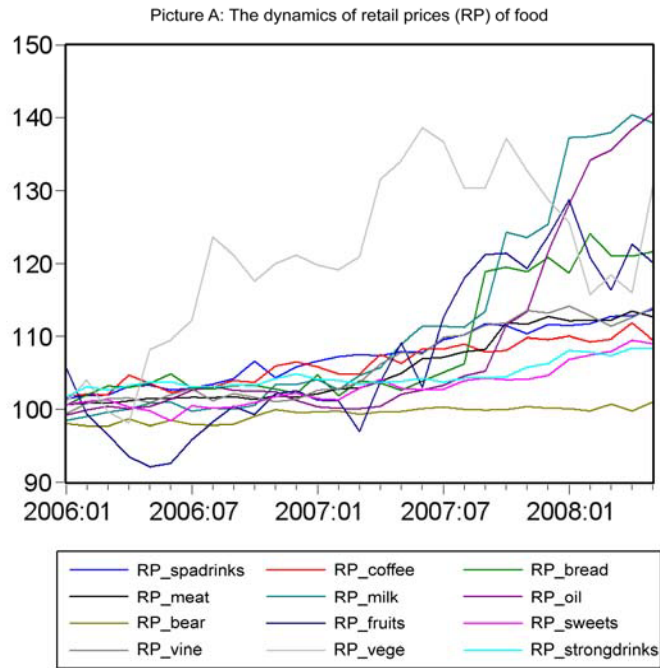Picture A: The dynamics of retail prices (RP) of food

Table B

Basic statistical properties of the time series

	D(Production prices)	D(Diesel fuel prices)	D(Food prices - The Economist)	D(EBIT total)	D(GDP)	D(Import prices)	D(Loans to private sector)
Mean	0.135764	1.232692	2.286522	3.204636	0.460526	0.138462	2.118934
Median	0.077343	-0.600000	1.860000	0.989702	1.800000	0.800000	2.091214
Maximum	3.163636	46.90000	10.22000	29.57230	21.20000	20.10000	3.351657
Minimum	-2.250000	-36.70000	-6.220000	-16.47357	-26.40000	-18.80000	0.828552
Std. Dev.	1.207860	15.22556	3.468751	11.87133	11.19181	9.756027	0.640221
Skewness	0.438604	0.270284	0.116795	0.472015	-0.708867	0.031156	-0.057966
Kurtosis	3.765194	3.859336	3.545405	2.881276	3.527734	2.125238	2.224324
Jarque-Bera	1.637311	2.233123	2.024173	0.867566	3.623413	1.666366	3.741943
Probability	0.441024	0.327404	0.363460	0.648053	0.163375	0.434664	0.153974
Sum	3.937159	64.10000	315.5400	73.70663	17.50000	7.200000	309.3644
Sum Sq. Dev.	40.84994	11822.69	1648.416	3100.428	4634.491	4854.183	59.43296
Observations	348	348	348	348	348	348	348
Cross sections	12	12	12	12	12	12	12

	D(Production prices_ dummy)	D(Diesel fuel prices_ dummy)	D(Food prices - The Economist_ dummy)	D(EBIT total_ dummy)	D(GDP_ dummy)	D(Import prices_ dummy)	D(Loans to private sector_ dummy)
Mean	0.030527	0.422436	0.071154	1.021905	0.270115	0.192857	0.860526
Median	0.038464	0.600000	1.450000	2.400000	0.433333	0.200000	1.650000
Maximum	0.372503	6.233333	27.10000	13.00000	9.900000	2.000000	18.20000
Minimum	-0.249675	-7.033333	-28.20000	-15.26667	-11.33333	-2.000000	-25.90000
Std. Dev.	0.119994	3.624311	12.25992	6.709738	5.651712	0.667090	10.34629
Skewness	0.162305	-0.264704	-0.341251	-0.533224	-0.332032	0.117568	-0.567592
Kurtosis	3.573542	2.164789	2.976151	2.861955	2.057138	3.920881	3.026453
Jarque-Bera	1.049612	2.118673	1.010488	1.686370	1.607046	3.161586	2.041462
Probability	0.591670	0.346686	0.603358	0.430338	0.447749	0.205812	0.360332
Sum	1.770579	21.96667	3.700000	35.76667	7.833333	16.20000	32.70000
Sum Sq. Dev.	0.820724	669.9172	7665.587	1530.700	894.3719	36.93571	3960.691
Observations	348	348	348	348	348	348	348
Cross sections	12	12	12	12	12	12	12

[a] D(): denotes the percentage change of the variable (as measured in percentage points).