THE BEHAVIOR OF PRICES AS A RESPONSE TO STRUCTURAL CHANGES - THE ROLE OF THE ECONOMIC TRANSMISSION MECHANISMS IN EXPLAINING THE OBSERVED BEHAVIOR

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Abstract*. The paper analyzes the impact of structural variables on prices by building a model based on a system of difference equations. The main contribution of the paper is the formulation and testing of a hypothesis regarding the relation between the changes in the trajectories of prices as a result of the changes in the structural variables and the pattern of the economic transmission mechanisms. The hypothesis was verified, indicating that there are unique characteristics of the transmission mechanisms and of the relations between them that differentiate the high volatility behavior of prices from the low volatility behavior.*

Key words*: transmission mechanisms, system of difference equations, Pearson and Spearman correlations, structural variables*

JEL Classification: *C15, C63*

1. Introduction

The dynamics of the variables specific to the economic system is influenced by the structure of the system as well as by the stable behaviors in the economy which are reflected by the transmission mechanisms. From this perspective, the quantitative analysis of the relation between variables should be accompanied by a more insightful understanding of the structural dimension of the economic system and the impact of this dimension on the relation between its components.

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In this context the paper has two objectives.

The first one is the analysis of the impact of the downward rigidities of wages on prices, demand and offer.

The second one is the formulation and testing of a hypothesis regarding the relation between the changes in the trajectories of prices as a result of the changes in the structural variables (downward rigidity of wages and inflationary expectations) and the pattern of the economic transmission mechanisms. This hypothesis is the main original contribution of the paper in the sense that it proposes an explicit analysis of the relation between the changes in the trajectories of prices and their characteristics, on one hand, and the economic transmission mechanisms and the relation between them, on the other hand. The paper is structures into six chapters.

The second chapter focuses on the literature review of the main applications of the dynamic systems in economics as well as on describing the place of the paper in relation to these contributions.

In the third chapter the paper presents the impact of structural factors on the economic variables of interest. The focus is on inflation due to the characteristics of the analyzed structural factors, namely the downward rigidity of wages which is a nominal variable strongly connected with inflation.

The fourth chapter presents the model focusing on the blocks of the model and on the specific system of difference equations.

The fifth chapter builds four scenarios for the analysis of the impact of the downward rigidities of wages on prices, demand and offer. The main contribution of the chapter is the formulation and testing of the hypothesis regarding the relation between the changes in the trajectories of prices as a result of the changes in the structural variables (downward rigidity of wages and inflationary expectations) and the pattern of the economic transmission mechanisms.

The sixth chapter is a synthesis of the main findings of the paper as well as suggestions for future developments.

2. Systems of differential equations – Applications in economics

The analysis of the economic processes using systems of differential equations underlines the complex behavior of the economic system: bifurcations, critical points, possible chaotic behaviors. The main economic problems analyzed using

the dynamic framework are diverse, indicating the versatility of the approach: economic cycles (see Goodwin, 1967; Desai, 1973; Wolfstetter , 1982; Sportelli, 1995; Purica and Caraiani, 2009), the dynamic theory of oligopoly (see Yoshida, 2011), demographic problems and its application in economics (see Galor and Weil, 1999, 2000; Lucas, 2002; Galor and Moav, 2002; Hansen and Prescott, 2002; Jones, 2001), economic growth (see Kaldor, 1956; Pasinetti, 1962; Samuelson and Modigliani, 1966 as well as unified economic growth theory developed by Galor, 2011), the problem of stability of the economic equilibrium (see Woodford, 1990; Bewley, 1998; Bohm and Kaas, 2000).

From the perspective of the variables used in the model the differences in comparison with the cited approaches are not significant. These approaches are based on the fundamental relations in economics between demand, offer, inflation, wages, etc. The current paper introduces no innovative relations. The main differences are related to the hypothesis of a single market. The large majority of the models follow the tradition set by the dynamic stochastic general equilibrium models (DSGE) working with a single market, thus not taking into account the relation between economic sectors and the impact of these relations. Due to the nature of the problem studied in this paper, namely the impact of structural factors, the model builds a market with two sectors with all the implications that derive from this approach. The main implications are the capacity to capture the relation between sectors and the effect of the modifications of one of the sectors on the others.

From the perspective of the behaviors of the solutions there are some differences in "the logic" of the approaches which should be underlined. We are going to focus on those approaches which are relevant to the current analysis.

The approach which is steadily gaining ground is based on the use of non-linear systems of differential equations in describing and analyzing economic processes (see Rand, 1978; Day, 1982a,b; Puu, 2000; Nishimura and Yano, 1995; Vosvrda, 2001). Admittedly, there is a richness of behaviors of these systems but also artificiality in defining the non-linear behaviors of the economic variables. One approach is to build trigonometric functions to reflect the relations between variables (see Hommes, 1997) or to use equations known for their non-linear behaviors as in the case of the Faigenbaum equation (see Jensen and Urban, 1984) or Van der Pol equation (see Bouli, 1999). The use of these equations is made without clearly presenting their capacity to reflect the specific economic mechanisms. In this context it is not clear if the economic variables exhibit a chaotic behavior or if there is a selection of those equations which allow the chaotic behavior to manifest itself. In these cases the analysis of the chaotic

behaviors is made in the logic of Thom (1989) and Zeeman (1977) (interestingly, these papers are not analyzing economic processes), namely analyzing the behavior of the systems for different intervals of the coefficients. In this context, the perturbations on the system are described by the modifications in these coefficients. These modifications affect the stability and the behavior of the system solutions only if they generate a change in the above mentioned interval of variation (see Goodwin, 1990 for a presentation of the problem). The current paper investigate the processes behind these approaches, namely it focuses on understanding the connection between the trajectories of the system solutions and the characteristics of the economic transmission mechanisms specific to the analyzed system. The problem is presented in Chapter 5.

3. The impact of structural factors on the economic indicators

The different ways to quantify and theoretically define structural changes led to different approaches to analyze the structural component of the economic variable of interest. Dobrescu (2009) analyzes structural inflation from the perspective of the relation between the modifications of the weights of different sectors in the total production and the changes in prices calculated as a ratio of the sectorial price index to the total aggregated price index. Balke and Wynne (1996) showed that the sectoral technological changes are reflected in the transversal distribution of price changes. Sheedy (2005) analyzed the impact of a shock (changes in the oil price) on the firm's costs which led to price adjustments with different lags. In this approach the shocks that affect the economy are structural because they reflect the structure of the firms in the economy and the differences in their behaviors.

The paper follows the logic of Sheedy (2005) in the sense that the changes in the key variables due to structural shocks are a result of the structure of the economy and its characteristics. The idea that we want to underline in this paper is that the economic system facilitates through its structure (the relation between the components of the system, the feed-back structure, behavior characteristics) the understanding of the relations between the trajectories of the prices and the characteristic of the economic transmission mechanisms and their relations.

4. The model's presentation

The chapter will focus on presenting the system of difference equations and the algorithm for running the model. The mathematical relations will be presented for

a model with n components (consumers, firms). This version of the model uses an accommodative monetary policy. In the context of a constant money velocity, the monetary mass varies to equate the product of the quantity of goods in the economy and the prices of these goods.

4.1. The system of difference equations

The system of difference equations models the variation in prices, wages, demand and offer in the context of the interaction between producers and consumers on two markets. The symbols used stand for pri – the price of the economic good, for the sector i; cri – demand for the good produced by the sector i; ori – offer for the good produced by the sector i; wri – nominal wage for the sector i; ep – expected inflation; is – the wage index; as – wage adjustment index; rs - downward rigidity of wages index; aprod – production adjustment index; profitri – the profit of the firm in sector i calculated as the difference between income and costs. The relations that model the evolution of prices, wages, demand and offer are described below:

$$p^{r_i}{}_t = p^{r_i}{}_{t-1} * \frac{C^{r_i}{}_{t-1}}{O^{r_i}{}_{t-1}} * e^p \tag{1}$$

$$w^{r_i}{}_t = w^{r_i}{}_{t-1} * \frac{p^{r_i}{}_t}{p^{r_i}{}_{t-1}} * i^s = w^{r_i}{}_{t-1} * \frac{C^{r_i}{}_{t-2}}{O^{r_i}{}_{t-2}} * e^p * i^s \tag{2}$$

$$i^s = \begin{cases} a^s & \frac{C^{r_i}{}_{t-1}}{O^{r_i}{}_{t-1}} > 1 \\ r^s & \frac{C^{r_i}{}_{t-1}}{O^{r_i}{}_{t-1}} < 1 \end{cases} \tag{3}$$

$$O^{r_i}{}_t = O^{r_i}{}_{t-1} * a_{prod} \tag{4}$$

$$a_{prod} = \begin{cases} a^1{}_{prod} & Profit^{r_i} > 0 \\ a^2{}_{prod} & Profit^{r_i} < 0 \end{cases} \tag{5}$$

$$C^{r_i}{}_t = \frac{w^{r_i}{}_t}{p^{r_i}{}_t} = \frac{w^{r_i}{}_1}{p^{r_i}{}_1} * \frac{C^{r_i}{}_0}{O^{r_i}{}_0} * \frac{O^{r_i}{}_{t-1}}{C^{r_i}{}_{t-1}} \tag{6}$$

The system of difference equations reflects the following economic behavior mechanisms.

The variation in prices is proportional to the ratio of demand to offer and depends on the inflation expectations. The prices are increasing if the demand is higher than the offer, remain unchanged in the case of equality and decrease otherwise (see relation 1). The variation in wages depends on the variation in prices. An increase in prices generates pressures in the direction of an increase in wages. The wage adjustment is captured by the wage index which can be an index higher than unit (the wages increase more than the prices) equal to unit (the wages increase is equal to the price increase) and lower then unit (the wage increase is lower than the price increase). By algebraic manipulation of the relation (2), the wages can be written as a function of demand and offer with lag two (t-2), the inflation expectations and the wage index. The output variation depends on the differences between output and demand and on the production adjustment capacity (which can be seen as elasticity of output to demand changes). This capacity is endogenously defined and it depends on the features of the production process and on the characteristics of the market (see relation 4). There are two possible values of the adjustment indicator, which correspond to the case of positive profits or negative ones (see relation 5). The demand at the moment t depends on the relation between income and prices. By algebraic manipulation of relation 6, the demand can be written as a function of the demand and offer with one lag (t-1), of the demand and offer at time t_0 and of the ratio of income and price and time t_1 (see relation 6).

4.2. The algorithm of the model

The model has the following theoretical framework. The market is described by representative producers from two sectors. The producers use raw materials (intermediate consumption) and labor force to produce the output. The relations between the sectors are reflected by the technological coefficients. The consumers' income depends on the number of hours worked and the hourly cost of the labor force in the sector of work. The demand for the goods in the economy reflects the consumers' choices, taking into account their disposable income and preferences.

The algorithm is based on the following steps:

Step 1. At the beginning of the simulation the following are defined: a) a set of prices for the goods produced; 2) a set of prices for the labor force; 3) the technological coefficients matrix; 4) the consumer preferences. The above-

mentioned variables are randomly defined but they respect a set of constraints that confers economic consistency. In this respect the technological matrix reflects the ratio of the weight of the intermediate consumption to the labor force in the production process. The set of prices is chosen not to be smaller than the marginal costs.

Step 2. The output at the sectoral level is the solution to the problem of profit maximization. The demand is the solution to the problem of utility maximization.

Step 3. Prices increase if C>O and decrease if C<O. The changes are proportional to the difference between demand (C) and offer (O) (see relation 1). The process illustrates the price adjustment mechanism of the output to the demand.

The wages vary proportionally to the changes in prices, taking into account the difference between the demand and offer (see relation 2). A supplementary constraint is added, namely the wages cannot decrease below the minimum wage in the economy.

If the profit is negative after the price adjustment, then the firms adjust their output to match demand. The adjustment is made with a lag reflecting the production characteristics of the firm, market strategies, the characteristics of the labor market, etc.

Step 4. Steps 2 and 3 are repeated for a number of periods (45 in the case of the simulations in the paper).

5. Running the model

The simulation has two main objectives. The first one is the analysis of the effects of the changes in the downward rigidity of wages (rs) on prices, demand and offer. The second one is testing a hypothesis relating the changes in the trajectories of prices as a results of the changes in the structural variables (downward rigidity of wages and inflationary expectations) with the pattern of the economic transmission mechanisms identified on the basis of the model build in the paper (see equations 1 to 6).

Hypothesis 1. The changes in the dynamic of prices as a result of a persistent perturbation in the structural variable are reflected by the changes in the behaviors of the economic systems described by the transmission mechanisms and the relation between these mechanisms.

To test the hypothesis and the effect generated by the changes in the downward rigidities of wages the paper builds four scenarios.

Table 1. Specific values for the four scenarios

	S1	S2	S3	S4
The coefficients specific to the consumers' utility functions (Cobb-Douglas type U(Q1,Q2) = Q1a * Q1b)	a =0.6 b=0.4	a =0.6 b=0.4	a =0.6 b=0.4	a =0.6 b=0.4
Technological coefficients	ai,j =0.4 bj =0.6	ai,j =0.4 bj =0.6	ai,j =0.4 bj =0.6	ai,j =0.4 bj =0.6
Inflationary expectations ep	ep =1.15	ep =1.15	ep =1.1	ep =1.1
The wages adjustment to inflation aw	aw =1.05	aw=1.05	aw =1.05	aw =1.05
Downward rigidity of wages rs	rs =1.01	rs =1.05	rs =1.01	rs =1.05

Source: Own computations.

The specific values of the first two scenarios reflect the objective of the analysis, i.e. identifying the effect of the changes in rs on the key variables. We can see in Table 1 that the only difference between the pairs of scenarios (1-2 and 3-4) is represented by ep. This approach was preferred to see if for different economic conditions (different values for inflationary expectations) the changes in rs would have the same impact.

The results of the four scenarios indicate two main conclusions which reflect the role of the transmission mechanisms in the dynamics of the key economic variables (see Appendix 1).

The first main conclusion illustrates the reaction of the demand and offers to the changes in the downward rigidity of wages as well as the dilemma confronting the decision makers regarding the relation between economic growth and inflation.

An increased rigidity of wages translates into a reduced impact of the production contraction on income. Higher income puts increasing pressures on offer, generating demand side inflation. The comparison of Scenarios 1 and 2 (see Appendix 1, Tables 1.A1 and 2.A1) illustrates the dilemma confronting the decision makers. On one hand, demand side pressures due to inelastic wage

adjustment generate demand side inflation. On the other hand, the negative effect is balanced by avoiding the downward spiral of demand and offer in which the contraction of demand and offer stimulate each other.

A sharper decrease in wages in the context of production contraction leads to a decrease in demand pressure on prices and to a lower inflation. This is accompanied by a recession risk which can be seen by comparing Tables 2.A1 and 4.A1. On one hand, a decrease in wages leads to lower labor costs, which stimulates production. On the other hand, a decrease in wages leads to a contraction of the demand, which has a negative impact on production. Which of the two effects is dominant? The answer to this question is difficult to give due to numerous interdependencies between the economic variables and the relations between different economic transmission mechanisms.

The second main conclusion illustrates the sensibility to the economic context. We can see (Appendix 1) that the changes in the key variables as a response to structural changes are not linear. This can be seen in Tables 1.A1 and 3.A1, in which proportional modifications of ep do not lead to proportional modification in the key variables demand, offer, and prices.

The results of the simulation suggest that the impact of the structural changes on inflation depends on the economic transmission mechanisms. In order to test the forth mentioned hypothesis, the paper analyzes three transmission mechanisms and the relations between them. The first mechanism is described by the relation between the price index for each of the sectors and the difference between demand and offer (gap). The second mechanism is represented by the relation between demand and prices at the moment t. The third mechanism is represented by the relation between offer and prices at time t.

The analysis of the transmission mechanisms and the relations between them was made using the Pearson and Spearman correlations. The procedure is based on the following steps:

Step1. The four scenarios were run for 45 periods obtaining the series for prices, demand and offer for each of the sectors. A chain index of prices was calculated for each of the sectors based on the price series.

Step 2. The Pearson and Spearman correlations were calculated for each of the scenarios and for each of the sectors. The correlation was calculated for the following pairs of variables: a) the chain price index and the gap between demand and offer; b) demand and prices; c) offer and prices. In total, 72 correlation coefficients were calculated, 12 for each scenarios.

Step 3. The correlation coefficients were analyzed by the intensity of the correlation and the sign of the relation between the variables. Based on these two criteria we observed patterns of transmission mechanisms which are combinations of states having the form {(+,s),(+,s),(-,s)} where the first component of each pair indicates the sign of the correlation and the second component the intensity of the correlation.

Before presenting the results of the analysis a short comment regarding the relation between the transmission mechanisms patterns and the dynamics of prices would be in order. The quantitative analysis of the relation between the variables does not offer only quantitative information, but facilitates the description of qualitative behaviors of the economic system. In this respect, the intensity of the correlation indicates the sensibility of the system to different stimuli. The sign of the correlation describes the behavior of the transmission mechanisms. The analysis of the relations between the mechanisms offers supplemental qualitative information. They facilitate the description of the behaviors and the regulating factor of the system.

Four possible cases are presented as an exemplification.

Case 1 describes the following combination of the transmission mechanism states {(+,s),(+,s),(-,s)}.

These states reflect the combined effect of the behavior of three variables: (1) the prices react positively to an increase in the difference between demand and offer; the sensibility of the reaction is low, (2) the prices react positively to an increase in demand; the sensibility of the reaction is low, (3)) the prices react negatively to an increase in offer; the sensibility of the reaction is low.

The global effect of the pattern of the transmission mechanisms is the lengthy adjustment to an equilibrium price.

Case 2 describes the following combination of the transmission mechanism states {(+,r),(+,r),(-,r)}.

These states reflect the combined effect of the behavior of three variables: (1) the prices react positively to an increase in the difference between demand and offer; the sensibility of the reaction is high, (2) the prices react positively to an increase in demand; the sensibility of the reaction is high, (3) the prices react negatively to an increase in offer; the sensibility of the reaction is high.

The global effect of the pattern of the transmission mechanisms is a speedy adjustment to an equilibrium price.

Case 3 describes the following combination of the transmission mechanism states {(+,s),(+,r),(-,s)}.

These states reflect the combined effect of the behavior of three variables: (1) the prices react positively to an increase in the difference between demand and offer; the sensibility of the reaction is low, (2) the prices react positively to an increase in demand; the sensibility of the reaction is high, (3) the prices react negatively to an increase in offer; the sensibility of the reaction is low.

The global effect of the pattern of the transmission mechanisms is high inflationary pressures.

Case 4 describes the following combination of the transmission mechanisms' states {(+,s),(+,s),(-,m)}.

These states reflect the combined effect of the behavior of three variables: (1) the prices react positively to an increase in the difference between demand and offer; the sensibility of the reaction is low, (2) the prices react positively to an increase in demand; the sensibility of the reaction is low, (3) the prices react positively to an increase in offer; the sensibility of the reaction is medium.

The global effect of this combination of transmission mechanism states is medium deflationary pressures.

For the four scenarios described in Table 1 calculated the Pearson and Spearman correlations between: a) the chain price index and the gap between demand and offer; b) demand and prices; c) offer and prices for the two sectors of the model.

Table 3. The Pearson and Spearman correlation for the four scenarios

Pearson					**Spearman**				
		g/ipc	c/p	o/p			g/ipc	c/p	o/p
s1	r1	-0.06	-0.12	-0.11	s1	r1	-0.17	0.37	0.24
	r2	0.04	-0.09	-0.11		r2	0.08	0.47	0.39
s2	r1	0.72	0.35	0.12	s2	r1	0.80	0.61	-0.24
	r2	0.37	0.16	0.07		r2	0.51	-0.09	-0.37
s3	r1	-0.08	-0.05	-0.10	s3	r1	-0.02	0.46	0.34
	r2	-0.05	-0.04	-0.04		r2	0.25	0.48	0.42
s4	r1	0.66	0.30	0.12	s4	r1	0.68	0.53	-0.26
	r2	-0.13	0.16	0.04		r2	0.56	-0.16	-0.43

Source: Own computations.

The sign and the intensity of the correlation describe the reactions of prices to different market signal. The combination of these reactions can lead to: 1) an amplification effect; 2) a counter-balancing effect; 3) a contraction effect. The magnitude of the coefficients indicates the stability of these effects. In order to underline these effects the following synthesis was made.

Table 4. Description of the transmission mechanisms based on the sign and the value of the correlation coefficients

Pearson					Spearman				
		g/ipc	c/p	o/p			g/ipc	c/p	o/p
s1	r1	(-,s)	(-,s)	(-,s)	s1	r1	(-,s)	(+,m)	(+,m)
	r2	(+,s)	(-,s)	(-,s)		r2	(+,s)	(+,r)	(+,m)
s2	r1	(+,r)	(+,m)	(+,s)	s2	r1	(+,r)	(+,r)	(-,m)
	r2	(+,m)	(+,s)	(+,s)		r2	(+,r)	(-,s)	(-,m)
s3	r1	(-,s)	(-,s)	(-,s)	s3	r1	(-,s)	(+,r)	(+,m)
	r2	(-,s)	(-,s)	(-,s)		r2	(+,m)	(+,r)	(+,m)
s4	r1	(+,r)	(+,m)	(+,s)	s4	r1	(+,r)	(+,r)	(-,m)
	r2	(-,s)	(+,s)	(+,s)		r2	(+,r)	(-,s)	(-,m)

Source: Own computations.

For testing the hypothesis the scenarios were split into two categories based on the specific behaviors of prices. The first category is characterized by a large increase in prices and low volatility and is registered for scenarios s2 and s4. The second category is characterized by a large increase in prices and low volatility and is registered for scenarios s1 and s3. The testing process is based on identifying unique characteristics or patterns of characteristics for the correlation coefficients (see Tables 3 and 4) which differentiate scenarios s2, s4 from s1 and s3.

In the case of the Pearson correlation, s1 and s3 are different from s2, s4 by: a) the only scenarios with negative correlation between demand and prices; b) the only scenarios with negative correlations for both pairs of variables, namely demand and prices, on one hand, and offer and prices, on the other; c) the only scenarios with a low sensibility to the signals from the demand and offer (small values for the correlation coefficients).

In the case of the Spearman correlation s1 and s3 are different from s2, s4 by: a) the only scenarios with positive correlations for both pairs of variables, namely demand and prices, on one hand, and offer and prices, on the other; b) the only

scenarios with a high/medium sensibility to the signals from the demand and offer (high/medium values for the correlation coefficients).

The differences between the results of the correlation indexes are explainable by the specific methodology of calculation. In this respect, the Pearson coefficient is more sensible to the presence of extreme values for the data. At the same time, the characteristics of the model lead to the registered differences.

The hypothesis is verified. This indicates that there are unique characteristics of the transmission mechanisms and of the relations between these mechanisms which differentiate between the behaviors of prices characterized by low volatility and the one characterized by high volatility. Nonetheless, we want to explain the behavior of prices not only to differentiate between their behaviors. In order to do this we have to look closer to the economic behaviors and to the way these behaviors are statistically reflected. The model is characterized by high inflationary pressures induced by inflationary expectations. These pressures interfere with the signal of the demand and offer on prices leading to a low correlation between the dynamics of demand and offer, on one hand, and inflation, on the other. Scenarios 1 and 3 are characterized by high volatility of prices. In these cases the dominant tendency underlined above, namely high inflationary pressures is accompanied by a tendency of decrease in prices generated by strong signals from the offer side. This is statistically translated into an increase in the value of the correlation coefficient between prices and offer. The explanation presented above indicates that the Spearman correlation captures better the cause of the differences between scenarios s1 and s3, on one hand, and s2,s4, on the other.

6. Conclusions and further developments

The paper builds a model of difference equations to analyze the relation and evolution of demand, offer and prices on a market with two sectors.

The first objective of the paper was to identify the impact of the changes in the structural variables. In this context the paper analyzed the effect of the changes in the downward rigidity of prices (rs) on the demand, offer and prices. The simulations revealed two main conclusions: a) the ambiguity of the sign of the relation between the downward rigidity of prices, on one hand, and the positive evolution of demand, on the other, explainable by the trade-off between the increase in productivity due to smaller labor cost and decrease in demand due to the same cause; b) the nonlinear behavior of the systems, namely proportional changes in the structural variables ep and rs did not lead to proportional changes in the key variables, namely demand, offer and inflation.

The key contribution of the paper was to test a hypothesis regarding the relation between the changes in the trajectories of prices as a result of the changes in the structural variables (downward rigidity of wages and inflationary expectations) and the pattern of the economic transmission mechanisms. The analysis of these mechanisms was based on the Pearson and Spearman correlations. The hypothesis was verified indicating that there are unique characteristics of the transmission mechanisms and of the relations between them that differentiate the high volatility behavior of prices from the low volatility behavior.

The differences between the results obtained using the Pearson and Spearman correlation coefficients indicate the limits that the use of this method has in analyzing the transmission mechanisms and their relations. In this respect, a future research approach would be to use conditional probability. This approach would give higher flexibility in defining the types or relations between the key variables. At the same time, the use of conditional probabilities would facilitate building more complex transmission mechanisms which would include a higher number of variables.

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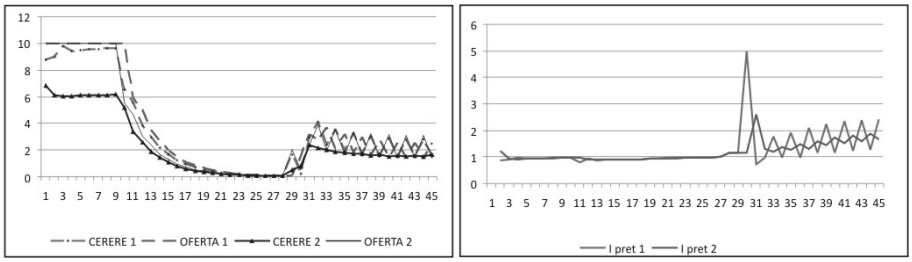
Appendix 1

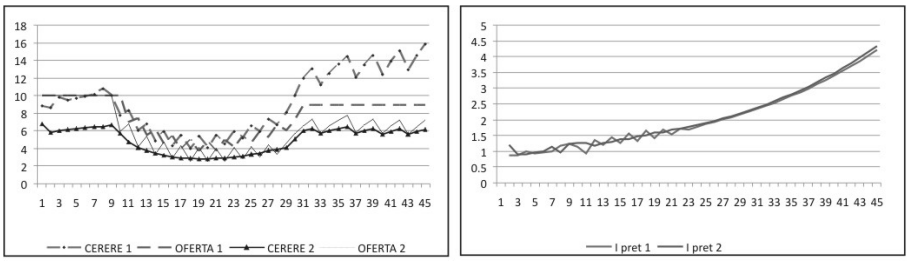
The results of the scenarios

Figure 1. A1 Running the model – Scenario 1



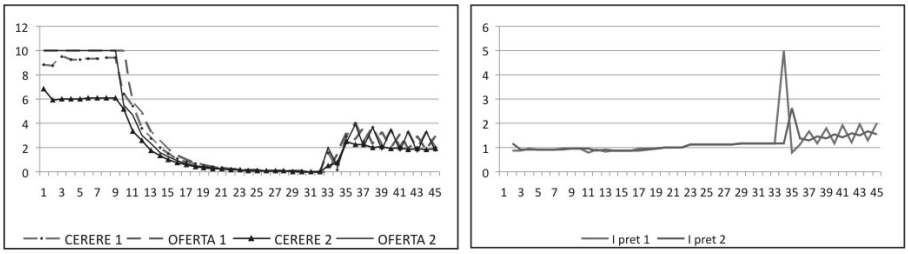
Legend: cerere i – demand in sector i, oferta i – offer in sector i, I pret i – price chain index in sector i.

Figure 2. A1 Running the model – Scenario 2



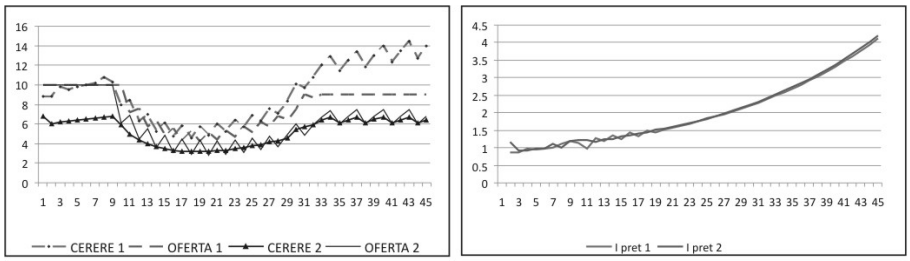
Legend: cerere i – demand in sector i, oferta i –offer in sector i, Ipret i – price chain index in sector i.

Figure 3. A1 Running the model – Scenario 3



Legend: cerere i – demand in sector i, oferta i – offer in sector i, I pret i – price chain index in sector i.

Figure 4. A1 Running the model – Scenario 4



Legend: cerere i – demand in sector i, oferta i – offer in sector i, I pret i – price chain index in sector i.

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