Asian Research Consortium

Asian Journal of Research in Business Economics and Management
Vol. 4, No. 4, April 2014, pp. 213-225

ISSN 2249-7307

Asian Journal of Research in Business Economics and Management

www.aijsh.org

Price Transmission Mechanism in the Iran Chicken Market Using the TECM, ECM-EG and GETS Models

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Abstract

The present paper studies the existence of asymmetry in the price transmission mechanism between the producer and the consumer prices in the Iran chicken market. Data used in the research include consumer price index and producer price index for chicken covering monthly periods of 91 months since March 2001 through September 2008. Johansen's cointegration method and Granger causality test were used to examine whether there is a long run relationship between the two indices and to determine causality direction. For the study of the asymmetry, three dynamic models were estimated: The Threshold Error Correction Model (TECM Model), the Engle – Granger Error Correction Model (ECM-EG Model) and the LSE−Henry general to specific model (GETS Model). The results indicate that there is a long-run relationship between each pair of producer and consumer prices. There is a causality direction from consumer prices to producer prices in long-run and mutual causality in short-run. The results of three models reject the hypothesis of asymmetric price transmission in the long-run, while it has confirmed in the short-run by ECM-EG model.

Keywords: Iran, price transmission. Causality relation, Johansen and Juselius, chicken, TECM model, GETS model

1. Introduction

Analysis of asymmetric price transmission along supply chain from producer to consumer for measuring competitiveness degree of different markets, welfare and political applications has a special place in applied economics. Asymmetric price transmission implies that retail prices response to increase and decrease of producer price differently (Meyer and Taubadel, 2004), (Peltzman, 2000). There are a wide range of reasons for existence of asymmetry in price transmission. The "searching costs" theory (Miller and Hayenga, 2001), “market power” (Brown & Yücel, 2000), (Zachariasse and Bunte, 2003), (Cotterill 2002), (Miller & Hayenga, 2001), (McCorriston, 2002), (Loyd et al., 2003), “menu cost” (Levy et al., 1997), (Dutta et al., 1999), (Ball and Mankiw 1994), (Buckle & Carlson, 2000), (Meyer and Taubadel, 2004), and “perishable goods” (Bailey and Brorsen 1989) , (Ward, 1982), (Serra and Goodwin 2003), are the most important factors.

Study of how price is transmitted is of high importance. First, along a supply chain, according to economic theories, any changes in production costs in early stages of production should be transmitted to the producer price index in the next stages and eventually to consumer price index (Taylor and Taylor, 2004) and (Zafeiriou et al., 2004). Thus, changes in producer price index can contribute to prediction of subsequent changes in consumer price index which is used for prediction of inflation. Secondly, as Peltzman (2000) suggested, asymmetric price transmission might imply the existence of gaps in the economic theory. Thirdly asymmetric price transmission could have welfare and thereby political applications. A possible application of asymmetric price transmission is that consumers don't benefit from price reduction in producer level or producers don't benefit from price increase in retail level (Meyer and Taubadel, 2004). So, under the assumption of asymmetric price transmission, distribution of welfare effects in levels and among economic agents over shocks to a market would be changed corresponding to issue of asymmetric price transmission.

The present paper studies vertical price transmission of chicken based on three methods of ECM-EG, TECM and GETS models. The contribution of the present paper in the existing literature is twofold: First, it studies the causality relationship and direction of price between producer price index and retail price index. Second, it tests for the presence of asymmetric price volatility, which is important because it provides some useful indications about the presence of market power in the industry. The important questions raised are as follows, first how change in price transmits along a supply chain? Second, to what extent, price changes in one side of market result in a positive or negative response in the other side?

2. Theoretical and empirical background

2.1 theoretical backgrounds

Given the importance of symmetry or asymmetry in price transmission from different aspects specially its relationship with validity of economic theories, numerous empirical efforts have been conducted over the last three decades to test the existence of asymmetric price transmission in different markets. Most of

studies have been done based on variable splitting technique developed by Wollffarm (1971) and later accepted by Houck (1977). In Houck's method, asymmetric price transmission is studied based on dividing price variables into decreasing and increasing stages. This method has been employed extensively in studies of agricultural economics to survey asymmetric price transmission. Study the asymmetric price in beef, pork and dairy products market, peanut butter and chicken industry in U.S, asymmetric price in markets of beef, pork and lamb, retail and wholesale markets for Australian red apple and finally studies of the asymmetric price transmission of farm to retail in tomato, onion, milk powder, coffee, rice and bean in brazil are some of such examples.

Wolfarm-Houck's technique doesn't consider features of data time series; series suffer from consecutive autocorrelation and generally result in false regression. The problem with some exceptions, at least in literature of agricultural economics, doesn't consider inherent changes in prices or mid-term stable relationships among prices. Developing co-integration techniques, efforts for testing asymmetry in co-integration framework were conducted. Von Cramon Taubadel and Fahl Busch (1994) demonstrated that an asymmetric Error Correction Model (ECM) based on Granger's and Lee's (1989) work could also be used for testing asymmetric price transmission. Likewise, Von Cramon Taubadel and Loy (1999), Meyer and Taubadel (2004) indicated that such methods as Wolfarm- Houck's are basically contradicted with cointegration and since time series of price are non-stationary, using the cointegration methods and error correction model (ECM) to study asymmetric price transmission is more appropriate than other methods such as ARDL, because different types of ARDL models are contrary to cointegration concept. In addition, Keele (2005) also demonstrated that ECM model is applicable even with reliable data and in this case it models this type of data better than ARDL model.

2.2 empirical backgrounds

The asymmetry in price transmission mechanism between the producers and the consumers has been surveyed with the application of different empirical models. Various empirical works support the existence of asymmetric transmission price between producer and retailer.

An important study regarding asymmetry in price transmission mechanism is the one developed by Rao and Rao (2005). In this study, the asymmetry in price transmission mechanism is surveyed between the petroleum and gasoline with the application of the LES-Hendry general-to-specific approach. They confirmed empirically the existence of asymmetry in price transmission mechanism. Moreover, Error Correction Models (Grasso and Manera 2007) and threshold cointegration analysis (Hsueh and Finney 2005) had been used to study oil-gasoline price relationship.

Von Cramon- Tabadel (1998) discovered the asymmetric formation of price in German pork market. Davson and Tifin (2000) identified the long-run relationships between retail prices in lamb farm in England and studied the features of structural and seasonal failure of series and concluded that Granger causality direction is from retail price to producer price, so that price of lamb is adjusted in the retail market. Goodwin and Harper (2000) and Kaabia, Gill and Bushenjaku (2000) developed threshold autoregressive models and studied beef division in the U.S, pork division in the U.S and lamb division in

Spain; respectively. Goodvin and Holt (1999) found that agricultural markets are conformed with shocks of wholesale market; however shocks effects of retail market are considerably limited to retail markets.

Abdullahi (2002) used a momentum- threshold autoregressive model (M-TAR) while studying the formation of price in Swiss pork market. He also concluded that price formation between levels of producer and retail market is asymmetric i.e. increase of producer prices decreasing marketing margin is transmitted more rapidly than decrease of producer price expanding marketing margins.

Rezitis (2003) used a general autoregressive conditional variance heterogeneous method (GARCH) while studying causality, formation of price and external effects in Greek markets of pork, lamb and poultry. Bakucs and Ferto (2005) used VECM to study the price formation concerning pork market in Hungary, detected competitive pricing and didn't find any evidence of asymmetric formation of price.

3. Research Methodology

Data for the chicken in this study include monthly price indices for producers and retailers from March 2001 through September 2008, which makes a total of 91 observations. Producer prices for chicken product was obtained from the Agricultural Price Indices (1997=100) provided by the Statistical Center of Iran. Retail (Consumer) prices for chicken product was obtained from the publication of the Consumer Price Index (1997=100) provided by the Central Bank of Iran.

The econometric analysis of the asymmetry in the price transmission was completed in four steps. First, the price series used in this study are tested for stationary test of time series as an essential process before the application of Johansen cointegration technique. In the present paper the unit root test employed in our data is Augmented Dickey Fuller (ADF) test (1981). In order to determine the ADF form we used the Schwartz–Bayesian (SBC) criterion and for every time series we chose the model, for which the SBC criterion has, the lowest value. Second, if the series are found to be integrated of order one, testing for cointegration is performed by specifying a Vector Autoregressive Model (VAR) and use the Johansen technique (Johansen and Juselius, 1990) to test the existence of a long-run relationship between the price indices and estimation of cointegration vector. Regarding the estimation of the cointegration vectors, the treatment of the Johansen's maximum likelihood approach was used. As we know, the Johansen cointegration technique can be applied since the time series are on-stationary in levels and stationary in first differences. In order to apply the Johansen technique it is necessary to calculate the number of lags of the endogenous variables of the model, so to satisfy this purpose we formulate VAR model using level values of variables and determine its rank using Aikatic (AIC) and Swartz-basin (SBC) and likelihood(LR) tests.

After confirming the existence of a long-run relationship between the price indices and in the third step, the dynamic Error Correction Model introduced by Engle and Granger (1987) aiming at the determination of the direction of the causality was used. The ECM Engle-Granger has the following form given by the following equations.

$$\Delta PP_t = \mu_1 + \sum_{t=1}^{n_1} \beta_{PP} \Delta PP_{t-1} + \sum_{t=0}^{n_2} \beta_{PC} \Delta PC_{t-1} - \pi_1 Z_{t_1-1} + e_{t_1}$$

$$\Delta PC_t = \mu_2 + \sum_{t=1}^{n_1} \beta_{PP} \Delta PP_{t-1} + \sum_{t=0}^{n_2} \beta_{PC} \Delta PC_{t-1} - \pi_2 Z_{t2-1} + e_{t2}$$

Where n1 and n2 are lags lengths, PPI and CPI are producer and consumer price index in the period t respectively and $Z_{1t-1} = PPI_{t-1} - \alpha_0 - \alpha_1 CPI_{t-1}$ and $Z_{2t-1} = CPI_{t-1} - \delta_0 - \delta_1 PPI_{t-1}$

The possible results of this method are the following;

α) $\pi 1 \neq 0$, $\pi 2 \neq 0$, there is a long-term two-way relationship between the two variables.

β) $\pi 1 = 0$, $\pi 2 \neq 0$ In the long run the producer price causes the consumer price.

γ) $\pi 1 \neq 0$, $\pi 2 = 0$ In the long run the consumer price is the cause for the formation of the producer price.

Finally, after determination of causality relationship between the two variables, asymmetry in chicken market was studied using three different models are given by the following equations:

1) Engle-Granger Error Correction Model (ECM-EG), that recently used for wood productions by Koutroumanidis, Zafeririou and Arabatzis (2009), Reziti, and Panagopoulos (2008) and Zhou (2005). This model formulated based on Houck's model (1977) later which developed by Granger and Lee (1989) with dividing components of error correction into positive and negative components and finally resulted in the following form by dividing ΔP into positive and negative components by Tabadel and Loy (1999).

$$\Delta PC_t = \mu_1 + \sum_{t=0}^{n_2} \alpha_k^- \Delta CPI_{t-1}^- + \sum_{t=1}^{n_1} \beta_k^- \Delta PPI_{t-1}^- - \pi^- EC_{t-1} + \sum_{t=0}^{n_3} \alpha_k^+ \Delta CPI_{t-1}^+$$

$$+ \sum_{t=1}^{n_4} \beta_k^+ \Delta PPI_{t-1}^+ - \pi^+ EC_{t-1} + \varepsilon_t$$

Above equations consist of two parts, a part with positive superscript on coefficients and variables indicating price increase, another part with negative superscript concerning price reduction. For example, π^+ and π^- are used when $Z > 0$ and $Z < 0$ respectively (coefficients of π^+ and π^- are rates of price adjustment to positive and negative shocks of marketing margin, respectively). Moreover, ΔCPI_{t-1} and ΔPPI_{t-1} are following:

$$\Delta CPI_{t-1}^- = \begin{cases} \Delta CPI_{t-1} & if \quad \Delta CPI_{t-1} \langle 0 \\ 0 & if \quad \Delta CPI_{t-1} \rangle 0 \end{cases} \qquad \Delta CPI_{t-1}^+ = \begin{cases} \Delta CPI_{t-1} & if \quad \Delta CPI_{t-1} \rangle 0 \\ 0 & if \quad \Delta CPI_{t-1} \langle 0 \end{cases}$$

$$\Delta PPI_{t-1}^- = \begin{cases} \Delta PPI_{t-1} & if \quad \Delta PPI_{t-1} \langle 0 \\ 0 & if \quad \Delta PPI_{t-1} \rangle 0 \end{cases} \qquad \Delta PPI_{t-1}^+ = \begin{cases} \Delta PPI_{t-1} & if \quad \Delta PPI_{t-1} \rangle 0 \\ 0 & if \quad \Delta PPI_{t-1} \langle 0 \end{cases}$$

The ECM–EG model is solved with the least squares method and then we applied the Wald test. In particular, we examined the validity of the equality $\pi^+ = \pi^-$.

2) Threshold Error-Correction Model: As noted by Enders and Siklos (2001), a more general specification may incorporate threshold effects of lagged ΔPP_t and ΔCP_t depending on whether EC_{t-1} is positive or negative. To evaluate the potential asymmetry in price transmission to PPI_t from CPI_t, we consider the following threshold model:

$$\Delta PP_t = \mu + \begin{cases} \pi^+ EC_{t-1} + \sum_{k=1}^{p} \alpha_k^+ \Delta CP_{t-k} + \sum_{k=1}^{p} \beta_k^+ \Delta PP_{t-k} + V_t & if \quad PP_{t-1} < \xi_0 + \xi_1 CP_{t-1} \\ \pi^- EC_{t-1} + \sum_{k=1}^{p} \alpha_k^- \Delta CP_{t-k} + \sum_{k=1}^{p} \beta_k^- \Delta PP_{t-k} + V_t & \text{otherwise} \end{cases}$$

Where**:** $EC_{t-1} = PP_{t-1} - \xi_0 - \xi_1 CP_{t-1}$

After the estimation of the model we applied the Wald test. In particular, we examined the validity of the equality $\pi^+ = \pi^-$.

It should be noted that the threshold here is defined with respect to PP_t being above or below its equilibrium level relative to CP_t. In the other studies the explanatory variables are typically split into two regimes based on the sign of ΔCP_t in individual periods. To the extent that market price adjustments are not instantaneous, defining the regimes based on whether CP_t is increasing or decreasing in specific periods may lead to misleading inferences on the actual response of PP_t because it ignores the information reflected by the relative equilibrium level of PP_t and CP_t.

3) The LSE–Hendry General-to-Specific Model (GETS). In the case of the agricultural products, the GETS model has not been applied before and is less preferable than VAR and cointegrating VAR approaches (Rao and Rao, 2005) and Vector Error Correction Model (VECM) (Reziti and Panagopoulos, 2008). However, according (Reziti and Panagopoulos, 2008), the GETS model is being criticized quite often because the prices used are considered to be cointegrated under assumption, without having been tested before. Additionally, GETS is being subject to criticisms for mixing I (0) to I (1) variables. This argument is not valid given that GETS model accepts the existence of the relationship between the dependent and the explanatory variables in their levels. Due to this fact, the levels of the variables are regarded as cointegrated and consequently their linear combination is I (0) (Hendry and Krolzig, 2005).

The GETS model has the following form:

$$\Delta PPI_t = \sum_{t=0}^{n_1} \alpha_k^+ \Delta CPI_{t-1}^+ + \sum_{t=1}^{n_2} \beta_k^+ \Delta PPI_{t-1}^+ + \pi^+ (PPI_{t-1} - \varphi_0 - \varphi_1 CPI_{t-1} - \varphi_2 T)$$
$$+ \sum_{t=0}^{n_3} \alpha_k^- \Delta CPI_{t-1}^- + \sum_{t=1}^{n_4} \beta_k^- \Delta PPI_{t-1}^- + \pi^- (PPI_{t-1} - \varphi_0 - \varphi_1 CPI_{t-1} - \varphi_2 T) + \xi_{ti}$$

Where coefficients of π^+ and π^- are rates of price adjustment to positive and negative shocks of marketing margin, respectively. An alternative form is given by the following equation:

$$\Delta PPI_t = \gamma_0 + \gamma_1 T + \sum_{t=0}^{n_1} \alpha_k^+ \Delta CPI_{t-1}^+ + \sum_{t=1}^{n_2} \beta_k^+ \Delta PPI_{t-1}^+ + \pi^+ (PPI_{t-1} - \varphi_0 - \varphi_1 CPI_{t-1})$$

Where:

$$\gamma_0 = (\theta^+ + \theta^-)^* \phi_0$$
$$\gamma_1 = (\theta^+ + \theta^-)^* \phi_2$$

After the estimation of the model we applied the Wald test. In particular, we examined the validity of the equality $\pi^+ = \pi^-$. The long-run adjustment of PP_t is determined by the parameters, π^+ and π^-. The short-run adjustment of PP_t, which is governed by the parameters, $\alpha\kappa^+$, $\alpha\kappa^-$, $\beta\kappa^+$ and $\beta\kappa^-$ (for k =1, 2, . . ., p), may come either from its own history of lagged dynamics or from the lagged effects of CP_t. If $\pi^+ \neq \pi^-$ PP_t, exhibits asymmetry in long-run adjustment. If either $\alpha\kappa^+ \neq \alpha\kappa^-$ or $\beta\kappa^+ \neq \beta\kappa^-$ or both, PP_t displays asymmetry in short-run adjustment.

4. Results and discussion

The application of the Augmented Dickey Fuller (ADF) method confirmed that the time series of the variables under study are I (1) (table 1) and consequently they might give a linear combination of variables that is I (0). To employ Johansen technique, it is necessary to calculate numbers of lags of endogenous variables in the model.

Table 1: Result of Unit Root test

variable		CPI		PPI	
		First Differences	level	First Differences	level
Lag length		1	2	0	0
ADF		-8.576822	-2.109327	-8.794718	-3.153371
Critical value	1%	-4.065702	-4.065702	-4.064453	-4.063233
	5%	-3.461686	-3.461686	-3.461094	-3.460516
	10%	-3.157121	-3.157121	-3.156776	-3.156439

According to results taken by E-views 5.0 software, AIC and LR suggest optimum lag of 4 and SBC suggests lag of 2. So in this research we chose optimum lag of 2 according to Schwartz–Bayesian criterion (table 2).

Table 2: Result of Optimum Lag for Johansen technique

Lag length (q)	(Lnl)	AIC(q)	SBC(q)	LR
1	-468.8607	11.44243	11.61728	-
2	-454.0696	11.18240	11.47383*	27.80023
3	-447.1300	11.11157	11.51956	12.70869
4	-440.9312	11.05858*	11.58315	11.05319*

The cointegration analysis of Johansen–Juselius, using the maximum likelihood of Johansen–Juselius (1990), that involves the use of the trace and the maximum eigenvalue statistic (table 3), indicates that there is one cointegration vector that has following form:

$$PPI_t = \underset{(1.65553)}{22.28467} + \underset{(0.01645)}{0.760897} CPI_t$$

Thus, Johansen technique confirms the existence of a long-run equilibrium relationship between consumer and producer prices in the chicken market and so it can be studied the Granger causality and symmetry price transmission tests.

Table 3: Johansen tests for cointegration vectors

term	Null hypothesis	Alternative hypothesis	statistic	0.05 critical value
Trace statistic	r =0	r ≥ 1	30.51076	20.2618
	r ≤1	r ≥ 2	4.739691	9.1645
Max–Eigen statistic	r =0	r = 1	25.77107	15.8921
	r ≤1	r =2	4.739691	9.1645

Based on causality test and according to table 4, taking into account the significance of coefficients of lagged error correction Z_{1t-1}, in the long run there is a Granger causality relationship from consumer prices to producer prices. But in the short run, regarding significance of coefficients ΔCPI and ΔPPI, there is a mutual causality between consumer and producer prices (Table 4). The causality relationship from consumer to producer prices in Iran's chicken market is attributable to two important factors; perishability of chicken and willing to purchase fresh chicken. Iranian people prefer to use fresh chicken, so freezed chicken is cheaper than fresh one. Therefore, the producers, in order to avoid from lose their products, must to sale their products at the market price. In this case, marketing margin in the market in both shocks are almost in favor of retailers. According to this result, in the short run, traces of positive or negative shocks in production costs are not limited to producer prices and transmitted to consumer prices.

But in the long run, both positive and negative shocks in the retail prices transmit to producer prices, so that profit margin and chicken producers' welfare are affected negatively while increase in production costs. Moreover, negative shocks in retailer prices are transmitted to producer prices so that profit margin and chicken producers' welfare are affected negatively. On the other hand, different shocks of markets reflecting in producer price index.

Table 4: Result of Granger causality Test

Tests		Short-run causality test		Long - run causality test			
				$^{2}Z_{t-1}$		Co - Test	
Variables		ΔCPI	ΔPPI	Z_{1t-1}	Z_{2t-1}	ΔCPI & Z_{1t-1}	ΔPPI & Z_{2t-1}
H_0		$B_{PC}=0$	$B_{PP}=0$	$\pi_1=0$	$\pi_2=0$	$\pi_1=0, B_{PC}=0$	$\pi_2=0$, $B_{PP}=0$
Dependent Variables	ΔPPI	18.1417)0.0000(		-2.8242)0.0059(		26.5368)0.0000(	
	ΔCPI		8.4238)0.0005(		-1.1808)0.2410(		9.8148)0.0000(

Significant test of coefficients lagged variables using Wald method

2. Significant test of coefficient of lagged error correction term using t-statistic test

3. Synchronous test of Significant of coefficients of lagged variables and lagged error correction term using Wald method

After estimation of causality relationship, the fourth stage which is symmetric price transmission test should be surveyed. This has been done by ECM-EG, TECM and GETS models. The results are shown in table 5. As table 5 shows, in three models, based on Wald test, null hypothesis regarding the existence of symmetry in price transmission from producer to consumer in both long run and short run has not been rejected.

It implies that, response of producer prices to negative and positive changes in consumer prices is symmetric in both the long run and short run. Therefore, marketing margin in the market in both shocks are almost the same. Moreover, the symmetric price transmission in Iran's chicken market is attributable to the fact of existence of large number of producer and retailer.

Table 5: Result of Asymmetric in Chicken Market

	TECM Model		GETS Model		ECM-EG Model	
Variables	coefficients	t statistics	coefficients	t statistics	coefficients	t statistics
T	-	-	0.021	1.1462	-	-
ΔPPI^{+}_{t-1}	-1.335	-3.399	-1.25	-2.8395	-1.4832	-3.6923
ΔPPI^{+}_{t-2}	0.1181	0.2785	0.453	1.0613	0.6471	1.6327
ΔPPI^{-}_{t-1}	-1.4890	-3.5723	-0.725	-1.5767	-	-
ΔPPI^{-}_{t-2}	-	-	-	-	0.4621	0.9359
ΔCPI^{+}_{t-1}	1.5332	4.4879	1.554	4.2952	1.8554	5.2802
ΔCPI^{+}_{t-2}	-0.7399	-1.9024	-0.828	-2.1243	-0.6612	-1.6405
ΔCPI^{-}_{t-1}	-0.3859	-3.3438	1.1	2.42	0.3895	1.9923
ΔCPI^{-}_{t-2}	-	-	-	-	-0.8854	-1.7333
π_1^{+}	0.8282	1.7125	-1.542	-3.9838	-1.0837	-3.2092
π_1^{-}	1.3319	3.5997	-0.603	-1.2044	-1.1524	-3.2736
R^2	0.5809	-	0.5845	-	0.5615	-
AIC	6.4382	-	6.4215	-	6.4605	-
SBC	6.6968	-	6.6783	-	6.7138	-
H_0	Wald Method Symmetry test with					
$\pi^{+} = \pi^{-}$	F- Statistic =0.6933 (0.4077) $\chi^2 = 0.6933(0.4050)$		F- Statistic =1.76 (0.188) $\chi^2 = 1.76(0.185)$		F-Statistic =0.8781(0.3516) $\chi^2 = 0.8781(0.3487)$	
$\beta^{+}_{PC} = \beta^{-}_{PC}$	F- Statistic = 0.7950 (0.3754) $\chi^2 = 0.7950(0.3726)$		F- Statistic =0.647 (0.423) $\chi^2 = 0.648(0.42)$		F-Statistic = 4.7250(0.327) $\chi^2 = 4.7250(0.3297)$	

5. Conclusions and suggestions

The analysis of how price is transmitted along a supply chain from producer price to consumer price and possible existence of asymmetric transmission is of high importance in economics literature. In the present study, price relationships and how price is transmitted between producer and consumer levels have been surveyed for chicken in Iran. With the assistance of Johansen-Jesiules technique, it was confirmed that there is a long run equilibrium relationship between consumer and producer prices in chicken market. Granger test indicated that there is a causality relationship from consumer to producer prices in the both long run and short run.

Null hypothesis regarding symmetry in price transmission from consumer to producer has been rejected in the both long run and short run. So that prices are set on the retail market and the retailers make 'offers' to producers down on the marketing chain. Therefore, given the causality direction of price from consumer to producer and the symmetry in the price transmission in the long run, it can be said that finding of this study do not imply market power or supernormal profits among producers in the Iran chicken market. The results of this study have confirmed the findings of Bojnec (2002), that even the less developed and regulated markets, can perform as competitive markets.

Finally, more studies are suggested regarding direction and the way of price transmission in perishable goods market and specially agricultural products, as well as the analysis of welfare issues and comparing costs and benefits resulting form adoption different policies by government in these markets are necessary.

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