



## Consequences of Food Safety Abolishing Energy Subsidies on Iranian Meat

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**Introduction:** Policies of the Fifth Five-year Socio Economic Development Plan on Iran emphasize on improving factors such as air quality and food security, reduction of the risks and infections that threatens health as well as to change dietary patterns by improving food composition and safety. To this end, the government required to support measures to increase production of animal protein obtained from livestock and poultry. The Iranian targeted subsidy plan started in 2010 which increased energy prices significantly. The increase in energy price after start of targeted subsidies included gasoline (3.6-6.2 times), Kerosene (5.4 times), gas oil (8.1-18.9) and fuel oil (18.8). In terms of supply of animal protein, meat has an important role in nutrition and a major share in family food expenditure so that the willingness to consume it has been obvious in the country's consumer culture. On the other hand, according to international standards, every individual needs 70 grams of protein a day (for average body weight of 70 kg). About one-quarter of this amount (about 25 g) should be animal protein. With commence the second phase of a targeted subsidy plan, it is important to get familiar with the effects of this policy on the livestock and poultry industry. A change in livestock prices due to increased production and transport costs have increased the consumer price and have led to changes in the intake of animal protein and calories. With introduction of this plan and recognition of its need in the country, there has been a need to investigate the effects of increasing energy prices on the livestock and poultry industries and to quantify the effects of these policies. This study is trying to investigate the effects of the increase in energy prices for beef, sheep and poultry meat prices, including on a farm and retail prices under various scenarios, the amount of demand and supply and ultimately the effects on food security in Iran.

**Materials and Methods:** Equilibrium displacement models (EDMs) have used in applied economics. EDM allows the researchers to focus on result of various supply and demand shifter. In this study, to decide the effects of elimination of energy subsidy policy on meat producers and consumers. The model comprises horizontally linked beef, sheep, and poultry demands at the retail level as well as vertical linkages between the farm and retail sectors.

**Results and Discussion:** Scenarios for energy price rise are created following three steps. First, a 38 % increase created in prices of energy carriers. Then change in balance, an increase of 50 % considered as the second stage. Up to this point we have about 88 % rise in energy prices, which must raise by another 300 % to reach the global prices which created in the third scenario. Alongside policies for elimination of energy subsidies, there has been a policy of cash subsidies in the country. In this study, to calculate the effect of cash subsidy, it was necessary to calculate the increase in family expenditures in exchange for a certain percentage of increase in the meat price. Therefore, with increase of average meat price, the average family expenditures for meat were also calculated. This average is the value which will pay to families in cash. Like assumptions used in the demand model, if all income rise spent on food, the percentage of increase in expenditure can be calculated. Using this percentage and income elasticity elements, the effect of cash subsidies on increasing meat expenditure can be calculated. Though accepting the premise that all families spend their income rise to buy meat is difficult, it helps us take a general attitude about paying cash that increases demand and shocks the retail demand. Therefore, an increase of 2 and 5 % considered for the average family expenditure. A 2 percent increase in the family expenditure increased the demand for poultry, sheep, beef by about 0.63, 1.13 and 0.92 percent and a 5 percent increase in the family expenditure increased the demand, by 1.57, 2.82 and 2.29 respectively.

**Conclusion:** The results show that if the increased demand is not proportional to the increase in production, it does not have a positive impact on families' food intake. The increases in prices of energy carriers have different effects on meat production. Increased prices of energy carriers encouraged sheep production, because the increase of energy price does not induce a significant effect on the industry which uses pastures as a main feeding resource. Moreover, increased poultry and beef and sheep prices in some scenarios led to substitution with sheep leading to changes in animal protein intake. Because the meat market is competitive, increased demand arising from cash subsidies will not lead to an increase in animal protein intake. To this end, production

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should increase, so that the price should be reduced and the family protein and calorie intake get close to international standards. In other words, the supply shock effect should be neutral and the increase in retail demand cannot help the consumer. It is recommended that the amount of money being paid to families to increase retail demand, be paid to the manufacturing sector to modernize production industry, for example heating devices that help to save energy. Moreover, to counter the negative effects of the increase in the prices of energy carriers, poultry production system that consumes a large share of energy should be modified to increase productivity. Investigating ways to increase productivity and find its effect on the transfer of demand function in an Iranian meat market requires separate study.

**Keywords:** Equilibrium Displacement Model, Energy Prices, Food Safety, Meat Market



## Investigation the Impact of Exchange Rate Volatility on the Export of Agricultural Products

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**Introduction:** Agricultural commodity export is a main attribute of developing countries and it is the basic force of development, however, developing countries have faced domestic and international instability in their markets and monetary and fiscal policies and these instabilities create a difficult condition for most of producers and exporters. Volatility in exchange market is one of the most important factor and vital concentrate for international trade especially agricultural commodity export. Because of this concern many studies have been conducted in this filed; (Aristotelous, 2001; Chen, 2009 and Sabuhoi and Piri, 2009). Many of these studies has stated that exchange rate fluctuation has a negative impact on aggregated agricultural export; however, none of them has been focused on the effects of exchange rate fluctuation on exported value of important commodities in long run and short run. In recent years, exchange rate fluctuation has been raised about 6 percent since 2007 to 2010 and it seemed that this phenomenon has a negative impact on agricultural commodity export in Iran. To test this hypothesis exported value of three important commodity (date, orange and grape) and exchange rate volatility since 1970 to 2013 have been used.

**Material and Methods:** In order to examine the relation between real exchange rate volatility and export values of date, orange and grapes, first GARCH method has been used to draw out exchange rate volatility; then, Panel unite root test has been used to check the level of integration. Since real exchange rate is not heterogeneous for different cross sections Levi-Lin and Chow unit root test has been used for this variable and IPS test has been applied to export value. Pederoni co-integration test has been used to check the integration between these variables. Finally, FMOLS (Fully Modified Ordinary Least Square) and DOLS (Dynamic Ordinary Least Square) methods have been used to estimate long run and short run coefficients.

**Results and Discussion:** Main results showed that real exchange rate volatility and export value of selected commodities are Co-integrated. The coefficient estimation of FMOLS and DOLS methods are equal and statically significant; so, these methods aren't statically different and they showed that real exchange rate volatility has a negative impact on exported value for whole panel. However, the specific coefficient for each commodity showed contradictory behavior in short run and long run; for example real exchange rate fluctuation has a negative and significant impact on all the commodities; but, in short run this variable has a positive and significant impact on exported value. Moreover, based on estimated results it seems that fluctuation in exchange market has a greater impact on more valuable commodities like date.

**Conclusion:** Considering the importance of agricultural product trade and in order to overcome mono-product economy, this study investigated long term and short term relation between export of grape, orange, date and exchange rate volatilities. To this aim, first the index of exchange volatility using generated autoregressive conditional heteroscedasticity (GARCH) was calculated. In order to investigate the relation between exchange rate volatilities and export value of agricultural product, unit root test and cointegration test related to panel data were used during years 1971-2013. The results of model estimation showed that exchange rate volatilities in short term and long term have respectively positive and negative effects on the export value of orange, grape and date. In long term, the negative effects of Exchange rate volatilities on high-export-value products are more than its effects on low-export-value products. Based on the estimation results we can conclude that, in short run, exporters are willing to increase their interchange and gain profits of the volatility in exchange market; however, in long run exchange rate fluctuation has effect on their long run profit because of instability in price and production, especially for more valuable products. Moreover, these risks can be more harmful in long run because of its impact on investment and production and due to lack of production, most of Iranian exporters will lose their international markets, hence, their volume and values of agricultural commodities export will reduce gradually. Based on the results, Iranian government should create a stable economic condition in long run, present proper information about exchange market future trend and its fluctuation in long run and short run and

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create a better marketing condition in short run.

**Keywords:** Exchange Rate, Export-Value Products, GARCH Model, Panel Co-integration Test



## Estimating Price Volatility Structure in Iran's Meat Market: Application of General GARCH Models

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**Introduction:** Over the past few years, the price volatility of agricultural products and food markets has attracted attention of many researchers and policy makers. This growing attention was started from the food price crisis in 2007 and 2008 when major agricultural products faced accelerated price increases and then rapidly decreased. This paper focused on the price volatility of major commodities related to three market levels of Iran's meat market, including hay (the input level), calf and sheep (the wholesale level) and beef and mutton (the retail level). In particular, efforts will be made to find more appropriate models for explaining the behavior of volatility of the return series and to identify which return series are more volatile. The effects of good and bad news on the volatility of prices in each return series will also be studied.

**Materials and Methods:** Different GARCH type models have been considered the best for modeling volatility of return series. Nonlinear GARCH models were introduced to capture the effect of good and bad news separately. The paper uses some GARCH type models including GARCH, Exponential GARCH (EGARCH), GJR-GARCH, Threshold GARCH (TGARCH), Simple Asymmetric GARCH (SAGARCH), Power GARCH (PGARCH), Non-linear GARCH (NGARCH), Asymmetric Power GARCH (APGARCH) and Non-linear Power GARCH (NPGARCH) to model the volatility of hay, calf, sheep, beef and mutton return series. The data on hay, calf, sheep, and beef and mutton monthly prices are published by Iran's livestock support firm. The paper uses monthly data over the sample period of the May 1992 to the March 2014.

**Results and Discussion:** Descriptive statistics of the studied return series show evidence of skewness and kurtosis. The results here show that all the series has fat tails. The significant p-values for the Ljung-Box Q-statistics mean that the auto-correlation exists in the squared residuals. The presence of unit roots in the return series is confirmed by the results of the ADF and PP unit root tests. Different GARCH type models mentioned in materials and method were fitted to the return series and then have been compared based on 7 loss functions MSE\_2, MSE\_1, PSE, QLIKE, R2LOG, MAD\_2, MAD\_1, two information criteria AIC and BIC and log likelihood. The selected models for modeling the behavior of volatility in the hay, calf, sheep, beef and mutton return series are SAGARCH (1,1) with a t distribution, NGARCH (1,1), TGARCH (1,1), SAGARCH (1,1) and EGARCH (1,1) all with Gaussian distribution. The coefficient of asymmetry ( $\gamma$ ) in all models shows signs of asymmetric behavior in volatilities so that for all of the return series except hay returns positive shocks have more effect on volatility relative than negative shocks of the same size. This evidence is vice versa for the hay return, in which negative shocks have more effect on volatility. The ( $\alpha_1 + \alpha_2$ ) in all models are greater than 0.7 which means the high persistence of shocks to volatilities. In other words, shocks might die out very gradually. This feature is more pronounced in the case of beef and calf return series with  $\alpha_1 + \alpha_2$  greater than 0.9. Sensitivity of the current volatility to the new shock or news,  $\beta$ , in calf (0.76) and beef (0.71) returns are greater than that of others. The low sensitivity to the news is related to the sheep returns (0.16). The effect of current conditional variance for the next month conditional variance,  $\beta$ , in sheep (0.55) and mutton (0.42) returns are relatively high. Minimal ( $\beta$ ) (0.14) is related to the calf returns.

**Conclusion:** The paper attempts to study persist shocks to volatility as well as how positive (good) or negative (bad) shocks (news) may have an asymmetric effect on the volatility of a return series of hay, calf, sheep, beef and mutton prices in Iran. The findings show signs of asymmetry and persistence in volatilities. The sensitivities of price were also, volatility to the news in the calf and beef markets is greater than other return series. By the way, the effect of current conditional variance of the next month conditional variance in sheep and mutton returns is greater than others. This finding indicates that when new shocks occurs in the meat market calf and beef returns are more influenced by them and sheep and mutton returns highly transmit the current volatility

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in the future. This suggests less political tensions in the country as much as possible to calm the economic and political space.

**Keywords:** Asymmetric Effects, Conditional Heteroscedasticity, GARCH Type, Meat, Price Volatility Models



## Optimal Cropping Pattern Based on Multiple Economic, Regional, and Agricultural Sustainability Criteria in Sari, Iran: Application of a Consolidated Model of AHP and Linear Programming

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**Introduction:** Determining a suitable cropping pattern is an important task for planners and requires an exact and realistic decision-making process based on several goals and criteria corresponding to secure the interest of agricultural beneficiaries in long-term. Accordingly, this study reviews the current pattern operated by farmers in Sari, Iran, and intends to provide a cropping pattern that considers the multifold regional and agricultural sustainability criteria along with economic considerations.

**Materials and Methods:** In order to achieve the study goals, a consolidated model of AHP and Linear Programming was applied. For this purpose, we constructed a three-level AHP, including a goal (determining the weight of each crop), seven criteria, and seven alternatives. Profitability, compatibility with regional and geographical conditions, water consumption, environmental effects of cropping, job creation opportunities, skill and proficiency required for producing a crop, and risk taken to cultivate a crop were considered as the criteria in the model. Seven alternative crops including rice, wheat, rapeseed, barley, soybean, clover, and vegetables were considered too. The next step is determining the weight of each criterion with regard to the goal and the weight of each alternative with regard to each criteria. By multiplying these weights, final weights for various crops were obtained from the model. Derived weights for each crop were then applied as objective function coefficients in the Linear Programming model and the model was solved subject to the constraints.

**Results and Discussion:** Optimal cropping pattern determined based on the consolidated model of AHP and Linear Programming and the results compared to a scenario that only looks forward to maximizing the economic interests. Due to the low profitability of rapeseed and barley, these crops eliminated from the pattern in the profit-maximizing scenario. According to the results, the scenario provides 11.36% more profit than the current cropping pattern. In the consolidated model, we first calculated final weight for any crop. With a relative weight of 0.23, rice had the highest priority. Wheat, vegetables, clover, barely, rapeseed, and soybean weighed 0.17, 0.16, 0.14, 0.11, 0.1, 0.09 and took the respective priorities. In the next step, we use the weights for each crop as objective function coefficients in the Linear Programming model and solve the model subject to the constraints. Rice cultivation had the largest crop area with 15126 ha (62.52% of the entire crop area). Clover, vegetables, wheat, rapeseed, barely, and soybean stood behind the rice. Comparing the ideal cropping pattern, which was based on multifold criteria, with the current pattern showed that the most significant changes between the patterns occurred for wheat, soybean, and rapeseed crops so the recommended crop area for wheat in the optimal pattern increased by around 165% , however, the recommended crop area for soybean and rapeseed decreased by 96% and 75% respectively. The total profit of the ideal cropping pattern was 1,152,469,874,210 Rials. This shows that the optimal pattern caused an increase in profit by 3.63% compared to the current cropping pattern. Comparison between the results of consolidated model and profit-maximizing scenario shows that the optimal cropping pattern recommended by the consolidated model offers lower profits (lower than 8%) than the pattern offered by profit-maximizing model, however, the optimal pattern allows us to take other important criteria into account, including crop compatibility with regional and geographical conditions, water consumption, environmental effects of cropping, job creation opportunities, skill and proficiency required for producing a crop, and risk taken to cultivate a crop.

**Conclusion:** Using a consolidated model of AHP and Linear Programming, this study aimed to decide an optimal cropping pattern that considers the multifold regional and agricultural sustainability criteria beside economic considerations in Sari. The results of ideal cropping pattern in consolidated model recommended some changes distribute cropping area between crops and increased the profit compared to the current pattern. Comparison between the results of consolidated model and a scenario that only looks forward to maximizing the economic benefits shows that the ideal cropping pattern recommended by the consolidated model offers lower

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profits (lower than 8%) than the pattern offered by profit-maximizing scenario, however, the optimal pattern allows us to take other important criteria into account, including crop compatibility with regional and geographical conditions, water consumption, environmental effects of cropping, job creation opportunities, skill and proficiency required for producing a crop, and risk taken to cultivate a crop, which are so vital in current agricultural situation and result in significant long-term effects. Therefore, it is recommended to have the optimal cropping pattern operated in the region or at least, in parts of the district as a pilot project.

**Keywords:** Agricultural Sustainability, AHP (Analytic Hierarchy Process), Economic Considerations, Linear Programming, Optimal Cropping Pattern, Regional Advantages





## The Effects of Spatial and Temporal Decisions on Orange Marketing in Babol County

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**Introduction:** Due to the fact that farmers are in the surrounding factors such as cultural, social and economic environment, these factors can influence the attitudes and decisions to accept or reject the innovation. Farmer's opinion over time, also, have a significant role in making new decisions. Therefore, absent a model which would assess the temporal and spatial factors in the decision - making process by growing citrus is strongly needed. This study aims to identify and measure the factors affecting the sales channel chosen by farmers and considers the impact of neighboring on farmers' decisions using the spatial probit model and finally provides some strategies to improve and increase the efficiency of distribution channels in the product market. One of the aims of this research is to assess the effects of accumulated decisions in the minds of farmers on the choosing of marketing channel. Another innovation of this study is evaluating the spatial factors on orange marketing which examines the effects of diffusive decisions in adjacent villages.

**Materials and Methods:** The data used in this study were collected by questionnaire form 99 gardeners in 9 villages in Babol in 1391-92. In this paper, three distribution channels including retail, sales to middle man and sales to whole sale are evaluated at Babol County. For testing these three channels, probit panel data and spatial approach were used. Therefore, in this model the effects of age, experience, education, amount of sales, price, spatial and temporal effects variables have been modeled. To get the spatial effects, the weighted contiguity matrix was used.

**Results and Discussion:** Age has a positive effect on wholesale approach. In sales to middleman approach, age has also positive effect, but its effect is more than wholesale and retail, because as the age increased, risk acceptance decreased. In retail, this variable (age) has a negative effect. In this way, due to higher marketing costs, the more sales time and the higher risks, with increasing of age, the less the tendency of farmers to sell to retail. With higher education, the probability of broker method increased, however, the wholesale and retail approaches will decrease. As the variable increases, the probability of choosing a wholesale than retail method increased as well. Orchardist age increases the probability of deselect a wholesale and not retail method. If the orchards have more citrus to sell, the change of choosing wholesale and retail methods will reduce. With increasing of the power market, choosing the path of the broker will be increased too. Price is one of the most important parameters that affect farmer's decisions. Increasing in price reduces the power of brokers in imposing their views, therefore, the probability of choosing other paths increased. One of the important factors that have played a significant role in farmers' decisions is the kind of decisions in his mind. In wholesale path, the farmers were most affected by last year decisions. On this path which is an optimization approach in sales, the grower seems to be more satisfied with his previous decision. However, in retail approach, the value of this coefficient is lower. This variable has a negative coefficient in the broker approach. In fact, as far as possible, the grower does not desire to repeat last year's decision to sell his product to the middleman and prefers to sell it with another method. Spatial lag variable in the model is the one that represents the influence of the farmers on each village from the farmer's decisions in adjacent villages. The amount of this variable in retail sales was higher than other methods. Hence, neighbors' decision, has been the biggest influence on the choice of this path. Proximity also exists in wholesale method. So in this case, the choice of marketing channel was affected by the choice of others. The broker method has the lowest interaction of farmers from decisions in adjacent villages, since it has the lowest income for farmers per unit of sales.

**Conclusion:** In wholesale, decision of the previous year is more effective than the spatial lag. Hence, in this type of selling, past tendencies which have been accumulated in the grower's mind, are more important than others' decisions to sell their product. Therefore, changing this type of marketing is more difficult than the two other methods. In broker methods, gardener always disobeys his last year decisions and tries to sell his product in a different way. In this method, he is also affected by decisions made by others. In general, this method is less desirable for orchardist and usually will be selected as the last option. In retail method, neighbors' decisions have had more impact on the choice of marketing system rather than the farmers' past decisions. In the retail channel,

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the neighbors' decisions have the most influence on the gardeners' decisions. According to the highest orchardist configuration has occurred in retail marketing, creating a successful marketing model based on this method can effectively contribute to the changing in the marketing of this product and can lead to reduce the marketing margin.

**Keywords:** Distribution Channel Selection, Orange, Spatial and Temporal Effects, Panel Probit

## The Effects of Agricultural Raw Product Exports on Environment Quality

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**Introduction:** The relationship between openness, trade and environmental damaging are the most important problems in the early 1990s. Some scientists assume the environmental quality is a normal good and increasing income increases demand for environmentally safe products. Therefore, Firms will be encouraging the using of safer and less polluting procedure. On the other hand other scientists assume international trade grows the environmental degradation through environmentally polluting industries and expand economics scales in developing countries. While environmental standards are low in these countries, the expansion of trade will lead to more pollution. Some experimental studies have confirmed a negative relationship between trade and environment. The effect of import and export of trade is not considered as important components of trade, despite very consideration of the relationship between openness, trade and environmental by researchers while in general part trade may have different effect on environmental.

**Materials and Methods:** The base model is used to study the relationship between economic growth and environmental indexes and trade. Grossman and Krueger (1991) and Shafik and Bandypady (1992) used the trade intensity variable, obtained from the ratio of exports plus imports divided by GDP as the World Trade openness of an economy measure. Grossman and Krueger (1991), the first person who developed environmental Kuznets curve (EKC) used multiple versions of the model. Instrumental variable regression model has been estimated using panel data of period 1998 and 2009 for 73 countries, including 27 development countries and 46 developing countries. Countries with more than 0.9 Human Development Index eligible as developed countries and countries by Human Development Index between 0.7 to 0.9 considered as developing countries., based on the standard international trade classification. For exports of agricultural raw materials, 5 Classification of goods in the first group of agricultural raw materials are used. We consider some of the goods are raw agricultural sector as a percentage of GDP and sectors including oil and minerals were removed from it. Therefore, this variable includes food and live animals, beverages and tobacco, crude materials, excluding fuel and other edible animal fats and vegetable oils. The data has been obtained from the global dataset of FAO. Variables such as Animal fats and vegetable oils and the per capita income squared has been omitted because of co linearity. Instrumental variables such as agricultural land (% of land area) and agricultural machinery is taken from WDI. These variables include per capita emissions of agricultural methane, per capita emissions of agricultural nitrous oxide gas, and biological oxygen demand (BOD) per capita. Methane (CH<sub>4</sub>) is a greenhouse gas that contributes to global warming and ozone pollution. More than fifty percent of the methane gas is due to agricultural activities.

**Results and Discussion:** The results of the instrumental variable method show that the export of agricultural products in developing countries will increase the emissions of nitrous oxide and methane gas and reduces water pollution. The coefficients of the variables considered positive for developed countries, but only the coefficient of nitrogen oxide emissions is significant. To investigate which of raw agricultural products, subtypes play a greater role in environmental pollution, we have re-estimated equation with place components of agricultural raw products, beverages and tobacco, crude materials excluding fuels and other edible fats and vegetable and animal oils. The results for the three pollutants reported in the table. This result indicates that only the export of drinking and tobacco increased environmental pollution by increasing methane in developing countries. So, none of the variables have significant impact on water pollution. The logarithm of the per capita income and the natural logarithm of the population have a significant and positive impact on environmental pollution caused by emissions of methane and nitrous oxide. The results are quite different for developing countries to developed countries and environment of this group of countries severely affected by any of the primary or raw agricultural commodity groups. The results show an increase in exports of raw materials and drinking reduces pollution of water and increase nitrogen oxide emissions. However, increasing exports would increase water pollution and

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reduces methane emissions.

**Conclusion:** The results of the instrumental variables estimator for the group of developed countries and developing countries show that the increase in exports of agricultural raw materials exacerbated the increasing environmental pollution by methane gas emissions in developed countries and pollution due to significant emissions of methane and nitrous oxide will be more intense in developing countries. On the other hand, increasing in the exports of raw agricultural commodities reduce water pollution by developing countries. Increased use of nitrogenous fertilizers and implication of improved farming methods can be effective on water pollution reduction in the case study of this group of countries in during the period under review. This means that the amount of nitrogen in the water reduced degrading bacteria but pollution from greenhouse gas intensity increased further.

**Keywords:** Environment, Openness of Economics, Pollution, Primary Agricultural Products Export

## Determination of the Price Transmission Mechanism in Iran Dates Market (Application of BV GARCH Model)

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**Introduction:** Agricultural prices are one of the most important tools for resource allocation in an economy. Evidence suggests that, agricultural prices in comparison with other goods prices have more volatility. If these volatility leads to asymmetric price transmission, this subject will be very important. In other words, if changes in the market price are not absolutely transferred between levels, asymmetric price transmission has occurred, which is leading to increased marketing margin. Price transmission in different market levels related to the marketing efficiency, which also affected the welfare of producers and consumers. Dates, among all horticultural crops, with a share of 10% of the planted area in our country, after the pistachios and grapes were located in the third highest level, and with 6.5 percent of the total horticulture products after grapes, apples and oranges, are in the fourth highest level. Iran Dates from global production share is 14% in 2012. Despite of important Dates, Dates producers, suffer from volatility and low price of this product. Dates owners considerable expenses for crop production, including purchasing, supply of fertilizers and pesticides, irrigation (water and electricity costs) and the cost of labor in planting and harvesting spent, but in most cases they not only benefit from production, but also sell it below cost. According to the phenomena that Dates owners are not marketed through cooperatives, so farmers are the victims and intermediaries benefited. In such an environment, the marketing of dates, have a significant impact on how prices transmitted. In policy debates, asymmetric price transmission is a phenomenon that arises from imperfect competition in the market and it would be imposing additional costs to consumers. Having this information will help policy makers to adopt the correct policies.

**Materials and Methods:** To achieve the aims of this study which determines the mechanism of price transmission in dates market bivariate GARCH model was used. Developments of ARCH and GARCH models take into account the nature of the phenomenon Volatility in financial and prices error component regression equations. ARCH model was first introduced by Engle and augmented GARCH model was first introduced by Bollerslev. Due to Conditional variance Heteroscedasticity, ARCH and GARCH models are widely used but little attention has been to this interaction. For this purpose, bivariate GARCH models developed. This study determined the mechanism of price transmission in date's market, over the period 1361: 1-1391: 4 with Diagonal VECH Bivariate GARCH model.

**Results and Discussion:** With the implementation of augmented Dickey-Fuller test, it was found that the time series producer price index and the consumer price index over the period 1361:1-1391:4 are stationary in first difference. In this study, also Hegy test used for stationary of variables. In this test the unit root hypothesis tested with different periods (for the monthly data used in this study up to 12 repetitions will be examined). Next, Johansen co-integration test results showed that there was a long-term relationship between the producer price index and the consumer price index. Granger causality test results indicated that there was a one-way causal relationship from consumer price index to producer price index. The results of this study indicated that the producer price index volatility with one lag has a positive and significant impact on its current volatility. As the results indicated, the covariance coefficient is statistically significant, indicating the volatility spillover between the two levels of the market. The spillover of volatility indicated uncertainty in the retail market and in producers market. The results also indicated that a one unit increase in the consumer price index cause an increase in producer price index less than unity (0.003).

**Conclusions:** the price transmission in Dates market is incomplete. So it is recommended to policy makers and government for reducing price risk and producers stabilize income, perform market regulation policies and protection policies like as steward devices on the market to buy dates at harvest time and, it needed structural support like appropriate and timely packaging and ware housing which Can lead to an increase in the welfare of producers and consumers as well as reforms in incomplete dates market.

JEL classification: Q1-Q23-E3

**Keywords:** BV GARCH, Hegy Test, Inefficient Market, Price Transmission

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