PRICING TO MARKET:
AN EVALUATION FOR TURKEY

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

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IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
THE DEPARTMENT OF ECONOMICS

JULY 2007

Approval of the Graduate School of Social Sciences

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ABSTRACT

PRICING TO MARKET: AN EVALUATION FOR TURKEY

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July 2007, 94 pages

This thesis investigates pricing to market behavior in the exports of Turkey, which is a small economy. The investigated sectors are hazelnut, dried grape, dried apricot, dried fig and feldspar. The sectors are selected because Turkey is the leading producer and exporter for these products in the world. We apply pricing to market model for the exports from Turkey to each of the largest importer countries and the world in total for each product to check whether there is monopolistic behavior in the markets. We also check whether there is complete local currency price stability in the investigated markets. The relationship between the import shares of destination markets in the Turkey's exports and the estimated pricing to market elasticities are compared as well. In general, we find that there is pricing to market in the exports of Turkey for the investigated sectors.

Keywords: Pricing to Market, Market Power, Monopolistic Behavior, Hazelnut, Dried Grape, Dried Apricot, Dried Fig, Feldspar

ÖZ

Yönder, Erkan
Yüksek Lisans, Ekonomi Bölümü
Tez Yöneticisi: Yard. Doç. Dr. Elif Akbostancı

Temmuz 2007, 94 sayfa

Bu çalışma, küçük bir ekonomi olan Türkiye'nin ihracatlarında piyasaya göre fiyatlandırma davranışını araştırmıştır. Araştırılan sektörler, fındık, kuru üzüm, kuru kayısı, kuru incir ve feldspattır. Bu sektörlerin seçilme nedeni, Türkiye'nin bu ürünler için dünyada önde gelen üretici ve ihracatçı olmasıdır. Bu sektörlerde monopolistik davranışın olup olmadığını incelemek amacıyla, her ürün için her bir en büyük ihracatçı ülkelere ve toplamda dünyaya Türkiye'den yapılan ihracatlar için piyasaya göre fiyatlandırma modeli uygulanmıştır. Ayrıca, araştırılan piyasalarda yerel para birimi türünden tam fiyat istikrarı olup olmadığı kontrol edilmiştir. Ek olarak, varış yeri piyasalarının Türkiye'nin ihracatındaki ithalat payları ile tahmin edilen piyasaya göre fiyatlandırma esnekliklerinin ilişkisi karşılaştırılmıştır. Genel olarak, araştırılan sektörler için Türkiye'nin ihracatlarında piyasaya göre fiyatlandırma bulunmuştur.

Anahtar Kelimeler: Piyasaya göre Fiyatlandırma, Piyasa Gücü, Monopolistik Davranış, Fındık, Kuru Üzüm, Kuru Kayısı, Kuru İncir, Feldspat

ACKNOWLEDGMENTS

The author wishes to express his deepest gratitude to his supervisor Assist. Prof. Dr. Elif Akbostancı for her guidance, advice, criticism, encouragements and insight throughout the research.

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CHAPTER I

INTRODUCTION

During the last decades, pricing to market has become an important issue in the new trade theory. The idea arises from the incomplete pass-through and the distortion of law of one price. When there is depreciation in the exporter's currency, the exporter adjusts the markup and the price in terms of the importer's currency fell "too little". This event is called pricing to market according to Krugman. The existence of pricing to market depends on the structure of the price elasticity of demand and how it is related with the price. When the elasticity of demand increases with the price, one may observe pricing to market behavior in the international market. The exporter may completely stabilize the price in terms of the importer's currency by changing the markup against the exchange rate fluctuations in one case of pricing to market behavior. This situation may be applied by the exporter to protect the shares and sales in the destination market depending on the importance of that market. The theoretical background of the pricing to market has been developed by Krugman (1986) and later the model has been applied by Knetter (1989 and 1993), Marston (1990), Lee (1995), Gil-Pareja (2000), Falk and Falk (2000), Glauben (2003), etc.

In the pricing to market literature, many of these studies have been applied to developed countries like U.S.A., Germany and Japan because of their high share in the international trade. However, the model has not been applied to Turkey's export markets in the literature. The aim of this paper is to investigate whether there is pricing to market behavior in the exports of Turkey, a small country. Since there is monopolistic behavior in the application of pricing to market by the exporters, we have investigated markets where Turkey has significant shares in the international trade in spite of the fact that Turkey is a small country. In these markets, Turkey stands as a large country considering the production values and shares in the international markets. The products analyzed are hazelnut, dried grape, dried apricot, dried fig and feldspar. Turkey realizes 70% of the hazelnut kernel exports, 27% of the dried grape exports, 71% of the dried apricot exports, 60% of the dried fig exports and 36% of the feldspar exports in the world. The export value in 2005 is more than 1.1 billion USD for hazelnut, around 230 million USD for dried grape, 180 million USD for dried apricot, 80 million USD for dried fig and 105 million USD for feldspar. Especially, hazelnut is an important product in the exports of Turkey with a volume of more than 1 billion USD. The determination of the price and the issue of using the market power in the international markets for the product are ongoing debates in Turkey. The analyses include both total exports to the world and specific destination markets. The destination markets investigated are Italy, Germany, France and Netherlands for hazelnut; U.K., Germany, Netherlands, Italy and France for dried grape; U.S.A., France, U.K., Germany, Netherlands and Switzerland for dried apricot; Germany, France and Spain for dried fig and Spain, Italy and Israel for feldspar. In general perspective, these importer countries are selected because of their high import shares in the exports of the products from Turkey. Some countries have also been added depending on the data availability. Our data set consists of monthly data from 1996 to 2005, as well.

The model we have applied is similar to Knetter's (1989 and 1993) in specification. However, our data contain more time series observations than cross-sectional observations, so we have applied OLS estimation equation by equation, instead of panel data estimation. In some cases, we have used ARCH-GARCH model, as well. We have regressed the logarithm of exchange rate on the logarithm of export price in terms of domestic currency to estimate the pricing to market elasticity for each case. Simply, if the estimated coefficient significantly lies between -1 and 0, then we say that there is pricing to market behavior. If it is insignificant, we conclude that there is either complete exchange rate pass-through or constant elasticity of demand. We have tested the estimated coefficients to see whether there is complete local currency price stability, in which pricing to market elasticity is exactly equal to -1, for each destination market. Additionally, we have looked at the relationship between the estimated pricing to market coefficient and import shares of the importer countries in the total exports of Turkey for each product.

Rest of the study is organized as follows: In section 2, the theoretical background and model is explained. In section 3, we take a look at the pricing to market literature; origins of the idea and the pricing to market model and some applications of the model by different authors have been presented. We continue with the interpretation of the data and an evaluation of the exports of Turkey. We move on with the estimation results and our pricing to market analyses on the exports of Turkey. Finally, we summarize the concluding remarks of the paper.

CHAPTER II

THEORETICAL MODEL

The price of a good that is traded in the international markets would be the same in different markets, when it is measured in the same currency, according to 'law of one price' under the assumption of perfect competition. In an integrated, competitive environment, the changes in the exchange rate will pass completely to the local currency prices to prevent the arbitrages to obtain law of one price, which is called complete exchange rate pass-through. However, this may not be the case in the real world. When we relax the assumption of perfect competition, the exchange rate pass-through would not be complete and we will move away the law of one price. Fluctuations in exchange rates may have an important influence on exporter's pricing behavior in an imperfect environment. For instance, when there is an appreciation in the importer's currency, the supplier has to decrease its price in importer's currency according to law of one price. However, if the exporter decreases the local currency price less proportionally than the change in exchange rate, law of one price is distorted and the supplier will have a higher markup compared to the case before the appreciation of the destination currency. Exchange rate change creates an additional markup between the price set by the exporter and the price paid by the importer, and can be used as an instrument of price discrimination over different international markets. We look at the elasticity of export price in terms of the domestic currency with respect to the exchange rate, so that we could investigate the price differentials coming from the exchange rate movements. If there is no effect on the prices by the exchange rate, then the elasticity value will be equal to zero. To illustrate this idea, we follow the theoretical model in Glauben and Loy (2003).

Suppose that there is a monopolistic exporter, with minor competition in the international markets and the demand function faced by the monopolistic exporter internationally as follows:

$$Q_t^j = Q^j(e_t^j P_t^j, Z_t^j) \tag{2.1}$$

where e_t^j stands for the exchange rate of destination market j at time t (importer's currency per unit of exporter's currency), P_t^j is the price set by the exporter in terms of exporter's currency and Z_t^j is the vector of demand shifters.

The cost function for the exporter:

$$C_t = C(Q_t^j, W_t) \tag{2.2}$$

where $C(.)$ is the cost function of the exporter and W_t is the vector of cost shifters. We assume that the transaction costs are minor.

The profit maximization problem for the monopolistic exporter can be solved in the following way:

Max $\pi_t^j = P_t^j Q^j(.) - C(Q^j(.), W_t)$ subject to P_t^j and the first order condition is

$$Q_t^j + P_t^j\left(\frac{\partial Q^j}{\partial P_t^j}\right) - \frac{\partial C}{\partial Q^j}\frac{\partial Q^j}{\partial P_t^j} = 0 \tag{2.3}$$

Divide each term by $P_t^j\left(\frac{\partial Q^j}{\partial P_t^j}\right)$, then we obtain

$$Q_t^j \Big/ P_t^j\left(\frac{\partial Q^j}{\partial P_t^j}\right) + 1 = \frac{\partial C}{\partial Q^j} \Big/ P_t^j,$$ that is,

$-\frac{1}{\eta^j}+1(=\frac{\eta^j-1}{\eta^j})=\frac{MC}{P_t^j}$ where $\eta^j=-\frac{\partial Q^j}{\partial P_t^j}\frac{P_t^j}{Q^j}$ and $MC=\frac{\partial C}{\partial Q^j}$ and marginal cost is assumed to be constant, so we get

$$P_t^j = MC\left(\frac{\eta^j(e_t^j P_t^j, Z_t^j)}{\eta^j(e_t^j P_t^j, Z_t^j)-1}\right) \tag{2.4}$$

This final result suggests us that the monopolistic exporter puts a markup on the common marginal cost for the destination market j at time t. This is the typical case of a monopolistic firm which equates its marginal cost to the marginal revenue. We would like to know whether the change in the exchange rate will result in the markup differentiation, thus change the price in terms of domestic currency "across destination markets". To investigate, let us take the derivative of P_t^j in the final equation with respect to exchange rate, e_t^j.

Take log of the expression above:

$$lnP_t^j = lnMC + ln[\eta^j(e_t^j P_t^j, Z_t^j)] - ln[\eta^j(e_t^j P_t^j, Z_t^j) - 1]$$

If we differentiate with respect to lne_t^j:

$$\frac{\partial lnP_t^j}{\partial lne_t^j} = \frac{\partial ln\eta^j / \partial lne_t^j P_t^j}{\eta^j}\frac{\partial lnP_t^j}{\partial lne_t^j P_t^j} - \frac{\partial ln\,(\eta^j-1) / \partial lne_t^j P_t^j}{\eta^j-1}\frac{\partial lnP_t^j}{\partial lne_t^j P_t^j}$$

Please note that:

$$\partial ln(\eta^j-1) / \partial lne_t^j P_t^j = \partial ln\eta^j / \partial lne_t^j P_t^j \text{ and } \partial lnP_t^j / \partial lne_t^j P_t^j = 1 + \partial lnP_t^j / \partial lne_t^j$$

Then we have:

$$\frac{\partial lnP_t^j}{\partial lne_t^j} = \left(1 + \frac{\partial lnP_t^j}{\partial lne_t^j}\right)\left(\partial ln\eta^j \Big/ \partial lne_t^j P_t^j\right)\left(\frac{1}{\eta^j} - \frac{1}{\eta^j - 1}\right)$$

$$= -\frac{1}{\eta^j - 1}\left(1 + \frac{\partial lnP_t^j}{\partial lne_t^j}\right)\left(\partial ln\eta^j \Big/ \partial lne_t^j P_t^j\right)$$

After some rearrangement:

$$\frac{\partial lnP_t^j}{\partial lne_t^j} = -\frac{\partial ln\eta^j \big/ \partial lne_t^j P_t^j}{\eta^j(\eta^j - 1) + \partial ln\eta^j \big/ \partial lne_t^j P_t^j} \tag{2.5}$$

We call this derivative as the pricing-to-market variable or exchange rate transmission elasticity. Since we have a monopolistic exporter $\eta^j > 1$, then we do have the following cases (Glauben and Loy (2003)):

Case 1: $\partial ln\eta^j \big/ \partial lne_t^j P_t^j > 0 \;\Rightarrow\; -1 \leq \frac{\partial lnP_t^j}{\partial lne_t^j} < 0$ (2.6)

Case 2: $\partial ln\eta^j \big/ \partial lne_t^j P_t^j = 0 \;\Rightarrow\; \frac{\partial lnP_t^j}{\partial lne_t^j} = 0$ (2.7)

Case 3: $\partial ln\eta^j \big/ \partial lne_t^j P_t^j < 0 \; and \; \left(\eta^j(\eta^j - 1) > \partial ln\eta^j \big/ \partial lne_t^j P_t^j\right) \;\Rightarrow\; \frac{\partial lnP_t^j}{\partial lne_t^j} > 0$ (2.8)

In Case 1, when the elasticity of demand increases with the price, then the derivative of price with respect to exchange rate, that is the pricing to market elasticity lies between 0 and -1. When the value is exactly equal to -1, then we have local currency price stability (see Figure 2.1 below). The exporter tries to stabilize the price in the destination market, in spite of the fluctuation in the exchange rate, by moving up or down the markup. When there is an appreciation in the domestic currency, the demand curve relating the price in importer's currency shifts upward. If there is pricing to market, then the exporter adjusts the markup and so that the price. The price adjustment finally appears, depends on how demand elasticity change with the local currency price. Existence of pricing to market depends on the convexity of the demand schedule faced by the firm. If the demand becomes more elastic as local currency prices rise because of the appreciation of the domestic currency, then the optimal markup changed by the exporter will fall and the supply curve shifts rightward as in the figure below. This situation presumes that exchange rate movements only affect the markup induced by changing the local currency price.

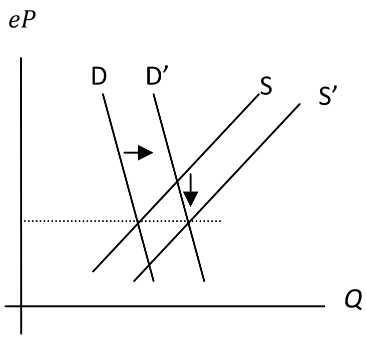


Figure 2.1 Local Currency Price Stability

When there is perfect competition, the price elasticity of demand will be infinity and $P_t^j = MC$. In this situation the elasticity of demand does not change with the price, since its value is infinity, then in Equation 2.4, $P_t^j = MC$ and the pricing-to-market coefficient will be equal to zero. We have a horizontal demand schedule in the international market and the domestic exporter will be a price-taker. Also, if there is constant elasticity of demand, then the derivative of the elasticity of demand with respect to price and as a result the PTM variable will be equal to zero in Equation 2.5. Both of these situations are represented by the Case 2.

Surprisingly, the price may move in the same direction with an appreciation in the domestic currency. In this case the markup adjustment exacerbates the effect of the exchange rate reasoning a destabilizing movement. If elasticity of demand declines when price increases and $\eta^j(\eta^j - 1)$ exceeds the pricing-to-market variable; the pricing to market elasticity becomes positive and this situation in Case 3 may be observed in the international markets. All of the three cases will be illustrated by applying an empirical model for the selected export markets of Turkey. The empirical model is presented in Section 5.

CHAPTER III

LITERATURE ON PRICING TO MARKET MODEL

Incomplete exchange rate pass-through may arise because of two factors. First, the shifts in the marginal cost resulted from the imported input price changes because of the exchange rate movements may end up with incomplete exchange rate pass-through. Secondly, it may occur from the markup adjustments by the monopolistic exporter. The monopolistic behavior of the exporters has been investigated by applying pricing to market model and residual demand elasticity model in the literature. The residual demand elasticity model is developed by Baker and Bresnahan (1998) and later applied by Goldberg and Knetter (1999) for international markets. When there are many firms producing in a market, it is difficult to measure the market power of a single firm, since there will be lots of own and cross elasticities of demand and limited data. Baker and Bresnahan developed a model which presents a residual demand function facing a single firm. They meant by residual demand as the demand relationship between one firm's price and quantity, taking into account the supply response of all other firms. By this way, they obtained an equation of the residual demand which uses a reduced set of data that is easy to collect. The analysis of Baker and Bresnahan was in micro level within the domestic market. Goldberg and Knetter (1999) advanced the model and applied to the international markets. They divided the competition that the firms are facing into two as 'outside competition' and 'inside competition'. Outside competition is the competition from foreign firms located outside the destination market faced by the exporters. Inside competition represents the competition by the firms located in the destination. They established a residual demand function, in which the exporter determines its price by taking into account the supply decisions of the outside and inside competitors for the destination markets. They used reduced form equations to estimate the residual demand elasticity. The residual demand elasticity model which was later applied by Glauben and Loy (2003) allows us to investigate both the existence and the magnitude of the market power on the international markets. They investigated the German exports to United States, Canada, France, U.K., Italy and Belgium on the beer, chocolate, cocoa powder and sugar confectionery markets. According to his residual demand elasticity estimation results, the elasticity coefficients are not significant in general and also the sign of the coefficient is inconsistent if it is significant. Thus, market power has to be rejected in these markets.

Another approach for investigating the behavior of the monopolistic exporter is the pricing to market model. According to Krugman (1986), if the prices in terms of the importer's currency fell "too little" when the importer's currency appreciated, this situation may be called "Pricing to Market". However, one distinction should be made. Suppose there are two cases. As presented by Krugman, in the first case, France exports wine to the United States and U.S. experiences a real appreciation against France. As the price of wine in terms of U.S. dollar becomes cheaper, the demand for wine by U.S. residents increases. If the U.S. market has a significant share in the total demand for French wine including both domestic and external demand, this will drive up the price of wine in terms of French franc. So the price of wine will not fall as much as the U.S. dollar rises. However, the price of French exports to the U.S. will not increase relative to the prices in the domestic market or exports to any other country. Krugman states that this case is not pricing to market. In the second case, Germany exports automobiles to both France and U.S. Now, suppose BMW developed a market strategy in which they hold the price in US dollar constant in U.S. and the Mark price constant in Germany. Again, in the case of U.S. dollar appreciation, the price in terms of U.S. dollar will not fall as the same rate as exchange rate rises. This time, the price of the autos in U.S. rises relative to the prices in France and Germany and this is called pricing to market.

Krugman developed coefficients to interpret pricing to market by calculating ratios of percentage changes in export and import unit values from U.S., Germany and E.C. He investigated both in aggregated and disaggregated level. In parallel to our analysis, he compared the German export prices to U.S. and to other countries. He calculated the change between two periods in the export unit value of the German exports to U.S. and for the German exports to the rest of the world, and he compared the two values. More than 30% appreciation of the dollar was reflected by German exporters in a divergence between prices in destination market U.S. and other regions of the world, according to the estimated ratios. In disaggregated level, he found there was pricing to market in only transportation equipment in machinery industry in the German exports to U.S. He did not apply any econometric analysis. Instead, he established static and dynamic theoretical models and left data analysis for future research. The static model basically constitutes the upcoming literature. The model includes a monopolistic behavior. In this case, the existence of pricing to market depends on the shape of the demand curve. In the dynamic model, he includes destination market dependent costs like marketing and distribution costs on the supply side. On the demand side, the persistency of the exchange rate change and the effort for protecting the reputation by setting the long-run profit maximizing price instead of short-run opportunistic price are the determining factors of pricing to market.

After Krugman's study, Knetter (1989) developed an empirical model to test the idea of pricing to market named by Krugman. His model has been explained in detail in the previous section. Knetter have used 7-digit industry export unit values. The investigated sectors for U.S. exports are dried onions, bourbon, orange juice, breakfast cereal, refrigerators, and switches and for German exports are for belts, titanium dioxide pigment, cars, beer, wine, potassium chloride, mining wax and motorcycles. The PTM coefficient is significantly different from zero in 11 markets among 46 destination markets that U.S. supplies. These 11 markets include onion exports to Netherlands, bourbon exports to Australia and Switzerland, orange juice exports to France and South Korea, breakfast cereal exports to Canada and South Korea, refrigerator exports to

Germany and switch exports to Canada, Mexico and Netherlands. The PTM coefficient for the U.S. exports appears to be positive rather then negative, which implies the destabilization of local currency price. In half or more of the destination markets that Germany exports, PTM coefficient is significant. These markets are fan belts exports to Netherlands, titanium exports to all of the destination markets investigated, small car exports to U.K., U.S., Australia and Italy, large car exports to France and Sweden, beer exports to all except Italy, white wine exports to U.S. and Japan, sparkling wine exports to U.S., Netherlands and France and potassium chloride exports to Japan. Negative coefficients occur for three times more frequently then positive coefficients, which is in contrast with U.S. results. He also found that German exporters stabilize their dollar price in the U.S. market with all coefficients for different sectors being significant and negative.

Knetter tries to explain the situation of German and U.S. exporters in three different ways. One focuses on the market share. U.S. is a large market, so the German exporters may try to preserve their share by stabilizing the local price, meanwhile U.S. exporters may be less concerned with their market share because the destination market is relatively smaller than the U.S. market and they react more opportunistically. Another explanation is that there are high numbers of competing firms in U.S. so price stabilization in the local currency may indicate “near competition”. Lastly, the reason for local price stability may be the asymmetries in invoicing. Normally, exporters invoice in their currency. However, for some large markets like U.S., the currency invoiced may be the reverse and this situation may cause stickiness in the prices in destination market’s currency.

Knetter (1993) has analyzed export price adjustments for U.S., U.K., Germany and Japan. Knetter’s previous study (1989) has outlined the specific destination markets of specific products, so included product-destination market estimations like in our study. Meanwhile, in Knetter (1993), he investigated the exports of specific products in total, not for specific destination markets. In general, local currency price stabilization appears in German, Japanese, UK export industries. Foreign profit margins are adjusted to mitigate the impact of exchange rate charges on dollar prices of U.S. imports. Somewhat surprisingly, U.S. exporters showed no tendency to adjust markups in response to exchange rate changes. The annual data results show that 89% of the German export industries, 79% of Japan, 67% of U.K. and 45% of U.S. export industries apply local currency price stability. The German and U.S. results are consistent with the previous work. The estimates of PTM coefficient show differences across industries. The results for Germany signal that local currency price stability is pervasive in chemicals. Large autos, show little evidence of PTM and there is local price stability in importer's currency for small autos. There is significantly negative PTM coefficient for alcoholic-beverages with the exception of white wine. In contrast to Krugman, chemical products which are homogeneous reflect pricing to market, rather than durable goods which are differentiated. He found pricing to market in Japanese and British auto exports, but not in U.S. auto exports, while there is evidence for pricing-to-market in photographic film exports for all three. PTM coefficient appears to be significant for chemical products from U.K. and Japan but not for the exports from U.S. These results are also consistent with the market structure of U.S. The behaviors of the exporters do not show much difference across exporter countries. The result in his previous work in which U.S. exporters have less evidence of local currency price stability than German exporters is true in more aggregate data rather than specific industry level.

Glauben and Loy (2003) applied monthly data for the German exports for the destination markets: United States, Canada, France, U.K., Italy and Belgium. The investigated sectors are beer, chocolate, cocoa powder and sugar confectionery. German food and beverage exports of chocolate and beer are chosen because of their international reputation. The PTM coefficient is significant in the case of beer exports to U.S. and Canada, sugar confectionary exports to U.K., cocoa powder export to Italy. All the PTM coefficients in these estimations are around -0.70, representing local currency price stability. Knetter (1989) found evidence for PTM in German beer exports to U.K., U.S., France and Canada, while in the Glauben and Loy's (2003) study, the coefficient is insignificant for the importers, France and U.K. The significant coefficients in Knetter (1989) are relatively lower around -0.3.

Falk and Falk (2000) updated Knetter's study by applying a more disaggregated data (8-digit) of 70 export items and widening the destination markets investigated. They tested the evidence of pricing-to-market of German exports to fifteen different destination markets. They have included some small economies, such as Switzerland, while Knetter's paper concentrated on larger markets. They have studied annual data from 1990 to 1994 including relatively more cross-sectional observations, which enable the authors to apply panel data analysis. They have grouped two different panel data sets according to commodities and destination countries. When we look at the findings on the data grouped by commodities, the pricing to market coefficient is significantly negative for 28 products, as expected. There is complete local currency price stability, where pricing-to-market coefficient is statistically equal to minus one, for the products; small cars, titan-oxide, nitrogen function, electric magnets and contact lenses. The pricing-to-market coefficient in Knetter's study was significantly negative with the value of -0.40, for German exports of small cars. The estimate of pricing-to-market coefficient is positive for 4 products, interpreting that when DM appreciates, the German exporters increase their prices even more. In general, Falk and Falk find that within an industry, markup adjustment differs highly across destinations. From the results for the panel data grouped by destination markets, the most evident finding is that there are large differences in pricing-to-market coefficient across destinations. The coefficient appears to be negative for the U.S., Italy, Spain, Finland, Norway and Japan. The estimate for the exports to U.S. is -1.14, higher than the Knetter's finding (1989). The German exporters to Greece, Sweden, Canada and Australia, which have lower import share, exhibit no pricing-to-market behavior, as expected. There is also statistically insignificant pricing-to-market in the exports to U.K.

To illustrate exchange rate pass-through and pricing to market in the U.S. exports and imports, Yang (1998) applied a 2 staged procedure. In the first stage, he regressed on the

U.S. import prices to investigate foreign exporters' behavior in the U.S. imports and on the export prices to observe whether the U.S. exporters apply pricing to market. In the second stage, he established a model to see whether product differentiation, export share to total production, variable marginal cost have effect on the estimated exchange rate pass-through and PTM coefficient. He found that there was pricing to market in both U.S. exports and imports. Foreign exporters compensate the exchange rate change themselves and are more likely to stabilize their dollar price in the U.S. In the U.S. exports, the exchange rate pass-through is much larger, similar to Knetter's findings. The U.S. exporters care much more about the domestic sales, so they do not try to stabilize their foreign currency prices abroad. Another finding is that there is cross-industry variation in both U.S. exports and imports in the manufacturing sector, as in Falk and Falk (2000). According to the 2nd stage results, as the market share rises, the foreign exporters apply pricing to market to protect their shares. U.S. exporters less likely to adjust their markups, when their exports have higher share in total production. There is higher evidence for pricing to market when the foreign exporters involve in the industries with higher capital-labor ratios, a proxy for the variable marginal cost, while less evidence for the exporters of highly differentiated products.

Pick and Park (1991) have applied pricing-to-market model on the quarterly data of the U.S. exports of wheat, corn, cotton, soybean, soybean meal and oil to test the existence of market power in international markets. According to the estimation results for cotton exports, the pricing-to-market coefficient is statistically insignificant among out of twelve destination markets. This result is consistent with the market structure of cotton exports since there is large number of international competitors. In the corn market, Mexico is the only destination market with significant pricing to market. If we look at the results for soybean exports, we again see that U.S. exporters do not seek pricing-to-market behavior with the exception of the exports to Netherlands. This result may be supported by the increased number of competitors like Argentina and Brazil in the soybean market. There is similar structure in the soybean meal market which the only evidence for pricing to market is in Canada and West Germany. Wheat market relatively reflects more pricing-to-market behavior; there are three destination markets with significant PTM coefficient. The findings of Pick and Park are consistent with Knetter's work for U.S. exports. The non-existence of pricing to market in most cases may arise from the high domestic demand in the U.S. and as a result the demand from international markets having secondary significance.

Marston (1989) analyzed seventeen export products from Japan. He used a different pricing to market model. He included the domestic prices in the theoretical model by calculating the relative price, which is the ratio of the export price to the domestic price. He assumed the invoice currency is the foreign currency in the model and took into account the unanticipated exchange rate changes. Small passenger car exports exhibit PTM coefficient with a value of 0.517, meaning that the domestic price in yen declines by 0.5 percent, if yen appreciates by 1 percent against foreign currency. The PTM behavior is evident in all estimations with the exception of small trucks, when we look at the regression results for transport and tractor equipments consisting of eight products. Among nine consumer products, all of the PTM coefficients are significantly different from zero excluding camera exports. The camera exporters from Japan do not satisfy local currency price stability because there were few competitors from outside Japan at the time of investigation.

Sasaki (2002) investigates pricing to market behavior in the Japanese exports to the U.S., E.U. and Asian countries in aggregate. He applied a model similar to the Martson (1989). He also used the ratio of the export price to the domestic price for the dependent variable in his model. Sasaki assumed the currency in the invoice may be the domestic currency, the importer's currency or a third country's currency like U.S. dollar. If the invoice currency is a foreign currency, then unanticipated exchange rate changes may arise. He estimated pricing to market model for the actual interest rate, and expected exchange rates including a variable for unanticipated exchange rate changes. The PTM coefficients are 0.50 for the U.S., 0.24 for the EU and 0.32 for the Asian countries. The coefficient of 0.5 for the U.S. case implies that Japanese exporters change the ratio of export price to domestic price 0.50% when U.S. dollar appreciates against yen by 1%. So according to the results, pricing to market is most evident in the Japanese exports to U.S. The estimation results of the model for the planned PTM behavior indicate smaller PTM coefficients. This may indicate previous studies may be overestimated according to Sasaki. The coefficients for the U.S., E.U. and Asian countries are 0.29, 0.21 and 0.10, respectively. One of the findings from Sasaki (2002) is that unanticipated exchange rate changes may be explained by shares of the currency invoice used.

Gil-Pareja (2002) proposed a similar pricing to market model to Knetter (1989) to investigate whether the segmentation in the automobile industry in E.U. continues after the single market program was completed. The difference in his model is that he took into account the currency of the invoice in his model. In 28 of 30 different automobile brands, the PTM coefficient has the expected sign with significance. The absolute value is greater than 0.70 in 26 of the markets. The results imply that the finding of Knetter (1993) that is the existence of local currency price stability in small cars is still an important phenomenon within the E.U. after the single market program.

Lee (1995) applied pricing to market model for 16 Korean export markets to the annual data from 1980 to 1990. According to Lee’s findings, there is evidence of pricing to market in 12 Korean export industries among 16 industries. He found -0.65 for PTM coefficient in the automobile sector. There is also pricing to market in color TV exports with the coefficient of -0.54. By SUR estimation method, he also compared pricing to market across destinations. He combined six industries for U.S., two for Japan and 8 industries for mainly Southeast Asian countries. According to his findings of destination specific PTM coefficients, the resultant estimate for U.S. is -0.62 with the market share of 0.087 and for the rest of the world is -0.28 with the share 0.117. He found insignificant pricing to market in exports to Japan where the market share is relatively higher with 0.293.

The investigation of Tantirigama (2003) involves panel data from 1991 to 2001 for New Zealand. There are two products analyzed, one is wool and the other is sheep meet. Both of the products have been chosen because of the comparative advantage of New Zealand in these products. Nine destination markets are chosen for the exports of wool, including Canada, China, France, Germany, Italy, Japan, Korea, U.K. and the U.S. The destination markets for sheep meat are Canada, France, Germany, Hong Kong, Italy, Japan, Korea, Netherlands, U.K. and U.S. The pricing-to-market coefficient in the estimation results for sheep meet is significantly different from zero, excluding U.K., U.S., Korea and Netherlands. All of the significant coefficients are negative, which supports the idea of local currency price stability. In U.K., where New Zealand has largest market share for sheep meat and in U.S. with moderate market share, the New Zealand exporters do not exhibit pricing to market. The U.K. result is consistent with the idea of Feenstra, Gagnon and Knetter (1993) that the pass-through gets higher with market share. The results for wool exports of New Zealand, the findings are rather mixed. The PTM coefficient is statistically significant in all cases except U.S., Canada and France. The insignificance of pricing-to-market coefficient for U.S. in both cases may be the result of lack of market power for the New Zealand exporters, because of many international players in the U.S. The coefficient is significant but positive in the cases of Italy, Germany, U.K. and China, which appears to be a destabilizing situation. Among these countries, in China, Germany and U.K., New Zealand exporters have moderate market share. The result of positive PTM coefficients with lower market share is parallel to the findings of Knetter for U.S. exporters.

The brief review of literature presented in this chapter shows that pricing to market model generally is applied to the developed countries like U.S.A., Germany and Japan. In various studies, it is found that German exporters usually apply pricing to market, especially for the exports to the U.S. and pricing to market is more evident in German exports than in the U.S. exports. This is because U.S. domestic market is a large market. Producers from U.S. give more importance to the domestic market than the abroad. They react either opportunistic in the international markets (when we have positive PTM coefficient) or pass the exchange rate change to import prices. This result is also true for the exports to small destination markets. The foreign exporters like from Germany also do not want to loose their sales in the larger market, U.S. and apply pricing to market to stabilize their dollar prices. The Japanese export results are also similar to German results and there is mostly evident pricing to market behavior. Sasaki (2002) also found that pricing to market elasticity is higher when Japan exports to U.S. According to Falk and Falk (2000), within an industry, markup adjustment differs highly across destinations. When market share is taken into consideration, Feenstra, Gagnon and Knetter (1993) and Lee (1995) found that pass-through increases with market share or pricing to market is less evident. In the literature, some authors look at the type of products. Krugman (1986) and Yang (1998) found that there is less pricing to market behavior in the exports of differentiated products like durable goods, compared to homogeneous products such as chemical products. In contrast, Knetter (1993) findings show more evidence of pricing to market for the products that are differentiated.

CHAPTER IV

DATA SET AND AN EVALUATION OF TURKEY'S EXPORTS

Monthly data from 1996 to 2005 are obtained from Turkish Statistical Institute to analyze pricing-to-market in Turkish export sectors. The data include export values and export quantities of the export products from Turkey in total and to specific destination markets in terms of Combined Nomenclature code (CN-code). For every market investigated, specific product items are collected according to the CN-code and summed up to obtain specific product export values and quantities. The CN-codes are reported in the appendix for each market analyzed. The export values are available in U.S. Dollar. The dollar values have been converted into YTL using the YTL/USD exchange rate reported by the Central Bank of Republic of Turkey. Then, the export unit values have been calculated by dividing the export value in YTL by the quantities for each observation. The selected products are hazelnut, dried fig, dried apricot, dried grape and feldspar. The products investigated have been chosen because of their large export shares in the international markets representing a monopolistic market structure and Turkey's comparative advantage in these products. For each product, the largest importer countries for the products from Turkey are selected as the destination markets. In some cases, we could not include some larger importers and in contrast, smaller importers are added in a few cases depending on the data availability. The exchange rate series are gathered from the website of the central bank of Turkey. There are 8 exchange rate series in terms of foreign currency per unit of YTL. Regarding European Community countries, the euro conversion rates reported by European Commission have been used from 2002 to 2005 data to complete the exchange rate series for the European countries analyzed (ex-currency per unit of YTL of the European countries). The exchange rate for total exports to the world in each market has been calculated by taking the weighted average of exchange rates of the investigated importer countries. To observe income effect, we have used industrial production series. The series is available in the International Financial Statistics CD at Turkish Statistical Institute. We have also applied imports from Turkey series for each destination market. However, the variable seemed insignificant in nearly all of the cases, so we exclude these results from the study.

4.1 Hazelnut

Hazelnut is one of the major edible nuts produced in the world and Turkey has a significant share regarding the quantity traded in the international markets. The major area of consumption of hazelnut is the chocolate, confectionary and baking industries in which hazelnut are used as an important raw material.

Table 4.1 Hazelnut (in shell) Production in Turkey

Year	1998	1999	2000	2001	2002	2003	2004	2005
Quantity (1000 tons)	580	530	470	570	625	490	350	500

Source: Export Promotion Center of Turkey

Turkey is an important source country for the hazelnut production and trade with reputable high-quality product. The annual hazelnut production fluctuates around 500,000 tons in the last decade. With this production levels, Turkey realizes almost 70-75% of the world's hazelnut crop. (IGEME Hazelnut Report, 2006) When we look at the export values, the position in the production of Turkey is reflected in the export markets, as well. In the table below, we can see the quantity exported and total export values of Turkey for hazelnut. In 2005, the hazelnut kernel exports exceed one billion USD.

Table 4.2 Hazelnut Kernel Exports Quantity and Value of Turkey

Year	Quantity (kg)	Export Value (USD)
1996	142,693,620	441,554,900
1997	137,924,937	619,807,544
1998	135,901,353	575,492,416
1999	120,270,714	441,368,056
2000	112,038,104	366,434,368
2001	174,277,849	485,104,883
2002	163,831,937	375,099,633
2003	137,631,490	412,303,828
2004	134,518,879	737,212,546
2005	133,375,298	1,109,411,388

Source: Turkish Statistical Institute (Own Calculations)

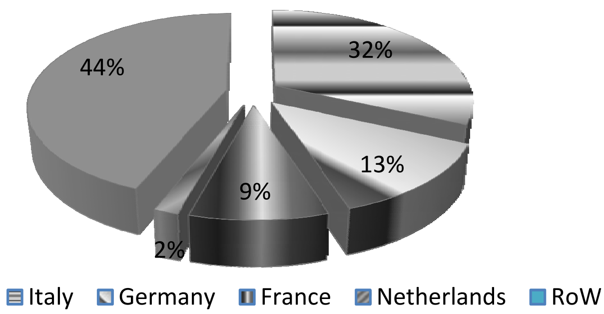
Turkey has a share of around 80% in the total world hazelnut exports and around 70% in the hazelnut kernel exports according to Export Promotion Center hazelnut reports. With this share, one may claim the monopolistic position of Turkey in the world implying a potential for PTM behavior. With no main competitor, Italy is the second largest exporter of hazelnut and meanwhile one of the main destination markets for Turkish exports, as well.

Table 4.3 Hazelnut Kernel Exports (2003)

Exporter Country	Quantity (ton)	Export Value ($1000)
Turkey	**136648**	**409229**
Italy	26677	89437
Azerbaijan	9121	20436
Germany	4875	16071
Spain	4920	12552
France	3806	10975
USA	4086	9007
World	202762	599971

Source: Export Promotion Center of Turkey

When we investigate the Turkish exports according to the destination markets, we see that Italy and Germany are two of the main destination market for Turkish hazelnut exporters. We also include France and Netherlands in our analysis, as well. One can see the graph of import shares of the destination countries investigated in the total Turkish exports. Italy has interestingly higher share than Germany, which has changed in the recent years. The monthly series of hazelnut from 1996 to 2005 are investigated for the destination markets mentioned.



Source: Turkish Statistical Institute (Own Calculations)

Figure 4.1 Importers' Shares in Turkish Hazelnut Exports (2005)

4.2 Dried Grape

Two thirds of the grape production in the world is originated from Europe and Turkey is the fifth largest country in the grape production. If we look at the production of dried grape, Turkey is a leading producer in the world. The production annually fluctuates around 250 thousands tons. In the international trade, Turkey and USA are the largest exporters, with shares 27% and 26%, respectively, of the world dried grape trade, but if we look at the quantities exported, Turkey realizes 33% of the total quantity exported, while USA compensates 19%. Looking at the quantity exported and export value; we may say that there is an oligopolistic structure of the Turkey's dried grape export market. There are no other main competitors in the world than USA. The market also includes re-exportation activities.

Table 4.4 Dried Grape Exports (2002)

Country	Quantity (ton)	Export Value ($1000)
Turkey	**205,212**	**156,258**
USA	116,767	151,933
Iran	128,626	71,091
Chile	38,161	n/a
Spain	27,634	34,241
World	624,557	575,640

Source: Export Promotion Center of Turkey

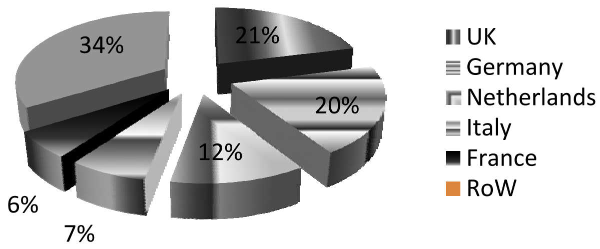
On average, exports of the dried grape from Turkey fluctuates around 200,000 tons annually and export unit value is around 1 USD on average. The comparison of the export unit values between Turkey and USA may show that the export value may be increased with the right market strategies. If we look at the export value of the dried grapes, it reaches 230 million USD annually.

Table 4.5 Dried Grape Exports Quantity and Value of Turkey

Year	Quantity (kg)	Export Value (USD)
1996	239,493,292	259,073,082
1997	179,414,152	204,521,183
1998	179,414,152	204,521,183
1999	193,112,317	211,753,370
2000	200,527,269	195,683,840
2001	223,748,847	161,289,146
2002	206,173,229	156,984,489
2003	195,323,810	183,575,447
2004	210,589,382	229,852,706

Source: Export Promotion Center of Turkey (Own Calculations)

In terms of import shares of the destination markets in the dried grape exports of Turkey, UK and Germany are the largest exporters from Turkey. The other investigated destination markets are Netherlands, Italy and France and their shares are given in the below pie chart. The dried grape series includes monthly data from 1996 to 2004, because there has been a change in the CN-code of the dried grapes in 2005.



Source: Turkish Statistical Institute (Own Calculations)

Figure 4.2 Importers' Shares in Turkish Dried Grape Exports (2004)

4.3 Dried Apricot

Turkey experiences 85% of the production of dried apricot in the world in 2004 according to the Export Promotion Center Sector Report. Since the production mainly depends on the climatic conditions, the production fluctuates across years. In the 2003, the quantity of the dried apricot produced was around 80,000 tons, while this value was 25,000 tons in the previous period. The export values and quantities by years are in the below table. The maximum annual export value, which is below 200 thousands USD, has been reached in 2004 in recent years.

Table 4.6 Dried Apricot Exports Quantity and Value of Turkey

Year	Quantity (kg)	Export Value (USD)
1996	91,836,533	94,661,942
1997	40,431,319	111,489,342
1998	170,061,072	107,672,256
1999	55,148,759	125,796,532
2000	70,058,612	110,089,959
2001	85,466,331	87,872,557
2002	69,087,518	118,305,339
2003	72,923,399	150,128,460
2004	81,246,504	197,565,577
2005	95,980,716	179,650,048

Source: Turkish Statistical Institute (Own Calculations)

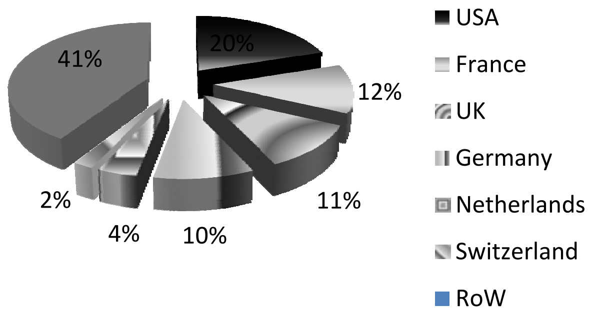
If we look at the exporter countries of dried apricot, there is actually no competitor of Turkey in the international market. Turkey's export has a share around 71% among total dried apricot exports in the world while the second largest exporter, France has a share of 5%.

Table 4.7 Dried Apricot Exports (2002)

Exporter Country	Quantity (ton)	Export Value ($1000)
Turkey	**69,112**	**117,872**
France	1,963	7,796
USA	3,106	7,613
Tajikistan	16,133	5,679
South Africa	1,059	3,357
World	104,934	163,785

Source: Export Promotion Center of Turkey

In the exports of dried apricot from Turkey, USA is the main destination market. The import share of the USA and other importers' shares in total Turkish dried apricot exports that are investigated can be observed in the pie chart below. These countries are France, UK, Germany, Netherlands and Switzerland. Netherlands and Switzerland have relatively lower import shares with 4% and 2%, respectively. The monthly data include observations from 1996 to 2005 for each destination.



Source: Turkish Statistical Institute (Own Calculations)

Figure 4.3 Importers' Shares in Turkish Dried Apricot Exports (2005)

4.4 Dried Fig

Turkey is a leading producer of the dried figs and constitutes 55% of the world's dried fig production. The annual production fluctuates around 50 thousands tons. In the recent years, the production is increasing and the market is expected to become larger with the increasing demand from the international markets.

Table 4.8 Dried Fig Productions in Turkey

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004
Quantity (ton)	50155	45255	50981	47800	48675	48028	53200	54491	55631

Source: Export Promotion Center of Turkey

In the international markets, Turkey manages 60% of the total world exports. It is an important share to gain monopolistic power in the international markets. USA is the largest exporter country coming after Turkey with experiencing around 6% of the world exports, certainly minor when we compare with Turkey's share. The quantity that Iran exported is the second in the world exports, however, the dried figs from Iran have much lower value than other exporter countries.

Table 4.9 Dried Fig Exports (2002)

Country	Quantity (ton)	Export Value ($1000)
Turkey	**35,052**	**70,553**
USA	2,343	7,239
Iran	8,145	6,120
Greece	2,934	5,981
Spain	5,540	5,033
Syria	4,674	3,772
World	67,112	115,327

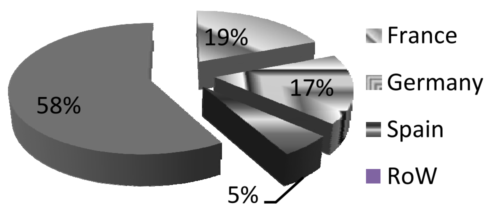
Source: Export Promotion Center of Turkey

Turkey's dried fig export quantities and values have been reported in Table 4.10. From the beginning of 2000, the dried fig exports reflect an increasing series. We may say that in the near future, the export values for dried fig may continue to develop with the growing importance in the international trade because more people around the world learn that the product is healthy. Turkey exports dried figs to many countries, mainly the European countries. We have investigated the dried fig exports to the main exporters, Germany, France and Spain. Italy and Switzerland are also important destination markets; unfortunately, the data series is not available or not complete for those countries. One can see the import shares of destination markets in Turkey's dried fig exports in the pie chart below. The monthly data series analyzed is from 1996 to 2005.

Table 4.10 Dried Fig Exports Quantity and Value of Turkey

Year	Quantity (kg)	Export Value (USD)
1996	25,706,787	51,304,901
1997	24,829,418	46,931,470
1998	26,483,366	51,559,110
1999	29,531,115	52,179,704
2000	27,392,643	45,178,430
2001	28,919,039	49,651,258
2002	26,014,369	53,441,627
2003	31,478,311	58,698,023
2004	38,276,032	66,997,847
2005	40,332,923	81,026,292

Source: Turkish Statistical Institute (Own Calculations)



Source: Turkish Statistical Institute (Own Calculations)

Figure 4.4 Importers' Shares in Turkish Dried Fig Exports (2005)

4.5 Feldspar

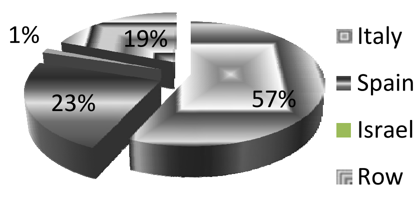
Feldspar is a kind of material used as a raw material in the glass, ceramics and dye sectors. Turkey contains 10% of the feldspar reserves of the world. In 2004, Turkey maintains 45% of the world's feldspar trade. The annual quantity exported and export values are presented in the below table. Despite showing a monopolistic power, when we look at the share in the world trade, the disadvantage of the feldspar export sector is that the product is very cheap per ton. However, the sector shows signs of growth.

Table 4.11 Feldspar Exports Quantity and Value of Turkey

Year	Quantity (kg)	Export Value (USD)
1996	756,135,254	15,323,270
1997	911,634,638	27,826,375
1998	1,283,210,946	24,511,377
1999	1,799,853,411	32,735,031
2000	2,114,432,301	38,961,111
2001	1,356,609,380	26,600,186
2002	2,350,722,976	43,419,981
2003	3,027,768,622	58,613,128
2004	3,971,724,522	86,778,434
2005	3,826,721,930	104,881,439

Source: Turkish Statistical Institute (Own Calculations)

Italy is the largest feldspar importer from Turkey. More than half of the feldspar exports have been made to Italy in 2005. Spain is the second importer with an import share of 23%. Israel has a minor share in the feldspar exports from Turkey.



Source: Turkish Statistical Institute (Own Calculations)

Figure 4.5 Importers' Shares in Turkish Feldspar Exports (2005)

CHAPTER V

EMPIRICAL MODEL AND RESULTS

Researches have applied either joint estimation or OLS estimation when investigating Pricing to Market. Knetter (1993) performed joint estimation, imposing cross section restrictions in his paper. Falk and Falk (2000) applied two different panel data models. They grouped commodities investigated by type in the first panel data. They pooled the data across destination markets and analyze how German producers of different commodities react to exchange rate fluctuations. They estimated fixed effects panel data model and found a PTM coefficient for each product. The fixed effects assumption would then be relaxed and tested by means of the random effects model which allowed the PTM coefficients to vary across destinations. In the second panel data, this time they pooled the data across commodity groups and applied the same method as in the first panel data model.

Glauben and Loy (2003) investigated Pricing to Market by performing a seemingly unrelated equations procedure. In our analysis, we would rather prefer applying OLS estimation than joint estimation, i.e. a SUR model. We have chosen OLS estimation, because our data set contains higher number of time series data (T) than the number of cross-sectional data (N), that is T>N. We have estimated each equation separately for each commodity and destination market.

$$lnp_{t,i}^{j} = \beta_{o,i}^{j} + \alpha\tau + \beta_{1,i}^{j} ln\left(\frac{e_t^j}{PPI_t^j}\right) + \beta_{2,i}^{j} ln\left(\frac{y_t^j}{CPI_t^j}\right) + u_{t,i}^{j} \tag{5.1}$$

where $t = 1, \dots, T$, $i = 1, \dots, C$, $j = 1, \dots, N$

p_i^j stands for price of the commodity i in terms of exporter country's currency, YTL. The price is used in terms of exporter country's currency because we are investigating the behavior of the exporters that is their ability to increase or decrease the prices in exporter's currency, against the depreciation or appreciation of their currency. y_t^j is the GDP of the destination market and measures the income effect. Exchange rate and the income variables are deflated by PPI and CPI of destination country j, respectively to overcome the inflation effects. Time trend τ is included in the equation to represent the marginal cost differences across months and changes in the preferences. In each period, the time effect measures a common price.

Before estimating the equations, we have checked the stationarity of the variables. We have applied Augmented Dickey-Fuller Test for each variable (See Appendix). All of the variables involved in the estimated equations are I(1). So we have used first difference of the variables in our estimations. Our estimation equation becomes as follows:

$$\Delta lnp_{t,i}^j = \beta_{o,i}^j + \alpha\tau + \beta_{1,i}^j \Delta ln\left(\frac{e_t^j}{PPI_t^j}\right) + \beta_{2,i}^j \Delta ln\left(\frac{y_t^j}{CPI_t^j}\right) + u_{t,i}^j \qquad (5.2)$$

The residual terms in all estimated equations are approximately distributed normally and there are no skewness and kurtosis problems. We overcome those problems by adding time and rarely seasonal dummies to the equations. In most of the estimations, seasonality appears to be insignificant, so in general, seasonal dummies are not included in the equations. We have also included some lag variables to obtain normality and remove the problem of autocorrelation. All of the final estimations also do not have any heteroscedasticity problem. Some equations fail the ARCH LM test, so a few of our final models are estimated applying ARCH-GARCH models. All of the test results are presented in the Appendix of this paper.

The constant term and the trend term are statistically insignificant in most of the equations. We have obtained significant constant term in the equation of hazelnut exports to Netherlands and both significant constant and trend term in the equation of dried grape exports to Germany. The coefficient of income term also occurs insignificant in most of the equations. As mentioned in the previous section, we have included the industrial production index as the approximation for monthly income variable, since we could not attain monthly GDP values. Only, in estimations of the dried fig exports to Germany and hazelnut exports to France, coefficient of seasonally adjusted industrial production variable appears to be significant. We have listed the results of income included estimations for each commodity exported to the analyzed destination markets in the section of "Income Effect" in the Appendix. The PTM coefficient is significant in all cases, except the feldspar exports to Israel.

5.1 Empirical Results for Turkey's Hazelnut Exports

Table 5.1 Estimation Equations for Hazelnut Exports

Germany			
	Variable	**Coefficient**	**Prob.**
	DLE	-0.6365	0.0000
	DLP(-1)	0.3153	0.0000
	D018	-0.3169	0.0000
	D039	0.2297	0.0002
France			
	DLE	-0.6131	0.0000
	DLP(-1)	0.3989	0.0000
	D9612	0.2124	0.0000
	D998	-0.1867	0.0002
	D018	-0.3280	0.0000
	D039	0.2345	0.0000
	D045	0.2408	0.0000
	D052	0.3099	0.0000
	DLIPSA	1.1576	0.0261
	MA(1)	-0.5081	0.0000

Table 5.1 (Continued)

Italy			
	Variable	**Coefficient**	**Prob.**
	DLE	-0.7242	0.0000
	DLP(-1)	0.2035	0.0182
		Variance Equation	
	C	0.0012	0.0000
	RESID(-1)^2	0.3341	0.0053
	RESID(-2)^2	-0.3279	0.0008
	GARCH(-1)	0.7747	0.0000
Netherlands			
	C	0.0180	0.0413
	DLE	-0.6079	0.0004
	D018	-0.3513	0.0001
	D045	0.2947	0.0006
	D054	0.2587	0.0022
World			
	DLE	-0.8929	0.0000
	D998	-0.1516	0.0005
	D018	-0.2679	0.0000
	D039	0.1759	0.0001
	D0510	-1.0156	0.0000
	D0511	1.0299	0.0000
	MA(1)	0.5373	0.0000

We have estimated 5 equations for the exports of hazelnut from Turkey to four destination markets that are Germany, France, Netherlands, Italy and the world total. In the estimation equation for hazelnut exports to Germany, we have applied OLS to the data set. To remove autocorrelation we have added first lag of the price variable and two dummies to overcome the normality problem[1]. We include the lag variable for the price in the OLS estimation of hazelnut exports to France, as well and some significant dummies for the outliers[2]. In this equation, we have significant industrial production variable for the income effect and significant lagged disturbance term. We estimate the

[1] PTM coefficient is significantly equal to -0.53, when we remove the dummies from the estimation for Germany.

[2] PTM coefficient for France does not change with value -0.618, if we remove the dummies.

equation for the destination market, Italy using a GARCH(2,1) model because the model fails the ARCH LM test with probability of 0.009 (F(1,115)). In the main equation, lagged price variable is significant. The equation for Netherlands is estimated by OLS including some dummy variables[3]. Constant term is also significant in this estimation. While analyzing the hazelnut exports to the entire world, we have added first lag of the residuals. To maintain normality, we have used some dummy variables[4]. In all of the estimated models, there is no non-normality. The estimations satisfy the no autocorrelation and no heteroscedasticity assumptions. The estimated equations and the test results are listed in the Appendix.

In each equation, we have significant pricing to market coefficients with the probabilities in Table 5.1, so the estimated equations reflect non-competitive market behavior. This result is consistent with the market position of Turkish hazelnut exporters with the share of around 70% of the world exports of hazelnut kernel in 2003. All of the results are within the interval (-1,0), implying the absolute value of demand elasticity to be greater than 1 and increasing with price, as discussed in the previous sections. The PTM coefficient is also significant for the total exports, representing monopolistic market structure.

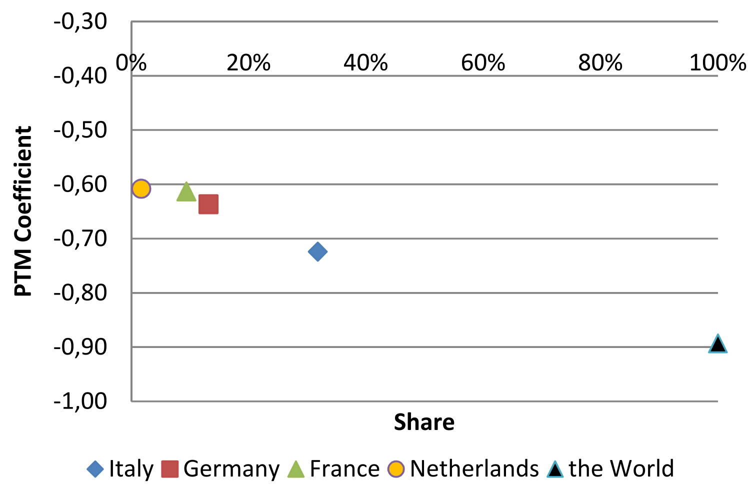
Table 5.2 PTM Coefficients of Hazelnut Exports

Destination Market	PTM Coefficient	Probability when $H_0: \beta_1 = -1$
Italy	-0.7242	0.0316
Germany	-0.6365	0.0018
France	-0.6131	0.0000
Netherlands	-0.6079	0.0194
The World	-0.8929	0.3012

[3] PTM coefficient for Netherlands does not change much and is equal to -0.59, if the dummy variables are removed.

[4] In the total exports of hazelnut case, PTM coefficient is equal to -0.79, if we remove the dummies.

In all of the destination markets, we may say that there is evidence for local currency price stability. When there is 1% appreciation in YTL, the Turkish exporter tries to stabilize its price in terms of destination market currency by decreasing 0.72% the price in YTL, if the destination market is Italy. This value is relatively high, comparing to the other destination markets. The exports to Germany, France and Netherlands reflect closer values around -0.60. 1% of depreciation in YTL results with 0.64% increase in price for the exports to Germany, 0.61% increases for the exports to France and Netherlands. The coefficient for the exports to the world in total is significantly no different than -1 with probability 0.30, meaning that Turkish exporters protect their export prices in terms of foreign currency against the exchange rate fluctuations. The hazelnut exporters to the whole world decrease the price by 1%, when YTL appreciates against foreign currency by 1% to stabilize the price in destination markets in local currency.



Source: Own Calculations, Data from Turkish Statistical Institute

Figure 5.1 Scatter of PTM coefficient and Import Shares (2005) in Turkey's Hazelnut Exports

The above scatter graph combines the import shares of destination countries from Turkey in the year 2005 with the estimated PTM coefficient for each destination market. As we can see from the graph; the pricing to market coefficient decreases when the share increases. Italy has the highest share with 32% and the highest absolute value for PTM coefficient. The absolute value of PTM coefficient for the total exports to the whole world is the highest with 89%. The movement of PTM coefficient for the 4 destination markets against the import share is also supported by the result of the estimation for world total.

5.2 Empirical Results for Turkey's Dried Grape Exports

We have investigated market power for the dried grape exports to Germany, France, Italy, Netherlands, U.K. and the whole world. We start our analysis with the exports to Germany. In the estimated equation, we have significant constant and trend term. The trend term stands for the marginal cost changes over time. The income term is insignificant and there is no dummy term in the regression. In the estimation for the destination market, France, the only independent variable is the exchange rate variable. The constant and trend term, the income effect are all insignificant. There is no need for any dummy, because the distribution for the residuals is normal and the estimation has no autocorrelation and heteroscedasticity problems. If we move to the regression for exports to Italy, we only add the lagged price variable other than the exchange rate component to our equation to remove the autocorrelation. The residuals are normally distributed with a 94% probability and there are no skewness and kurtosis problems. To investigate pricing to market for the exports of dried grape to Netherlands, the regression by OLS only contains the exchange rate variable and a dummy for an outlier[5]. We have insignificant constant term, trend term and income variable. For the U.K., the largest destination market for dried grape, we need to regress the price on the 2nd order moving average variable to remove autocorrelation, and a few dummies for outliers in the data and the exchange rate[6]. The probability for Jarque-Bera normality test is exactly 5% and the value for skewness is 4.05, which are at the limits. The distribution of residuals for

[5] PTM coefficient does not change, if we estimate the equation for Netherlands without the dummy.

[6] When we remove the dummies, PTM coefficient is -0.94 and does not change much for U.K.

UK is more problematic than the other destinations which are very close to normal distribution. Finally, in the estimation of pricing to market model for the exports to whole world, we use 1st order moving average variable in the main equation. There is also a dummy variable to remove the normality problems from the estimation[7]. The constant term, trend term and income effects are not significant.

Table 5.3 Estimation Equations for Dried Grape Exports

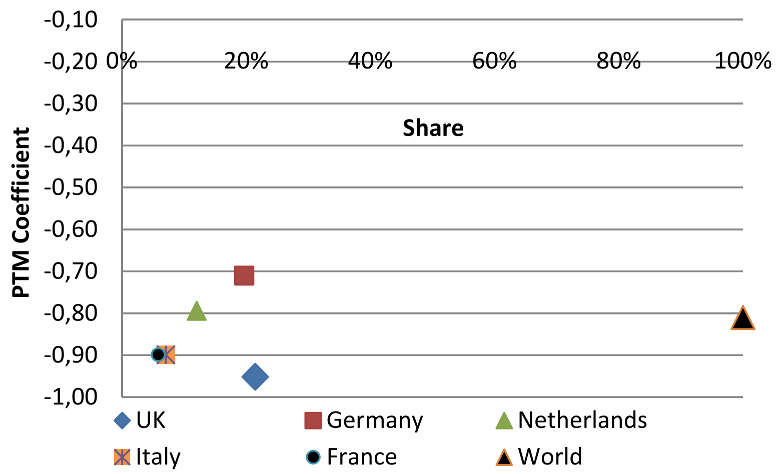
	Variable	Coefficient	Prob.
Germany			
	C	0.0205	0.0106
	TREND	-0.0002	0.0385
	DLE	-0.7101	0.0000
France			
	DLE	-0.8983	0.0000
Italy			
	DLE	-0.8988	0.0000
	DLP(-1)	-0.1722	0.0430
Netherlands			
	DLE	-0.7941	0.0000
	D0411	-0.1147	0.0072
UK			
	DLE	-0.9516	0.0000
	D0010	-0.0880	0.0005
	D019	-0.1165	0.0000
	D0311	0.1086	0.0000
	MA(2)	-0.3080	0.0019
World			
	DLE	-0.8101	0.0000
	D009	-0.0959	0.0006
	MA(1)	0.4217	0.0000

Table 5.4 PTM Coefficients of Dried Grape Exports

Destination Market	PTM Coefficient	Probability when $H_0: \beta_1 = -1$
UK	-0.9516	0.1814
Germany	-0.7101	0.0002
Netherlands	-0.7941	0.0051
Italy	-0.8988	0.4098
France	-0.8983	0.1865
The World	-0.8101	0.0027

[7] PTM coefficient does not change if the dummy variable is removed from the estimation for the total exports.

We observe pricing to market in all destination markets in the exports of dried grape from Turkey. The exporters increase their prices by 0.95%, when there is an appreciation in YTL against UK pound. If we apply the Wald test to check whether PTM coefficient is equal to -1, the probability of the test result is 0.1814, higher than 5% significance level, because of the lower standard deviation of the estimated coefficient, so the PTM elasticity is statistically equal to -1. The PTM coefficient is -0.90 for Italy and France. The value is also statistically no different than -1 for these destination markets, so the exporters satisfy complete local currency price stability. In the estimation for the dried grape exports to Netherlands and Germany, the PTM coefficient is statistically different from -1. According to the results, if the YTL appreciates against currency of Germany and Netherlands, the prices in YTL decline by 0.71% for Germany and 0.79% for Netherlands, respectively. When we look at the value of PTM coefficient for the exports to whole world, it can be claimed that exporters increase their prices by 0.81%, when 1% depreciation in YTL against the foreign currency occurs.



Source: Own Calculations, Data from Turkish Statistical Institute

Figure 5.2 Scatter of PTM coefficient and Import Shares (2004) in Turkey's Dried Grape Exports

In the graph, we may observe that there is a positive relationship between the pricing to market coefficient and the importer's share in the total dried grape exports, with the exception of UK. The exception may arise because UK did not change its currency into

Euro. In all of the other countries investigated, Euro is the official currency in use, which may cause the consistent pricing to market relationship in the dried grape market. The shares of France and Italy are 6-7% and they have the same PTM coefficient at the value of -0.90. The PTM coefficient for the total exports is -0.81 closer to the average of the coefficients for the destination markets.

5.3 Empirical Results for Turkey's Dried Apricot Exports

We have used the data set for the destination markets; Germany, France, UK, USA, Netherlands, Switzerland and the world as total to investigate the market power of the Turkish dried apricot exporters. U.S.A., U.K., France, Germany with the exception of Russia and Australia are the destination markets that have more than 10% share among the total dried apricot exports of Turkey and Netherlands' and Switzerland's shares are relatively minor.

If we look at the estimation process, to estimate the price of the exports to Germany, we add the first order moving average variable and some dummy variables into our estimation equation[8]. The income effect is not significant statistically. We have used one dummy variable in the regression for France[9]. When we move to estimation for the largest importer of dried apricots, U.S.A., the estimated equation contains lagged price variable, lagged exchange rate variable and a few dummies[10]. Regarding the income effect, the industrial production variable is insignificant. In the estimation of dried apricot exports to U.K., we need to add six dummies to recover from the normality and skewness problems and the 2nd order moving average variable to overcome the autocorrelation[11]. In the Netherlands equation, the price variable is regressed on the first

[8] PTM coefficient increases to -0.63, when the dummies are removed from the estimation for Germany.

[9] PTM coefficient is equal to -0.77 in the estimation without dummies for France.

[10] PTM coefficient becomes -1.37 in the estimation of U.S. case without dummies.

[11] PTM coefficient for U.K. is equal to -0.96, when the dummies are removed from the estimation.

lag of the residuals and a dummy variable, other than the exchange rate term[12]. To check the market power in the relatively minor destination market, Switzerland, we apply a GARCH(2,1) model because the OLS estimation fails from the ARCH LM test with probability 0.005 (F(1,115)). The lagged price variable is significant in the PTM equation. However, we have insignificant income effect. Finally, when estimating the exports to the whole world, the significant variables are the first lag of the price, 2nd order moving average variable and some dummies; other than the exchange rate[13]. No non-normality, autocorrelation and heteroscedasticity are remained in the final estimations, as presented in the Appendix.

Table 5.5 Estimation Equations for Dried Apricot Exports

USA			
	Variable	**Coefficient**	**Prob.**
	DLE	-1.2858	0.0000
	D968	0.2058	0.0003
	D025	0.3113	0.0000
	D058	-0.2840	0.0000
	DLP(-1)	0.1770	0.0141
	DLE(-1)	0.5504	0.0003
Germany			
	DLE	-0.8085	0.0000
	D9612	0.1922	0.0018
	D998	-0.1901	0.0021
	D018	-0.2795	0.0000
	D039	0.1772	0.0044
	D052	0.3000	0.0000
	MA(1)	0.2409	0.0112
France			
	DLE	-0.8060	0.0000
	D028	0.5464	0.0000
UK			
	DLE	-0.8564	0.0000
	D999	0.1795	0.0026
	D017	-0.2387	0.0001
	D018	0.2327	0.0001
	D026	0.1970	0.0015
	D045	0.2505	0.0000
	D058	-0.3683	0.0000
	MA(2)	0.3434	0.0003

[12] In the estimation without the dummy variable, PTM coefficient for Netherlands changes to -1.18.

[13] For the total exports, PTM coefficient becomes -1.04 without the dummy variables and if we apply MA(1) process, instead of MA(2).

Table 5.5 (Continued)

	Variable	Coefficient	Prob.
Netherlands			
	Variable	**Coefficient**	**Prob.**
	DLE	-0.9091	0.0000
	D026	0.6802	0.0000
	MA(1)	-0.3090	0.0007
Switzerland			
	DLE	0.5717	0.0034
	DLP(-1)	-0.3991	0.0000
		Variance Equation	
	C	0.0280	0.0000
	RESID(-1)^2	0.3327	0.0880
	GARCH(-1)	-0.4600	0.0052
World			
	DLE	-1.1648	0.0000
	D967	-4.6117	0.0000
	D968	4.6093	0.0000
	D9811	-4.7736	0.0000
	D9812	4.7641	0.0000
	D045	0.2025	0.0004
	D058	-0.2718	0.0000
	MA(2)	0.4787	0.0000

Pricing to market exists in the exports to all of the destinations we have investigated. In the USA equation, we observe a joint effect of the exchange rate and the first lag of the exchange rate. The coefficient of the exchange rate is -1.29, that is the exporters increase their prices in YTL more than 1%, when they face with a 1% appreciation of YTL. They offset some part of this effect by decreasing their price by 0.55% with the 1% appreciation of YTL in the previous month. They jointly increase their prices by 0.74%, if TL appreciates by 1%. When we apply the Wald test to check whether the coefficients are jointly equal to -1, i.e. whether the exporters satisfy complete local currency price stability, the test value is 4.16 with probability 0.044, nearly 5%. According to the test result, statistically, we may say that the PTM coefficient is equal to -1, that is the dried apricot exporters to USA completely stabilize their USD prices against the exchange rate movements. The PTM coefficients for France and Germany is around -0.81. The value is -0.86 for UK and -0.91 for the Netherlands. For all of the four destination markets, the PTM coefficient is no different from -1, statistically, meaning complete price stability in the destination market currency. We have an interesting result for the destination market Switzerland. The PTM coefficient is positive and significantly 0.57. According to this result, the demand elasticity declines with price, as explained in section 2 of this paper.

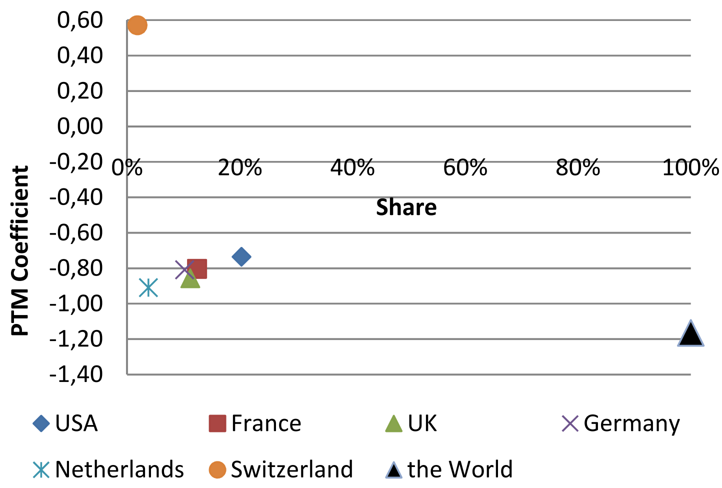
This causes destabilization of prices in the destination market. We may say that in all destination markets, except Switzerland, there is local currency price stability. If we investigate the exports as a whole, there is complete local currency price stability – the Turkish exporters increase their prices by 1%, when USD depreciates against TL by 1%. The null hypothesis of PTM coefficient is equal to -1 is not rejected with probability 0.15. So there is complete local currency price stability in the dried apricot exports to all of the destinations from Turkey, except to Switzerland.

Table 5.6 PTM Coefficients of Dried Apricot Exports

Destination Market	PTM Coefficient	Probability when $H_0: \beta_1 = -1$
USA*	-0.7353	0.0435
France	-0.8060	0.0837
UK	-0.8564	0.2137
Germany	-0.8085	0.1187
Netherlands	-0.9091	0.1317
Switzerland	0.5717	0.0000
The World	-1.1648	0.1483

**Joint coefficient including the coefficient of the 1st lag variable*

As it can be seen from the graph, there is a positive relationship between the importer's share in the total dried apricot exports and the PTM coefficient. The exports of dried apricot to USA have around 20% share of total dried apricot exports and the PTM coefficient is -0.74. France, UK and Germany are the destination markets with shares around 10% and their PTM coefficients are also around -0.80. Netherlands' share is 4% with a PTM coefficient around -0.90. Switzerland has a minor share with 2% in the total exports and the PTM coefficient is in the opposite direction with a positive value. This different result may arise because Switzerland is not a member of EU. The total exports' equation PTM coefficient is the highest in absolute terms when compared to specific destination markets. According to Wald test results, it is significantly equal to -1 like in the case of the largest destination market, USA.



Source: Own Calculations, Data from Turkish Statistical Institute

Figure 5.3 Scatter of PTM coefficient and Import Shares (2005) in Turkey's Dried Apricot Exports

5.4 Empirical Results for Turkey's Dried Fig Exports

We have analyzed the exports of dried fig from Turkey for three destination markets and the world as total. These destinations are France, Germany and Spain. The data for dried fig exports to France have values close to zero or are missing in the ninth months of each year. We take the average of the ninth months for the missing information and put a seasonal dummy to the 9th month. The seasonal dummy variable is significant, showing some seasonal structure also in the prices. We also add some time dummies for the outliers[14]. While estimating the model for the dried fig exports to Germany, we applied the ARCH model because of the presence of ARCH, according to the ARCH LM test. The probability for the test is 0.03, so we do not reject the null hypothesis of the presence of autoregressive conditional heteroscedasticity. In the main equation, lagged dependent variable is significant. Industrial production also appears to be significant for the income effect. In the variance equation, we add 2nd lag of the squared residuals. In the equation for Spain, we include seasonal dummies for 6th, 8th and 9th months with the

[14] When we remove the dummy variables from the equation for France, PTM coefficient becomes insignificant. However, we have autocorrelation problem this time.

same reasoning in the France equation. We have used a GARCH(0,1) model to estimate the equation. 1st lag of the price variable is also significant in the main equation. Lastly, we estimate for the exports to whole world, applying an ARCH(1) model. The main equation contains significant seasonal dummies for the 8th and 9th months and the lagged residual variable. Al of the equations satisfies the standard assumptions. However, only the normality of the residuals in the Germany equation appears with 0.047 probability, very close to 5% significance level. As mentioned above, the estimation method is ARCH-GARCH model with the exception of the equation for France. Regarding the details of the estimations and tests, see Appendix.

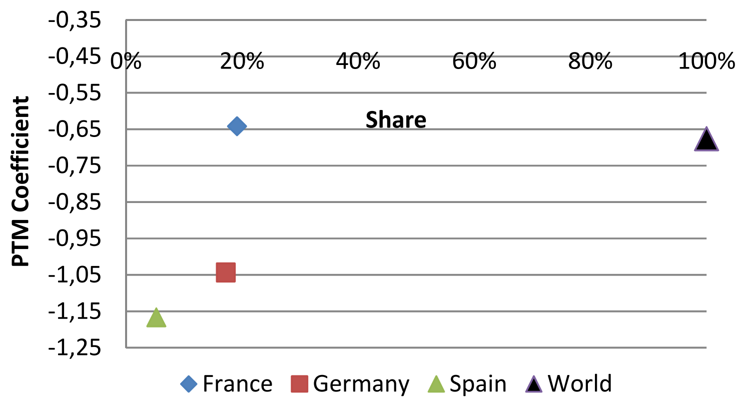
Table 5.7 Estimation Equations for Dried Fig Exports

France			
	Variable	**Coefficient**	**Prob.**
	DLE	-0.6422	0.0207
	S9	0.4764	0.0000
	D018	-0.7179	0.0000
	D024	-0.5939	0.0001
	D026	0.9547	0.0000
	D027	-1.1553	0.0000
	D039	-1.0365	0.0000
	D0310	0.8074	0.0000
Germany			
	DLE	-1.0433	0.0000
	DP(-1)	-0.3248	0.0004
	DLIPSA	2.9636	0.0276
		Variance Equation	
	C	0.0179	0.0000
	RESID(-1)^2	0.7038	0.0150
Spain			
	DLE	-1.1664	0.0000
	DLP(-1)	-0.5485	0.0000
	S6	0.1375	0.0073
	S8	0.1380	0.0021
	S9	0.2204	0.0001
		Variance Equation	
	C	0.0003	0.6550
	GARCH(-1)	0.9982	0.0000
World			
	DLE	-0.6760	0.0000
	S8	-0.1296	0.0000
	S9	0.2413	0.0000
	MA(1)	-0.2975	0.0036
		Variance Equation	
	C	0.0063	0.0000
	RESID(-1)^2	0.5136	0.0110

Table 5.8 PTM Coefficients of Dried Fig Exports

Destination Market	PTM Coefficient	Probability when $H_0: \beta_1 = -1$
France	-0.6422	0.4914
Germany	-1.0433	0.8537
Spain	-1.1664	0.5195
The World	-0.6760	0.0084

As it can be observed in the table, the PTM coefficient is significant in all destination markets. The PTM coefficient for France is between the range (0,-1) with the value of -0.64 and satisfies the local currency price stability. The coefficient is no different than -1 according to the Wald test with 49% probability. Germany and Spain has a value less than -1, which means the exporters increase more than 1%, when they see an appreciation of YTL for 1%. Especially the behavior of dried fig exporters to Spain is relatively destabilizing. However, if we apply a Wald test for the coefficients to test whether they are equal to -1, we do not reject the null hypothesis. These results mean complete price stability in terms of the destination country currency in all cases. If we look at the world equation, the exporters decrease their prices by around 0.68%, when YTL appreciates. In spite of the fact that there is complete local currency price stability for the destination markets, we could not observe in the total exports according to the Wald test result in the Table 5.8.



Source: Own Calculations, Data from Turkish Statistical Institute

Figure 5.4 Scatter of PTM coefficient and Import Shares (2005) in Turkey's Dried Fig Exports

If we compare the importer's share in the total exports with the PTM coefficients, the PTM coefficient increases, when share increases. However, the share of France and Germany are close, but there is relatively high difference between PTM coefficients. The coefficient value for the exports to the world in total is lower than the PTM coefficients for Spain and Germany and close to the largest importer of dried fig, France.

5.5 Empirical Results for Turkey's Feldspar Exports

There are three destination markets investigated for the feldspar exports. These markets are Italy Spain and Israel. In the estimation for the exports to Italy, the constant term, trend term and the income effect are insignificant. We add three dummy variables to overcome the heteroscedasticity problem in the regression[15]. The first lag of the export price is as well significant. If we move to the case of Spain, there is a significant dummy variable in the equation[16]. The first lag of the error term is also included to remove the autocorrelation. We exclude the constant term, trend term and the income variable because of their insignificant coefficients. In the equation for the feldspar exports to Israel, the coefficients of the first and second lag of the price are statistically different than zero. There are also two significant dummy variables in the equation[17]. Finally, in the estimation for total exports, we have applied two dummy variables.[18] The lagged price term and first lag of the residuals are also significant.

Table 5.9 Estimation Equations for Feldspar Exports

Italy			
	Variable	**Coefficient**	**Prob.**
	DLE	-1.1768	0.0000
	D972	0.6049	0.0000
	D974	-0.4472	0.0001
	D985	0.5585	0.0000
	DLP(-1)	-0.4444	0.0000

[15] PTM coefficient for Italy is -1.01, when we remove the dummies and change DLP(-1) with MA(1).

[16] PTM coefficient for Spain is equal to -1.14 in the estimation without the dummy variable.

[17] PTM coefficient for Israel is still insignificant, if we remove the dummies from the equation.

[18] PTM coefficient becomes -0.85, if we remove the dummy variables for the total exports.

Table 5.9 (Continued)

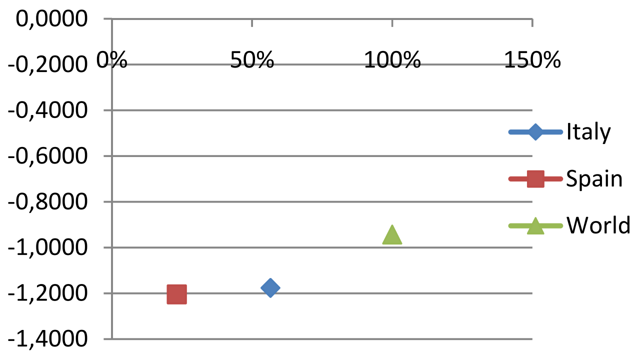
	Variable	Coefficient	Prob.
Spain			
	Variable	**Coefficient**	**Prob.**
	DLE	-1.2049	0.0000
	D023	-0.3421	0.0010
	MA(1)	-0.8116	0.0000
Israel			
	DLE	-0.3670	0.6469
	DLP(-1)	-0.8218	0.0000
	DLP(-2)	-0.3998	0.0000
	D036	-2.3290	0.0000
	D041	-2.1518	0.0001
World			
	DLE	-0.9431	0.0000
	D973	5.0216	0.0000
	D974	-4.9424	0.0000
	DLP(-1)	0.0593	0.0097
	MA(1)	-0.6953	0.0000

The PTM coefficient is significant in all cases except the Israel case. In the Italy case, the coefficient is equal to -1.17. If we apply the Wald test, we do not reject the null hypothesis of PTM coefficient is equal to -1 with 34% probability so complete local currency price stability is applied by the feldspar exporters from Turkey. When we look at the PTM coefficient from the equation of feldspar exports to Spain, The coefficient is significantly -1.20 and different from -1 according to the Wald test result. We see that there is a rather destabilizing effect in the export prices in response to exchange rate fluctuations. In the equation for the exports to Israel, the PTM coefficient is statistically insignificant which means that pricing to market does not exist. When we look at the coefficient in the equation for total exports, it is -0.94 and it is not significantly different than -1 with 52% probability.

Table 5.10 PTM Coefficients of Feldspar Exports

Destination Market	PTM Coefficient	Probability when $H_0: \beta_1 = -1$
Italy	-1.1768	0.3368
Spain	-1.2049	0.0269
Israel	-0.3670	0.4300
The World	-0.9431	0.5230

When we compare the importer's shares and the PTM coefficients, we see that the PTM coefficient increase as the import share rises like in the investigations of dried grape and dried apricot exports. For the largest destination market, Italy with 57% of the feldspar exports, and the total exports, there is complete local currency price stability.



Source: Own Calculations, Data from Turkish Statistical Institute

Figure 5.5 Scatter of PTM coefficient and Import Shares (2005) in Turkey's Feldspar Exports

5.6 Discussion

In the literature, generally, pricing to market analyzes have been made for the larger export countries like USA, Germany and Japan and markets like beer, automobile, chemical products in which these countries are large exporters, have been chosen to investigate. In our investigation, we have selected the sectors where Turkey is the leading producer and exporter in the world. In the hazelnut market, we see that there is pricing to market in the destination markets investigated. However, according to Wald test results; there is no complete local currency price stability in each destination. In world total, the exports from Turkey constitute local currency price stability. Hazelnut exporters use the information of the price of the previous month in determining their prices except for the exports to Netherlands. The absolute value of the PTM coefficients increases with the import shares of the destination markets in all cases including the total exports. In the dried grape market, there is complete local currency price stability in all destination markets except Germany and Netherlands. In all cases, there is pricing to market. Only in Italy and UK cases, the exporters look at the prices of the previous month for Italy and previous two months for the UK to determine their prices. The absolute value of the PTM coefficients decreases with the import shares for the entire destination markets except the UK case. Since the official currency in the UK is other than Euro, there is a different exchange rate movement in the UK than the other destination countries investigated in which Euro has been the official currency since 2002. In the dried apricot market, there is complete local currency price stability in total and in all destination markets except Switzerland. In the Switzerland case, the PTM coefficient has a positive value. Knetter explains the positive value for the PTM coefficient in the case of USA exports as since the domestic market is more important for the producers, they act in the export markets more opportunistically. This explanation may be true in our study for the dried apricot exports to Switzerland, since the import share in the dried apricot exports of Turkey is very small, around 2% for Switzerland. In the USA case, we see that the first lag of the exchange rate variable is significant and there is a joint effect of the exchange rate on the export prices. There is also autoregressive or moving average processes in all estimations. Like in the dried grape study, the absolute value of the PTM coefficient declines with the import share. We see that in all cases except the total exports, there is complete local currency price stability. All of the estimations follow ARCH-GARCH process except the French case. Generally, there is also seasonality effect in the eighth and ninth months. The relation between the import share and absolute PTM coefficient is the same as the dried apricot and dried fig studies. Lastly, if we look at the feldspar exports, the PTM coefficients are less than -1. This value implies that there is a destabilizing effect on the prices occurring from the exchange rate fluctuations. However, according to the Wald test, the estimated PTM coefficient is not different from -1 for the largest exporter, Italy. This result supports the previous findings declaring that in the large destination markets, the exporters stabilize their prices against the foreign currency not to loose their market share. The feldspar exports to Israel show no pricing to market since the coefficient of the exchange rate is insignificant, so statistically, PTM elasticity is equal to zero. This is the only case that does not support pricing to market in our investigation. The absolute value of the PTM coefficient movement against the import share is as well negatively related in the feldspar exports.

In general, we see that there is pricing to market in the strong export markets of Turkey and 15 of 25 cases, there is complete local currency price stability with 0.05 level of significance. The Turkish exporters may behave in this way not to loose their shares and sales in the importer country. There is not much competition from the outside world in the markets we investigated; however, Turkish exporters are competing with each other in the international markets and as a result, protectionist behavior may occur in total. We also observe that in the exports to E.U. countries, there is similar pricing to market behavior of the Turkish exporters. However, for the non-E.U. countries, the behavior differs. We investigate the relationship between the import share and the PTM coefficient, instead of the export share, because of the unavailability of the data. The import share in the Turkish exports may be a good indicator to show the importance of the market for Turkish exporters. In general, in 4 of 5 export markets, there is an inverse relationship between the share and the absolute value of PTM coefficient except the hazelnut market. This result implies that as the import share increases, exporters' compensation of the exchange rate change declines. In the hazelnut market, we found that the relationship between the import share and the absolute value of PTM coefficient is positive in contrast.

CHAPTER VI

CONCLUDING REMARKS

We investigated the evidence of pricing to market for the exports of Turkey which is a small open economy. We applied OLS and ARCH-GARCH estimation equation by equation to the time series data. We analyzed the hazelnut, dried grape, dried apricot, dried fig and feldspar markets in which Turkey has significant share in the international markets. Our findings for pricing to market model show that in these sectors, Turkey stands as a large economy with significant market power.

Our findings show that there is pricing to market behavior in all cases except dried apricot exports to Switzerland and feldspar exports to Israel. There is more destabilizing markup adjustment by the exporters of dried apricot to Switzerland that exacerbates the effect of a change in the exchange rate on the prices. Feldspar exports to Israel is the only case where complete exchange rate pass-through exists because the pricing to market coefficient is insignificant and statistically no different from zero.

When we look at the estimation results of hazelnut market, the market power in the hazelnut market which is an ongoing debate in Turkey statistically exists. There is complete local currency price stability with 5% significance level only in the total exports of hazelnut. It is a large market with 1 billion USD of exports annually and with correct market policies, the earnings from the exports of hazelnut may be increased much more, since there is significant market power. The findings on dried grape, dried apricot, dried fig and feldspar exports are not different from the hazelnut exports and Turkey has significant market power for these products, as well.

Dried grape exports to U.K., Italy and France; dried apricot exports in all cases except Switzerland; dried fig exports in all cases except the total exports and feldspar exports in all cases except the Spanish case also exhibit complete local currency price stability. The main reason behind complete local currency price stability in these markets may be that the Turkish exporters stabilize their price in terms of the importer's currency not to loose their shares and sales in that country. The competition is generally not from the other countries; instead, Turkish exporters are competing with each other in the international markets and as a result, they stabilize the price in terms of the local currency.

Another finding is that the first lag of the exchange rate is significant only in the case of dried apricot exports to U.S.A. in which there is a joint effect of the exchange rate on the export prices. In general, we find that there is similar pricing to market behavior of the Turkish exporters in the exports to E.U. countries. However, for the non-E.U. countries, the behavior differs. We also observe that there is a backward looking behavior in the determination of the export prices that is the lag of the price variable is significant in general. We finally compare the import shares in Turkish exports and the PTM coefficient and found that as the import share increases, the exporters compensate the exchange rate change decreasingly in all cases except the hazelnut market where the exporters compensate increasingly.

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APPENDIX A

ESTIMATION RESULTS

A.1 Estimation Results for Hazelnut Exports to Italy

Table A.1.1 Unit Root Test for Hazelnut Exports to Germany

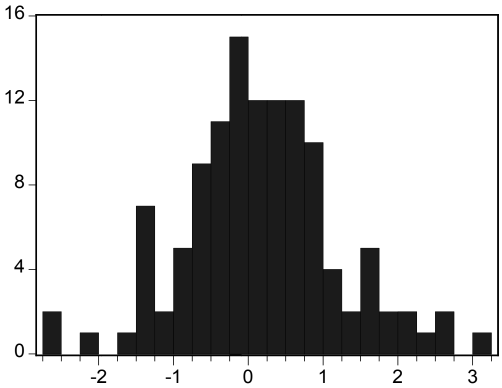
$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.21	ADF(e)=-2.64
ADF(dp)=-8.31	ADF(de)=-6.68

Table A.1.2 Regression for Hazelnut Exports to Italy

Dependent Variable: DLP Method: ML - ARCH (Marquardt) - Normal distribution Sample (adjusted): 1996M03 2005M12 Included observations: 118 after adjustments Failure to improve Likelihood after 22 iterations				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
DLE	-0.7242	0.1267	-5.7143	0.0000
DLP(-1)	0.2035	0.0862	2.3609	0.0182
Variance Equation				
C	0.0012	0.0003	4.1330	0.0000
RESID(-1)^2	0.3341	0.1197	2.7900	0.0053
RESID(-2)^2	-0.3279	0.0977	-3.3570	0.0008
GARCH(-1)	0.7747	0.0577	13.4223	0.0000
R-squared	0.140887	Mean dependent var		0.035965
Adjusted R-squared	0.102534	S.D. dependent var		0.082708
S.E. of regression	0.078353	Akaike info criterion		-2.377926
Sum squared resid	0.687591	Schwarz criterion		-2.237044
Log likelihood	146.2977	Durbin-Watson stat		1.902103

Table A.1.3 Test Results for Hazelnut Exports to Italy

Type of Test	Statistic	Prob.	
DW	1.9021	n/a	n/a
ARCH LM Test	0.1560	Prob. F(5,107)	0.9778



Series: Standardized Residuals Sample 1996M03 2005M12 Observations 118
Mean 0.158220 Median 0.108839 Maximum 3.120869 Minimum -2.691178 Std. Dev. 1.024288 Skewness 0.127758 Kurtosis 3.619873
Jarque-Bera 2.210193 Probability 0.331179

Figure A.1 Normality for Hazelnut Exports to Italy

Table A.1.4 Income Effect for Hazelnut Exports to Italy

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DLE	-0.7223	0.1196	-6.0376	0.0000
DLP(-1)	0.2423	0.0862	2.8094	0.0050
DLIPSA	**0.6889**	**0.4335**	**1.5891**	**0.1120**
		Variance Equation		
C	0.0011	0.0005	2.4446	0.0145
RESID(-1)^2	0.3291	0.1352	2.4342	0.0149
RESID(-2)^2	-0.3218	0.1064	-3.0251	0.0025
GARCH(-1)	0.7882	0.0929	8.4797	0.0000

A.2 Estimation Results for Hazelnut Exports to Germany

Table A.2.1 Unit Root Test for Hazelnut Exports to Germany

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.00	ADF(e)=-2.43
ADF(dp)=-7.46	ADF(de)=-6.75

Table A.2.2 Regression for Hazelnut Exports to Germany

Dependent Variable: DLP Method: Least Squares Sample (adjusted): 1996M03 2005M12 Included observations: 118 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
DLE	-0.6365	0.1136	-5.6038	0.0000
DLP(-1)	0.3153	0.0731	4.3119	0.0000
D018	-0.3169	0.0602	-5.2625	0.0000
D039	0.2297	0.0594	3.8680	0.0002

R-squared	0.3905	Mean dependent var	0.0347
Adjusted R-squared	0.3745	S.D. dependent var	0.0749
S.E. of regression	0.0593	Akaike info criterion	-2.7807
Sum squared resid	0.4002	Schwarz criterion	-2.6868
Log likelihood	168.0620	Durbin-Watson stat	1.9139

Table A.2.3 Test Results for Hazelnut Exports to Germany

Type of Test	Statistic	Prob.	
DW	1.9139	n/a	n/a
Serial Correlation LM Test	0.5470	Prob. F(5,109)	0.7403
ARCH LM Test	0.1606	Prob. F(5,107)	0.9763
White Test	0.4381	Prob. F(6,111)	0.8520

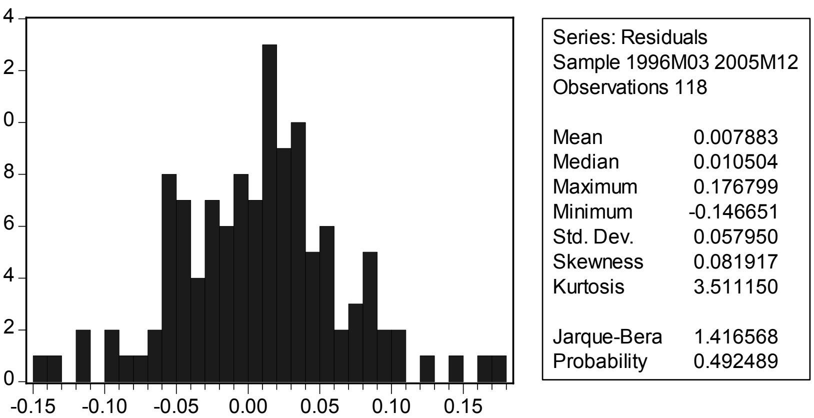


Figure A.2 Normality for Hazelnut Exports to Germany

Table A.2.4 Income Effect for Hazelnut Exports to Germany

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.6581	0.1135	-5.7988	0.0000
DLP(-1)	0.3089	0.0727	4.2494	0.0000
D018	-0.3352	0.0608	-5.5136	0.0000
D039	0.2333	0.0590	3.9555	0.0001
DLIPSA	**0.7555**	**0.4583**	**1.6484**	**0.1021**

A.3 Estimation Results for Hazelnut Exports to France

Table A.3.1 Unit Root Test for Hazelnut Exports to France

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.22	ADF(e)=-2.48
ADF(dp)=-7.80	ADF(de)=-6.61

Table A.3.2 Regression for Hazelnut Exports to France

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M03 2005M12
Included observations: 118 after adjustments
Convergence achieved after 8 iterations
Backcast: 1996M02

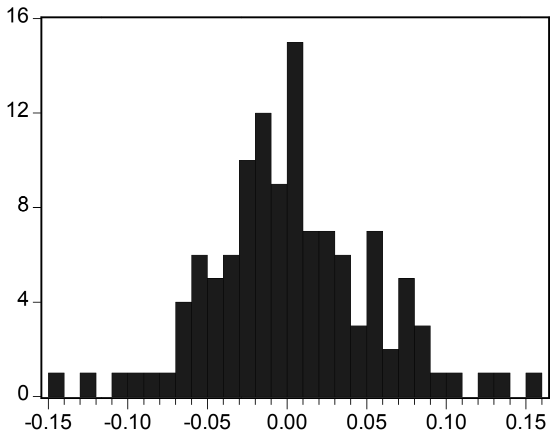
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.6131	0.0799	-7.6785	0.0000
DLP(-1)	0.3989	0.0579	6.8892	0.0000
D9612	0.2124	0.0483	4.4025	0.0000
D998	-0.1867	0.0480	-3.8855	0.0002
D018	-0.3280	0.0487	-6.7323	0.0000
D039	0.2345	0.0483	4.8595	0.0000
D045	0.2408	0.0473	5.0860	0.0000
D052	0.3099	0.0479	6.4756	0.0000
DLIPSA	1.1576	0.5132	2.2555	0.0261
MA(1)	-0.5081	0.1018	-4.9934	0.0000

Table A.3.2 (Continued)

R-squared	0.6166	Mean dependent var	0.0363
Adjusted R-squared	0.5846	S.D. dependent var	0.0829
S.E. of regression	0.0534	Akaike info criterion	-2.9402
Sum squared resid	0.3082	Schwarz criterion	-2.7054
Log likelihood	183.4747	Durbin-Watson stat	1.8494
Inverted MA Roots	0.51		

Table A.3.3 Test Results for Hazelnut Exports to France

Type of Test	Statistic	Prob.	
DW	1.8494	n/a	n/a
Serial Correlation LM Test	1.5206	Prob. F(5,103)	0.1899
ARCH LM Test	0.4632	Prob. F(5,107)	0.8029
White Test	0.6635	Prob. F(12,105)	0.7824



Series: Residuals	
Sample 1996M03 2005M12	
Observations 118	
Mean	0.002492
Median	0.000602
Maximum	0.152924
Minimum	-0.141363
Std. Dev.	0.051265
Skewness	0.198180
Kurtosis	3.556963
Jarque-Bera	2.297603
Probability	0.317017

Figure A.3 Normality for Hazelnut Exports to France

A.4 Estimation Results for Hazelnut Exports to Netherlands

Table A.4.1 Unit Root Test for Hazelnut Exports to Netherlands

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.18	ADF(e)=-2.47
ADF(dp)=-10.25	ADF(de)=-6.59

Table A.4.2 Regression for Hazelnut Exports to Netherlands

Dependent Variable: DLP				
Method: Least Squares				
Sample (adjusted): 1996M02 2005M12				
Included observations: 119 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.0180	0.0087	2.0642	0.0413
DLE	-0.6079	0.1653	-3.6769	0.0004
D018	-0.3513	0.0836	-4.1996	0.0001
D045	0.2947	0.0837	3.5227	0.0006
D054	0.2587	0.0826	3.1326	0.0022

R-squared	0.3222	Mean dependent var	0.0360
Adjusted R-squared	0.2985	S.D. dependent var	0.0982
S.E. of regression	0.0822	Akaike info criterion	-2.1175
Sum squared resid	0.7708	Schwarz criterion	-2.0007
Log likelihood	130.9915	F-statistic	13.5504
Durbin-Watson stat	1.9171	Prob(F-statistic)	0.0000

Table A.4.3 Test Results for Hazelnut Exports to Netherlands

Type of Test	**Statistic**	**Prob.**	
DW	1.9171	n/a	n/a
Serial Correlation LM Test	2.7045	Prob. F(5,109)	0.0241
Serial Correlation LM Test	0.8030	Prob. F(4,110)	0.5258
ARCH LM Test	0.0257	Prob. F(5,108)	0.9997
White Test	0.2632	Prob. F(5,113)	0.9323

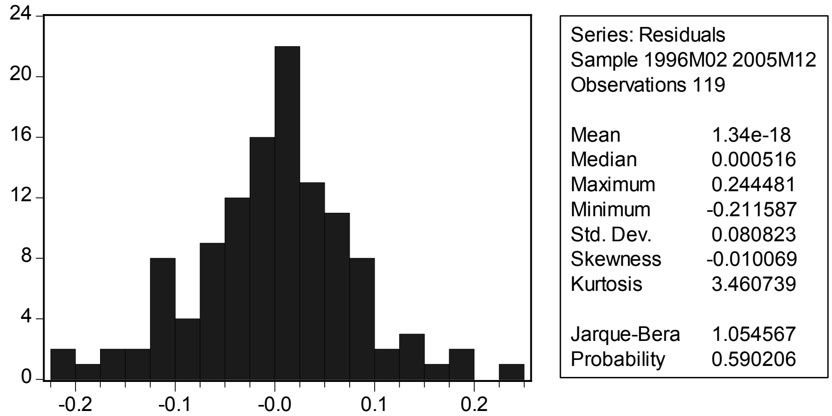


Figure A.4 Normality for Hazelnut Exports to Netherlands

Table A.4.4 Income Effect for Hazelnut Exports to Netherlands

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0187	0.0087	2.1553	0.0333
DLE	-0.6067	0.1642	-3.6950	0.0003
D018	-0.3452	0.0831	-4.1518	0.0001
D045	0.2907	0.0831	3.4968	0.0007
D054	0.2490	0.0822	3.0280	0.0031
DLIPSA	**0.6788**	**0.4220**	**1.6083**	**0.1106**

A.5 Estimation Results for Hazelnut Exports to the World

Table A.5.1 Unit Root Test for Hazelnut Exports to the World

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-1.95	ADF(e)=-2.56
ADF(dp)=-14.13	ADF(de)=-6.67

Table A.5.2 Regression for Hazelnut Exports to the World

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2005M12
Included observations: 119 after adjustments
Convergence achieved after 10 iterations
Backcast: 1996M01

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8929	0.1031	-8.6620	0.0000
D998	-0.1516	0.0421	-3.6027	0.0005
D018	-0.2679	0.0428	-6.2615	0.0000
D039	0.1759	0.0425	4.1398	0.0001
D0510	-1.0156	0.0496	-20.4710	0.0000
D0511	1.0299	0.0512	20.1106	0.0000
MA(1)	0.5373	0.0815	6.5928	0.0000

R-squared	0.8983	Mean dependent var	0.0354
Adjusted R-squared	0.8928	S.D. dependent var	0.1515
S.E. of regression	0.0496	Akaike info criterion	-3.1132
Sum squared resid	0.2754	Schwarz criterion	-2.9497
Log likelihood	192.2370	Durbin-Watson stat	1.8598
Inverted MA Roots	-0.54		

Table A.5.3 Test Results for Hazelnut Exports to the World

Type of Test	Statistic	Prob.	
DW	1.8598	n/a	n/a
Serial Correlation LM Test	0.8812	Prob. F(5,107)	0.4964
ARCH LM Test	0.6819	Prob. F(5,108)	0.6381
White Test	0.1479	Prob. F(7,111)	0.9939

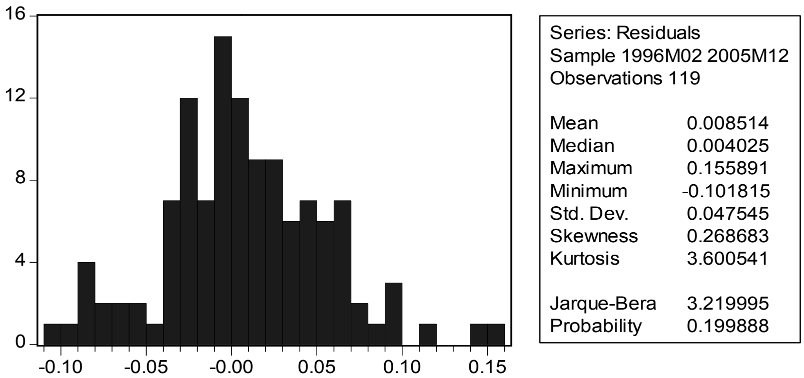


Figure A.5 Normality for Hazelnut Exports to the World

A.6 Estimation Results for Dried Grape Exports to U.K.

Table A.6.1 Unit Root Test for Dried Grape Exports to U.K.

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-3.29	ADF(e)=-3.07
ADF(dp)=-7.86	ADF(de)=-6.44

Table A.6.2 Regression for Dried Grape Exports to U.K.

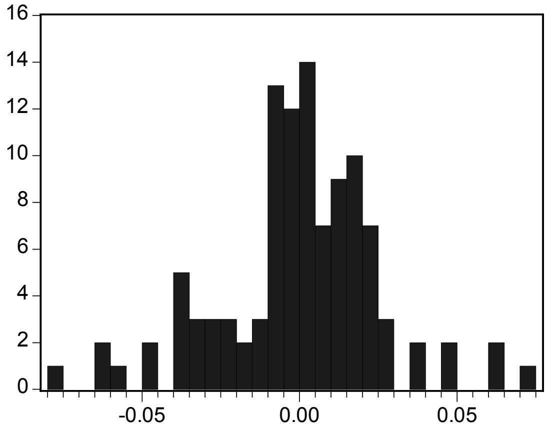
Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2004M12
Included observations: 107 after adjustments
Convergence achieved after 7 iterations
Backcast: 1995M12 1996M01

Table A.6.2 (Continued)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.9516	0.0360	-26.4383	0.0000
D0010	-0.0880	0.0245	-3.5892	0.0005
D019	-0.1165	0.0245	-4.7489	0.0000
D0311	0.1086	0.0245	4.4338	0.0000
MA(2)	-0.3080	0.0968	-3.1822	0.0019
R-squared	0.7962	Mean dependent var		0.0297
Adjusted R-squared	0.7882	S.D. dependent var		0.0557
S.E. of regression	0.0256	Akaike info criterion		-4.4442
Sum squared resid	0.0670	Schwarz criterion		-4.3193
Log likelihood	242.7665	Durbin-Watson stat		2.2421
Inverted MA Roots	0.55	-0.55		

Table A.6.3 Test Results for Dried Grape Exports to U.K.

Type of Test	Statistic	Prob.	
DW	2.2421	n/a	n/a
Serial Correlation LM Test	1.1518	Prob. F(5,97)	0.3386
ARCH LM Test	1.1817	Prob. F(5,96)	0.3239
White Test	0.2246	Prob. F(5,101)	0.9511



Series: Residuals	
Sample 1996M02 2004M12	
Observations 107	
Mean	-2.44e-05
Median	0.001187
Maximum	0.071086
Minimum	-0.075527
Std. Dev.	0.025145
Skewness	-0.236900
Kurtosis	4.050447
Jarque-Bera	5.920329
Probability	0.051810

Figure A.6 Normality for Dried Grape Exports to U.K.

Table A.6.4 Income Effect for Dried Grape Exports to U.K.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.9513	0.0362	-26.2945	0.0000
D0010	-0.0878	0.0247	-3.5571	0.0006
D019	-0.1168	0.0247	-4.7269	0.0000
D0311	0.1081	0.0247	4.3708	0.0000
DLIPSA	-0.0463	0.2883	-0.1607	0.8726
MA(2)	-0.3092	0.0984	-3.1415	0.0022

A.7 Estimation Results for Dried Grape Exports to Germany

Table A.7.1 Unit Root Test for Dried Grape Exports to Germany

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-1.57	ADF(e)=-2.43
ADF(dp)=-10.71	ADF(de)=-6.75

Table A.7.2 Regression for Dried Grape Exports to Germany

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2004M12
Included observations: 107 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0205	0.0079	2.6026	0.0106
@TREND	-0.0002	0.0001	-2.0962	0.0385
DLE	-0.7101	0.0753	-9.4315	0.0000

R-squared	0.5123	Mean dependent var	0.0287
Adjusted R-squared	0.5030	S.D. dependent var	0.0505
S.E. of regression	0.0356	Akaike info criterion	-3.8048
Sum squared resid	0.1319	Schwarz criterion	-3.7299
Log likelihood	206.5592	F-statistic	54.6304
Durbin-Watson stat	1.9676	Prob(F-statistic)	0.0000

Table A.7.3 Test Results for Dried Grape Exports to Germany

Type of Test	Statistic	Prob.	
DW	1.9676	n/a	n/a
Serial Correlation LM Test	0.4081	Prob. F(5,99)	0.8421
ARCH LM Test	1.9163	Prob. F(5,96)	0.0986

Table A.7.3 (continued)

Type of Test	Statistic	Prob.	
White Test	1.5414	Prob. F(4,102)	0.1959

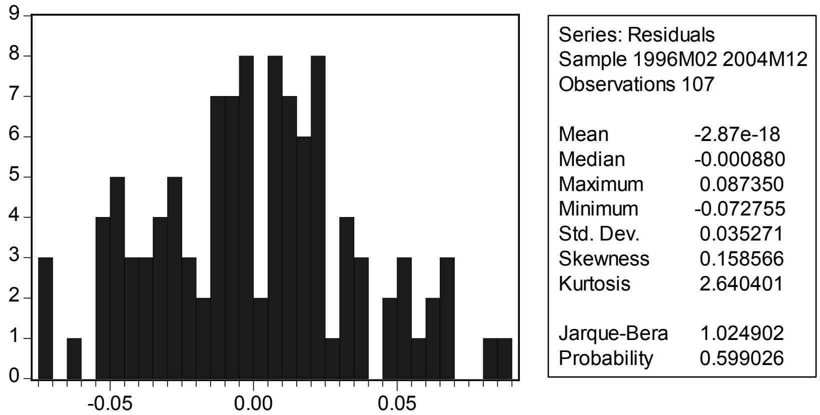


Figure A.7 Normality for Dried Grape Exports to Germany

Table A.7.4 Income Effect for Dried Grape Exports to Germany

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.0176	0.0079	2.2154	0.0289
@TREND	-0.0002	0.0001	-1.8338	0.0696
DLE	-0.7340	0.0756	-9.7138	0.0000
DLIPSA	**0.5125**	**0.2783**	**1.8416**	**0.0684**

A.8 Estimation Results for Dried Grape Exports to Netherlands

Table A.8.1 Unit Root Test for Dried Grape Exports to Netherlands

$p{\sim}I(1)$	$e{\sim}I(1)$
ADF(p)=-3.64	ADF(e)=-2.47
ADF(dp)=-7.59	ADF(de)=-6.59

Table A.8.2 Regression for Dried Grape Exports to Netherlands

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2004M12
Included observations: 107 after adjustments

Table A.8.2 (Continued)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.7941	0.0720	-11.0277	0.0000
D0411	-0.1147	0.0418	-2.7424	0.0072
R-squared	0.4320	Mean dependent var		0.0281
Adjusted R-squared	0.4266	S.D. dependent var		0.0552
S.E. of regression	0.0418	Akaike info criterion		-3.4928
Sum squared resid	0.1836	Schwarz criterion		-3.4428
Log likelihood	188.8623	Durbin-Watson stat		1.9623

Table A.8.3 Test Results for Dried Grape Exports to Netherlands

Type of Test	Statistic	Prob.	
DW	1.9623	n/a	n/a
Serial Correlation LM Test	0.4499	Prob. F(5,100)	0.8124
ARCH LM Test	0.7621	Prob. F(5,96)	0.5793
White Test	1.6740	Prob. F(3,103)	0.1772

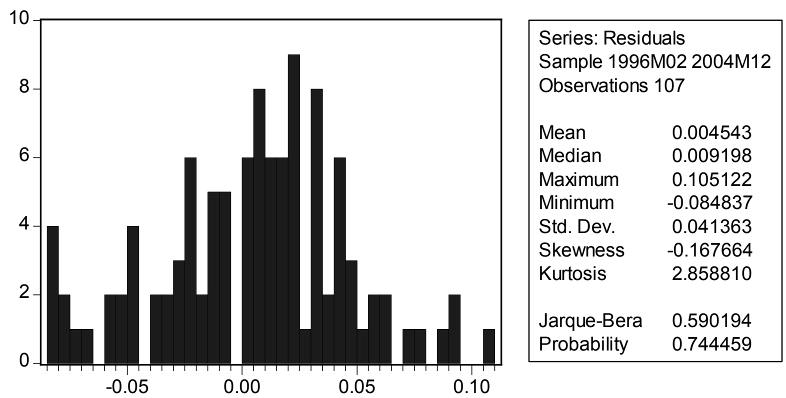


Figure A.8 Normality for Dried Grape Exports to Netherlands

Table A.8.4 Income Effect for Dried Grape Exports to Netherlands

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DE	-0.7946	0.0723	-10.9856	0.0000
D0411	-0.1150	0.0420	-2.7373	0.0073
DIP	**0.0790**	**0.2325**	**0.3400**	**0.7346**

A.9 Estimation Results for Dried Grape Exports to Italy

Table A.9.1 Unit Root Test for Dried Grape Exports to Italy

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.21	ADF(e)=-2.64
ADF(dp)=-8.31	ADF(de)=-6.68

Table A.9.2 Regression for Dried Grape Exports to Italy

Dependent Variable: DLP Method: Least Squares Sample (adjusted): 1996M03 2004M12 Included observations: 106 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
DLE	-0.8988	0.1223	-7.3498	0.0000
DLP(-1)	-0.1722	0.0841	-2.0491	0.0430
R-squared	0.2473	Mean dependent var		0.0295
Adjusted R-squared	0.2400	S.D. dependent var		0.0779
S.E. of regression	0.0679	Akaike info criterion		-2.5237
Sum squared resid	0.4791	Schwarz criterion		-2.4734
Log likelihood	135.7541	Durbin-Watson stat		2.1242

Table A.9.3 Test Results for Dried Grape Exports to Italy

Type of Test	**Statistic**	**Prob.**	
DW	2.1242	n/a	n/a
Serial Correlation LM Test	1.0924	Prob. F(5,99)	0.3694
ARCH LM Test	0.4245	Prob. F(5,95)	0.8306
White Test	1.3057	Prob. F(4,101)	0.2730

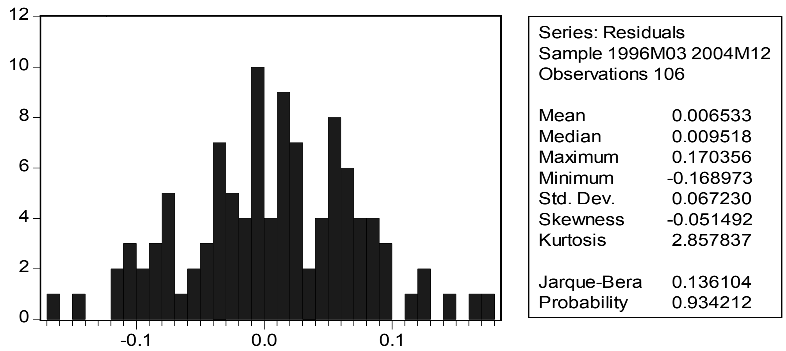


Figure A.9 Normality for Dried Grape Exports to Italy

Table A.9.4 Income Effect for Dried Grape Exports to Italy

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8939	0.1245	-7.1809	0.0000
DLP(-1)	-0.1720	0.0844	-2.0375	0.0442
DLIPSA	**-0.1962**	**0.8061**	**-0.2434**	**0.8082**

A.10 Estimation Results for Dried Grape Exports to France

Table A.10.1 Unit Root Test for Dried Grape Exports to France

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-1.84	ADF(e)=-2.48
ADF(dp)=-12.34	ADF(de)=-6.61

Table A.10.2 Regression for Dried Grape Exports to France

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2004M12
Included observations: 107 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8983	0.0765	-11.7437	0.0000

R-squared	0.4583	Mean dependent var	0.0296
Adjusted R-squared	0.4583	S.D. dependent var	0.0598
S.E. of regression	0.0440	Akaike info criterion	-3.3989
Sum squared resid	0.2054	Schwarz criterion	-3.3739
Log likelihood	182.8420	Durbin-Watson stat	2.0108

Table A.10.3 Test Results for Dried Grape Exports to France

Type of Test	Statistic	Prob.	
DW	2.0108	n/a	n/a
Serial Correlation LM Test	0.4140	Prob. F(5,101)	0.8381
ARCH LM Test	0.1745	Prob. F(5,96)	0.9715
White Test	1.4003	Prob. F(2,104)	0.2511

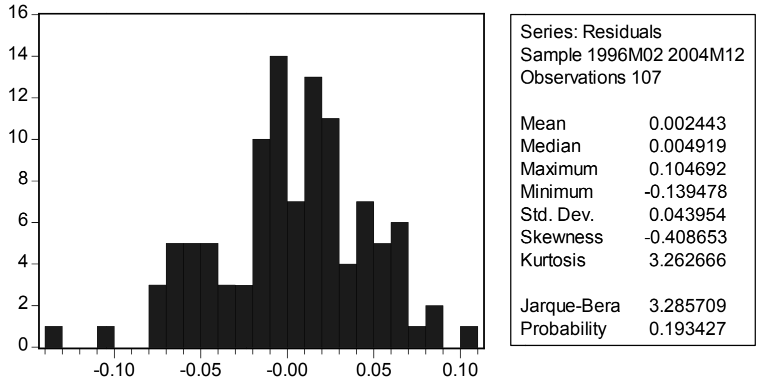


Figure A.10 Normality for Dried Grape Exports to France

Table A.10.4 Income Effect for Dried Grape Exports to France

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
DLE	-0.8977	0.0768	-11.6890	0.0000
DLIPSA	**-0.1672**	**0.3919**	**-0.4267**	**0.6705**

A.11 Estimation Results for Dried Grape Exports to the World

Table A.11.1 Unit Root Test for Dried Grape Exports to the World

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-3.17	ADF(e)=-2.16
ADF(dp)=-4.19	ADF(de)=-6.43

Table A.11.2 Regression for Dried Grape Exports to the World

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2004M12
Included observations: 107 after adjustments
Convergence achieved after 8 iterations
Backcast: 1996M01

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
DLE	-0.8101	0.0617	-13.1280	0.0000
D009	-0.0959	0.0270	-3.5516	0.0006
MA(1)	0.4217	0.0895	4.7128	0.0000

Table A.11.2 (Continued)

R-squared	0.6604	Mean dependent var	0.0290
Adjusted R-squared	0.6539	S.D. dependent var	0.0506
S.E. of regression	0.0298	Akaike info criterion	-4.1622
Sum squared resid	0.0922	Schwarz criterion	-4.0873
Log likelihood	225.6803	Durbin-Watson stat	2.0563
Inverted MA Roots	-0.42		

Table A.11.3 Test Results for Dried Grape Exports to the World

Type of Test	Statistic	Prob.	
DW	2.0563	n/a	n/a
Serial Correlation LM Test	1.4240	Prob. F(5,99)	0.2222
ARCH LM Test	1.1671	Prob. F(5,96)	0.3311
White Test	0.2336	Prob. F(3,103)	0.8728

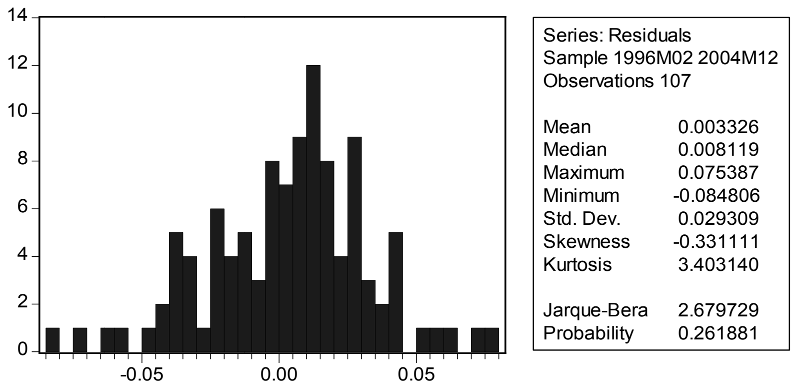


Figure A.11 Normality for Dried Grape Exports to the World

A.12 Estimation Results for Dried Apricot Exports to U.S.A.

Table A.12.1 Unit Root Test for Dried Apricot Exports to U.S.A.

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-3.08	ADF(e)=-2.90
ADF(dp)=-8.71	ADF(de)=-6.23

Table A.12.2 Regression for Dried Apricot Exports to U.S.A.

Dependent Variable: DLP Method: Least Squares Sample (adjusted): 1996M03 2005M12 Included observations: 118 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
DLE	-1.2858	0.1235	-10.4129	0.0000
D968	0.2058	0.0556	3.7031	0.0003
D025	0.3113	0.0561	5.5484	0.0000
D058	-0.2840	0.0554	-5.1248	0.0000
DLP(-1)	0.1770	0.0710	2.4929	0.0141
DLE(-1)	0.5504	0.1474	3.7346	0.0003

R-squared	0.6450	Mean dependent var	0.0245
Adjusted R-squared	0.6291	S.D. dependent var	0.0910
S.E. of regression	0.0554	Akaike info criterion	-2.8993
Sum squared resid	0.3436	Schwarz criterion	-2.7584
Log likelihood	177.0602	Durbin-Watson stat	2.0326

Table A.12.3 Test Results for Dried Apricot Exports to U.S.A.

Type of Test	**Statistic**	**Prob.**	
DW	2.0326	n/a	n/a
Serial Correlation LM Test	1.3251	Prob. F(5,107)	0.2591
ARCH LM Test	0.8912	Prob. F(5,107)	0.4898
White Test	0.4107	Prob. F(9,108)	0.9271

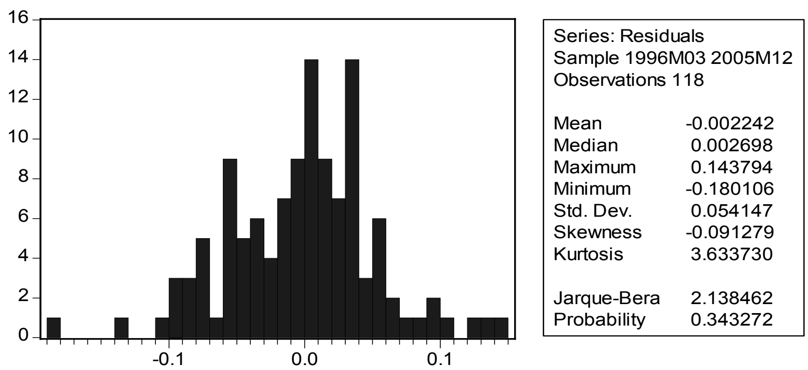


Figure A.12 Normality for Dried Apricot Exports to U.S.A.

Table A.12.4 Income Effect for Dried Apricot Exports to U.S.A.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-1.2854	0.1232	-10.4372	0.0000
D968	0.2030	0.0555	3.6595	0.0004
D025	0.3093	0.0560	5.5254	0.0000
D058	-0.2806	0.0553	-5.0690	0.0000
DLP(-1)	0.1636	0.0716	2.2844	0.0242
DLE(-1)	0.5462	0.1470	3.7146	0.0003
LDIPSA	**0.6244**	**0.4954**	**1.2604**	**0.2102**

A.13 Estimation Results for Dried Apricot Exports to France

Table A.13.1 Unit Root Test for Dried Apricot Exports to France

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.83	ADF(e)=-2.48
ADF(dp)=-9.05	ADF(de)=-6.61

Table A.13.2 Regression for Dried Apricot Exports to France

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2005M12
Included observations: 119 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8060	0.1101	-7.3206	0.0000
D028	0.5464	0.0642	8.5130	0.0000

R-squared	0.4700	Mean dependent var	0.0248
Adjusted R-squared	0.4655	S.D. dependent var	0.0877
S.E. of regression	0.0641	Akaike info criterion	-2.6388
Sum squared resid	0.4814	Schwarz criterion	-2.5921
Log likelihood	159.0071	Durbin-Watson stat	1.9618

Table A.13.3 Test Results for Dried Apricot Exports to France

Type of Test	Statistic	Prob	
DW	1.9618	n/a	n/a
Serial Correlation LM Test	1.4079	Prob. F(5,112)	0.2268
ARCH LM Test	0.8152	Prob. F(5,108)	0.5414
White Test	0.2903	Prob. F(5,115)	0.8323

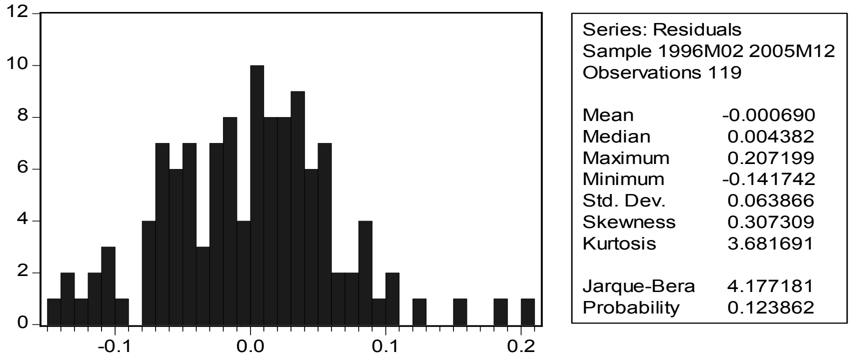


Figure A.13 Normality for Dried Apricot Exports to France

Table A.13.4 Income Effect for Dried Apricot Exports to France

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8058	0.1106	-7.2882	0.0000
D028	0.5477	0.0649	8.4346	0.0000
DLIPSA	**-0.0856**	**0.5290**	**-0.1618**	**0.8717**

A.14 Estimation Results for Dried Apricot Exports to U.K.

Table A.14.1 Unit Root Test for Dried Apricot Exports to U.K.

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.88	ADF(e)=-3.07
ADF(dp)=-5.44	ADF(de)=-6.44

Table A.14.2 Regression for Dried Apricot Exports to U.K.

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2005M12
Included observations: 119 after adjustments
Convergence achieved after 9 iterations
Backcast: 1995M12 1996M01

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8564	0.1148	-7.4577	0.0000
D999	0.1795	0.0582	3.0852	0.0026
D017	-0.2387	0.0595	-4.0134	0.0001
D018	0.2327	0.0581	4.0052	0.0001
D026	0.1970	0.0605	3.2548	0.0015

Table A.14.2 (Continued)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D045	0.2505	0.0592	4.2293	0.0000
D058	-0.3683	0.0582	-6.3267	0.0000
MA(2)	0.3434	0.0925	3.7144	0.0003
R-squared		0.639109	Mean dependent var	0.02493
Adjusted R-squared		0.61635	S.D. dependent var	0.099419
S.E. of regression		0.06158	Akaike info criterion	-2.6721
Sum squared resid		0.420921	Schwarz criterion	-2.48527
Log likelihood		166.9901	Durbin-Watson stat	2.10119

Table A.14.3 Test Results for Dried Apricot Exports to U.K.

Type of Test	Statistic	Prob	
DW	2.1012	n/a	n/a
Serial Correlation LM Test	0.1590	Prob. F(5,106)	0.9768
ARCH LM Test	0.3540	Prob. F(5,108)	0.8787
White Test	0.7283	Prob. F(8,110)	0.6662

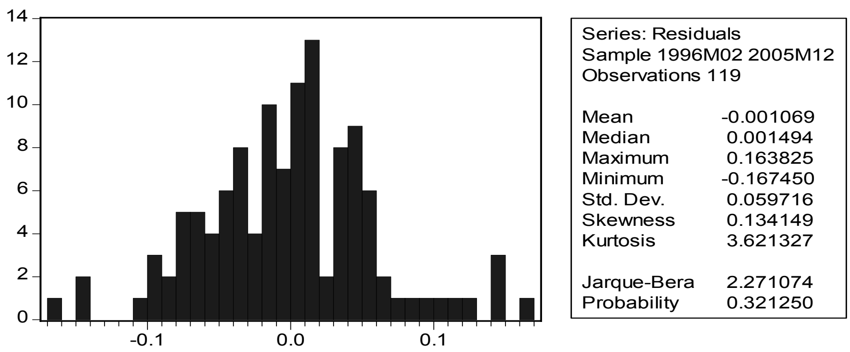


Figure A.14 Normality for Dried Apricot Exports to U.K.

Table A.14.4 Income Effect for Dried Apricot Exports to U.K.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8572	0.1153	-7.4352	0.0000
D999	0.1807	0.0584	3.0921	0.0025
D017	-0.2384	0.0596	-3.9977	0.0001
D018	0.2272	0.0603	3.7672	0.0003
D026	0.2128	0.0759	2.8038	0.0060
D045	0.2513	0.0594	4.2277	0.0000
D058	-0.3663	0.0587	-6.2408	0.0000
DLIPSA	**0.2682**	**0.7550**	**0.3553**	**0.7231**
MA(2)	0.3469	0.0934	3.7143	0.0003

A.15 Estimation Results for Dried Apricot Exports to Germany

Table A.15.1 Unit Root Test for Dried Apricot Exports to Germany

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.22	ADF(e)=-2.43
ADF(dp)=-7.80	ADF(de)=-6.75

Table A.15.2 Regression for Dried Apricot Exports to Germany

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2005M12
Included observations: 119 after adjustments
Convergence achieved after 9 iterations
Backcast: 1996M01

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8085	0.1218	-6.6385	0.0000
D9612	0.1922	0.0602	3.1928	0.0018
D998	-0.1901	0.0603	-3.1515	0.0021
D018	-0.2795	0.0609	-4.5928	0.0000
D039	0.1772	0.0610	2.9068	0.0044
D052	0.3000	0.0603	4.9728	0.0000
MA(1)	0.2409	0.0934	2.5801	0.0112

R-squared	0.4679	Mean dependent var	0.0358
Adjusted R-squared	0.4394	S.D. dependent var	0.0828
S.E. of regression	0.0620	Akaike info criterion	-2.6667
Sum squared resid	0.4304	Schwarz criterion	-2.5032
Log likelihood	165.6695	Durbin-Watson stat	2.0262
Inverted MA Roots	-0.24		

Table A.15.3 Test Results for Dried Apricot Exports to Germany

Type of Test	Statistic	Prob.	
DW	2.0262	n/a	n/a
Serial Correlation LM Test	0.6463	Prob. F(5,107)	0.6649
ARCH LM Test	0.9455	Prob. F(5,108)	0.4548
White Test	0.2958	Prob. F(7,111)	0.9543

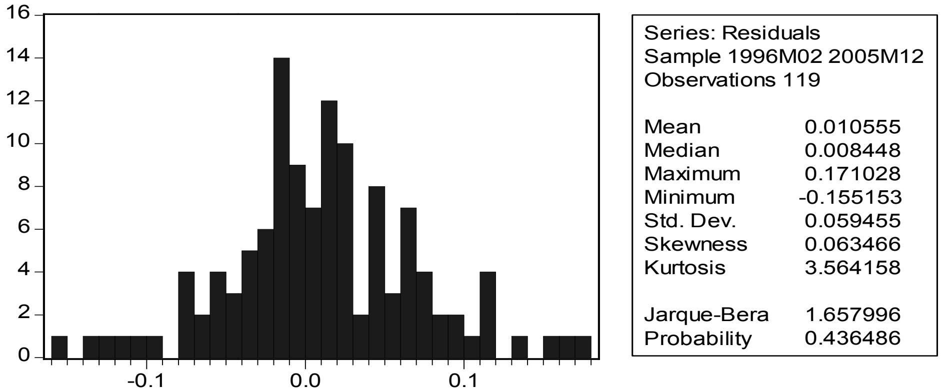


Figure A.15 Normality for Dried Apricot Exports to Germany

Table A.15.4 Income Effect for Dried Apricot Exports to Germany

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.8204	0.1232	-6.6601	0.0000
D9612	0.1921	0.0605	3.1766	0.0019
D998	-0.1931	0.0608	-3.1755	0.0019
D018	-0.2878	0.0628	-4.5834	0.0000
D039	0.1793	0.0614	2.9221	0.0042
D052	0.3037	0.0609	4.9888	0.0000
DLIPSA	**0.2416**	**0.4557**	**0.5301**	**0.5971**
MA(1)	0.2357	0.0945	2.4927	0.0142

A.16 Estimation Results for Dried Apricot Exports to Netherlands

Table A.16.1 Unit Root Test for Dried Apricot Exports to Netherlands

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.44	ADF(e)=-2.47
ADF(dp)=-11.12	ADF(de)=-6.59

Table A.16.2 Regression for Dried Apricot Exports to Netherlands

Dependent Variable: DLP Method: Least Squares Sample (adjusted): 1996M02 2005M12 Included observations: 119 after adjustments Convergence achieved after 10 iterations Backcast: 1996M01

Table A.16.2 (Continued)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.909108	0.131677	-6.9041	0.0000
D026	0.680213	0.092881	7.3235	0.0000
MA(1)	-0.308988	0.088374	-3.4964	0.0007
R-squared	0.4710	Mean dependent var		0.0263
Adjusted R-squared	0.4618	S.D. dependent var		0.1281
S.E. of regression	0.0940	Akaike info criterion		-1.8670
Sum squared resid	1.0242	Schwarz criterion		-1.7969
Log likelihood	114.0838	Durbin-Watson stat		2.0794
Inverted MA Roots	0.31			

Table A.16.3 Test Results for Dried Apricot Exports to Netherlands

Type of Test	Statistic	Prob.	
DW	2.0794	n/a	n/a
Serial Correlation LM Test	1.5567	Prob. F(5,111)	0.1783
ARCH LM Test	0.1674	Prob. F(5,108)	0.9741
White Test	0.3639	Prob. F(3,115)	0.7792

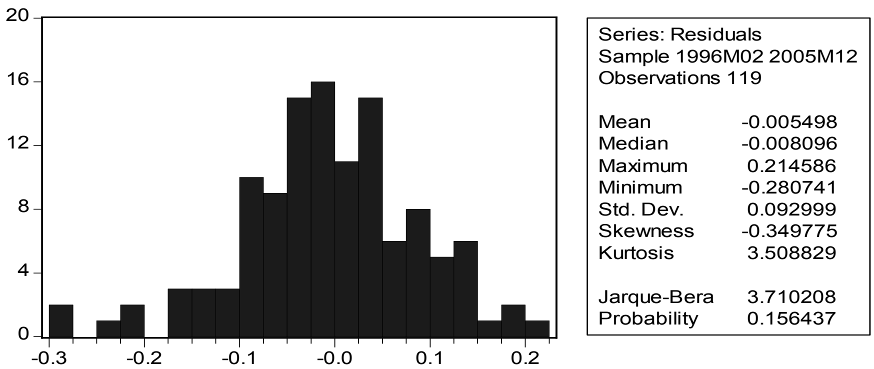


Figure A.16 Normality for Dried Apricot Exports to Netherlands

Table A.16.4 Income Effect for Dried Apricot Exports to Netherlands

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.9097	0.1324	-6.8700	0.0000
D026	0.6794	0.0937	7.2542	0.0000
DLIPSA	**0.0532**	**0.5381**	**0.0988**	**0.9214**
MA(1)	-0.3089	0.0891	-3.4683	0.0007

A.17 Estimation Results for Dried Apricot Exports to Switzerland

Table A.17.1 Unit Root Test for Dried Apricot Exports to Switzerland

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.31	ADF(e)=-2.49
ADF(dp)=-15.30	ADF(de)=-6.72

Table A.17.2 Regression for Dried Apricot Exports to Switzerland

Dependent Variable: DLP Method: ML - ARCH (Marquardt) - Normal distribution Sample (adjusted): 1996M03 2005M12 Included observations: 118 after adjustments Failure to improve Likelihood after 14 iterations				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
DLE	0.5717	0.1952	2.9281	0.0034
DLP(-1)	-0.3991	0.0887	-4.5010	0.0000
Variance Equation				
C	0.0280	0.0052	5.4097	0.0000
RESID(-1)^2	0.3327	0.1950	1.7059	0.0880
GARCH(-1)	-0.4600	0.1646	-2.7943	0.0052
R-squared	0.1574	Mean dependent var		0.0234
Adjusted R-squared	0.1276	S.D. dependent var		0.1738
S.E. of regression	0.1623	Akaike info criterion		-0.8784
Sum squared resid	2.9775	Schwarz criterion		-0.7610
Log likelihood	56.8283	Durbin-Watson stat		1.9898

Table A.17.3 Test Results for Dried Apricot Exports to Switzerland

Type of Test	**Statistic**	**Prob.**	
DW	1.9898	n/a	n/a
ARCH LM Test	0.4390	Prob. F(5,107)	0.8204

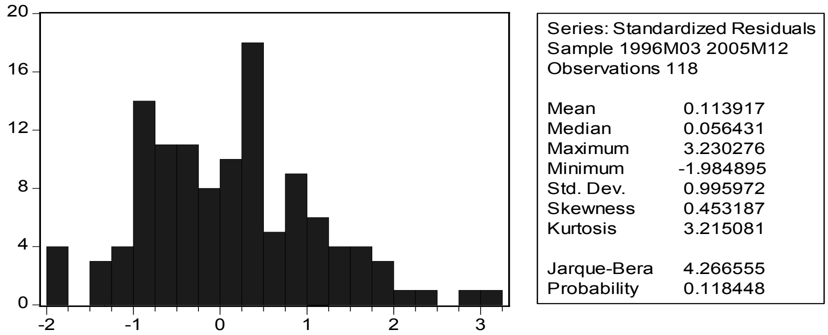


Figure A.17 Normality for Dried Apricot Exports to Switzerland

A.18 Estimation Results for Dried Apricot Exports to the World

Table A.18.1 Unit Root Test for Dried Apricot Exports to the World

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.34	ADF(e)=-2.76
ADF(dp)=-12.65	ADF(de)=-6.36

Table A.18.2 Regression for Dried Apricot Exports to the World

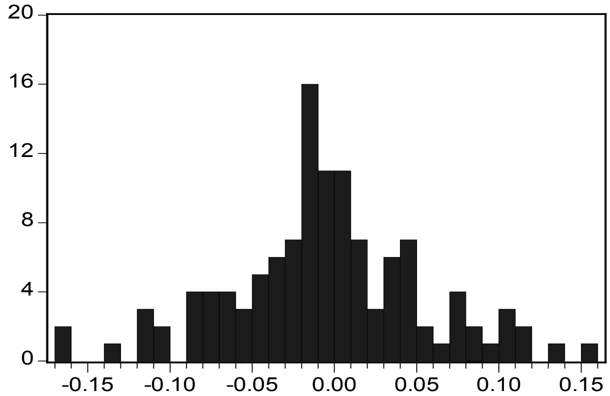
Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2005M12
Included observations: 119 after adjustments
Convergence achieved after 15 iterations
Backcast: 1995M12 1996M01

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
DLE	-1.1648	0.1132	-10.2865	0.0000
D967	-4.6117	0.0546	-84.5148	0.0000
D968	4.6093	0.0546	84.3453	0.0000
D9811	-4.7736	0.0539	-88.5043	0.0000
D9812	4.7641	0.0541	88.0480	0.0000
D045	0.2025	0.0554	3.6539	0.0004
D058	-0.2718	0.0544	-5.0005	0.0000
MA(2)	0.4787	0.0862	5.5499	0.0000

R-squared	0.9954	Mean dependent var	0.0227
Adjusted R-squared	0.9951	S.D. dependent var	0.8788
S.E. of regression	0.0613	Akaike info criterion	-2.6810
Sum squared resid	0.4172	Schwarz criterion	-2.4942
Log likelihood	167.5212	Durbin-Watson stat	2.0464

Table A.18.3 Test Results for Dried Apricot Exports to the World

Type of Test	Statistic	Prob.	
DW	2.0464	n/a	n/a
Serial Correlation LM Test	1.6315	Prob. F(5,106)	0.1580
ARCH LM Test	0.8754	Prob. F(5,108)	0.5002
White Test	0.4821	Prob. F(8,110)	0.8667



Series: Residuals	
Sample 1996M02 2005M12	
Observations 119	
Mean	-0.005677
Median	-0.007352
Maximum	0.151419
Minimum	-0.166346
Std. Dev.	0.059186
Skewness	-0.002574
Kurtosis	3.492108
Jarque-Bera	1.200892
Probability	0.548567

Figure A.18 Normality for Dried Apricot Exports to the World

A.19 Estimation Results for Dried Fig Exports to France

Table A.19.1 Unit Root Test for Dried Fig Exports to France

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-1.96	ADF(e)=-2.48
ADF(dp)=-14.97	ADF(de)=-6.61

Table A.19.2 Regression for Dried Fig Exports to France

Dependent Variable: DLP
Method: Least Squares
Sample (adjusted): 1996M02 2005M12
Included observations: 119 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.6422	0.2737	-2.3467	0.0207
S9	0.4764	0.0490	9.7156	0.0000
D018	-0.7179	0.1475	-4.8661	0.0000
D024	-0.5939	0.1449	-4.0993	0.0001

Table A.19.2 (Continued)

D026	0.9547	0.1492	6.3989	0.0000
D027	-1.1553	0.1489	-7.7592	0.0000
D039	-1.0365	0.1532	-6.7632	0.0000
D0310	0.8074	0.1465	5.5109	0.0000
R-squared	0.7313	Mean dependent var		0.0273
Adjusted R-squared	0.7143	S.D. dependent var		0.2709
S.E. of regression	0.1448	Akaike info criterion		-0.9618
Sum squared resid	2.3280	Schwarz criterion		-0.7750
Log likelihood	65.2274	Durbin-Watson stat		2.1692

Table A.19.3 Test Results for Dried Fig Exports to France

Type of Test	**Statistic**	**Prob.**	
DW	2.1692	n/a	n/a
Serial Correlation LM Test	0.8670	Prob. F(5,106)	0.5059
ARCH LM Test	0.3436	Prob. F(5,108)	0.8854
White Test	1.4139	Prob. F(9,109)	0.1909

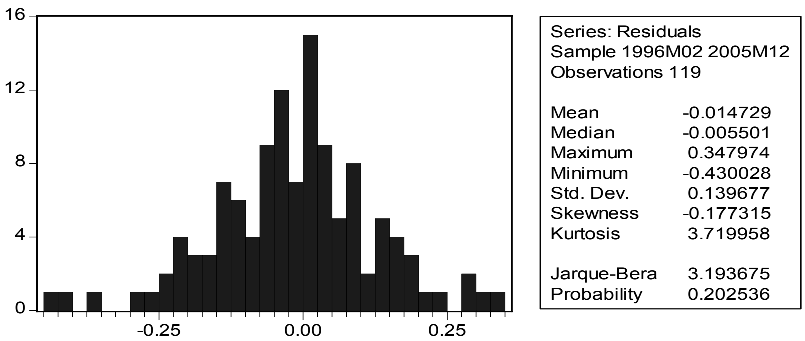


Figure A.19 Normality for Dried Fig Exports to France

Table A.19.4 Income Effect for Dried Fig Exports to France

DLE	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
S9	-0.6564	0.2721	-2.4126	0.0175
D018	0.4750	0.0487	9.7479	0.0000
D024	-0.7357	0.1470	-5.0041	0.0000
D026	-0.6123	0.1444	-4.2393	0.0000
D027	0.9547	0.1482	6.4402	0.0000
D039	-1.1384	0.1483	-7.6747	0.0000
D0310	-1.0253	0.1524	-6.7265	0.0000
DLE	0.7709	0.1475	5.2277	0.0000
DLIPSA	**1.8735**	**1.2003**	**1.5609**	**0.1214**

A.20 Estimation Results for Dried Fig Exports to Germany

Table A.20.1 Unit Root Test for Dried Fig Exports to Germany

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.24	ADF(e)=-2.43
ADF(dp)=-11.45	ADF(de)=-6.75

Table A.20.2 Regression for Dried Fig Exports to Germany

Dependent Variable: DLP
Method: ML - ARCH (Marquardt) - Normal distribution
Sample (adjusted): 1996M03 2005M12
Included observations: 118 after adjustments
Convergence achieved after 34 iterations

Variable	Coefficient	Std. Error	z-Statistic	Prob.
DLE	-1.0433	0.2345	-4.4500	0.0000
DLP(-1)	-0.3248	0.0912	-3.5624	0.0004
DLIPSA	2.9636	1.3449	2.2035	0.0276
Variance Equation				
C	0.0179	0.0041	4.3507	0.0000
RESID(-1)^2	0.7038	0.2894	2.4316	0.0150

R-squared	0.1218	Mean dependent var	0.0272
Adjusted R-squared	0.0907	S.D. dependent var	0.2161
S.E. of regression	0.2061	Akaike info criterion	-0.4188
Sum squared resid	4.7978	Schwarz criterion	-0.3014
Log likelihood	29.7120	Durbin-Watson stat	2.1430

Table A.20.3 Test Results for Dried Fig Exports to Germany

Type of Test	Statistic	Prob.	
DW	2.1430	n/a	n/a
ARCH LM Test	0.7284	Prob. F(5,107)	0.6036

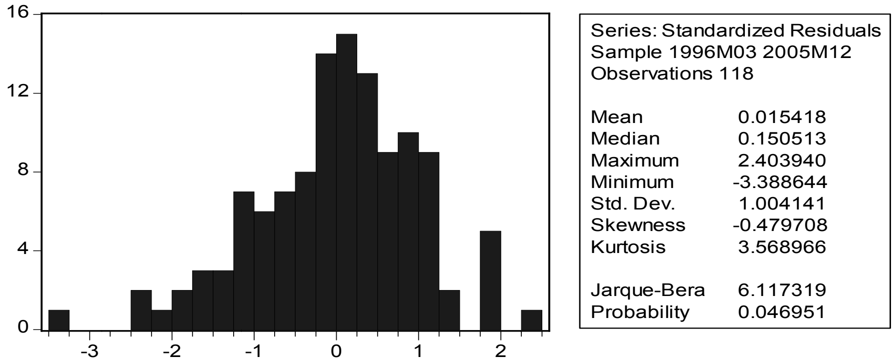


Figure A.20 Normality for Dried Fig Exports to Germany

A.21 Estimation Results for Dried Fig Exports to Spain

Table A.21.1 Unit Root Test for Dried Fig Exports to Spain

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.60	ADF(e)=-2.41
ADF(dp)=-11.07	ADF(de)=-6.77

Table A.21.2 Regression for Dried Fig Exports to Spain

Dependent Variable: DLP
Method: ML - ARCH (Marquardt) - Normal distribution
Sample (adjusted): 1996M03 2005M12
Included observations: 118 after adjustments
Convergence achieved after 23 iterations

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
DLE	-1.1664	0.2576	-4.5287	0.0000
DLP(-1)	-0.5485	0.0604	-9.0798	0.0000
S6	0.1375	0.0513	2.6816	0.0073
S8	0.1380	0.0449	3.0768	0.0021
S9	0.2204	0.0570	3.8644	0.0001
Variance Equation				
C	0.0003	0.0006	0.4468	0.6550
GARCH(-1)	0.9982	0.0282	35.4060	0.0000

Table A.21.3 Test Results for Dried Fig Exports to Spain

Type of Test	Statistic	Prob.	
DW	2.1142	n/a	n/a
ARCH LM Test	0.4323	Prob. F(5,107)	0.825226

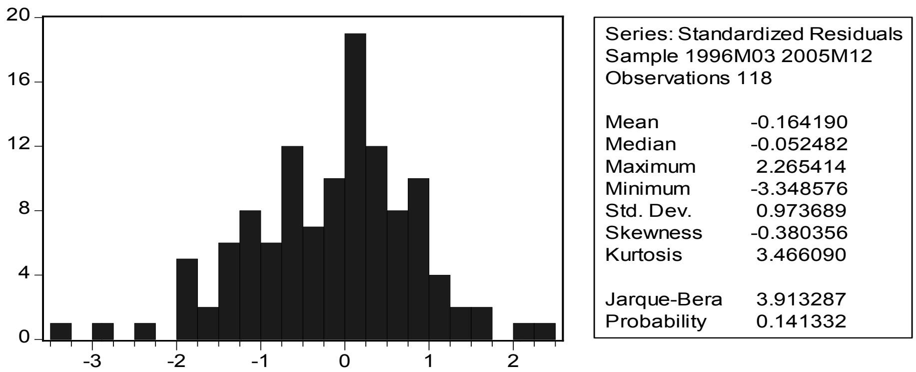


Figure A.21 Normality for Dried Fig Exports to Spain

Table A.21.4 Income Effect for Dried Fig Exports to Spain

Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
DLE	-1.1681	0.2639	-4.4269	0.0000
DLP(-1)	-0.5503	0.0605	-9.0959	0.0000
S6	0.1397	0.0526	2.6559	0.0079
S8	0.1406	0.0449	3.1343	0.0017
S9	0.2168	0.0580	3.7385	0.0002
DLIPSA	**-0.7037**	**1.0431**	**-0.6747**	**0.4999**
Variance Equation				
C	0.0002	0.0006	0.3956	0.6924
GARCH(-1)	0.9994	0.0283	35.2777	0.0000

A.22 Estimation Results for Dried Fig Exports to the World

Table A.22.1 Unit Root Test for Dried Fig Exports to the World

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.73	ADF(e)=-2.45
ADF(dp)=-11.00	ADF(de)=-6.67

Table A.22.2 Regression for Dried Fig Exports to the World

Dependent Variable: DLP Method: ML - ARCH (Marquardt) - Normal distribution Sample (adjusted): 1996M02 2005M12 Included observations: 119 after adjustments Convergence achieved after 21 iterations MA backcast: 1996M01, Variance backcast: ON				
Variable	**Coefficient**	**Std. Error**	**z-Statistic**	**Prob.**
DLE	-0.6760	0.1208	-5.5962	0.0000
S8	-0.1296	0.0242	-5.3497	0.0000
S9	0.2413	0.0269	8.9636	0.0000
MA(1)	-0.2975	0.1020	-2.9151	0.0036
Variance Equation				
C	0.0063	0.0012	5.2521	0.0000
RESID(-1)^2	0.5136	0.2019	2.5437	0.0110
R-squared	0.4281	Mean dependent var		0.0268
Adjusted R-squared	0.4028	S.D. dependent var		0.1472
S.E. of regression	0.1137	Akaike info criterion		-1.6518
Sum squared resid	1.4614	Schwarz criterion		-1.5117
Log likelihood	104.2821	Durbin-Watson stat		2.2549

Table A.22.3 Test Results for Dried Fig Exports to the World

Type of Test	**Statistic**	**Prob.**	
DW	2.2549	n/a	n/a
ARCH LM Test	0.3329	Prob. F(5,108)	0.8921

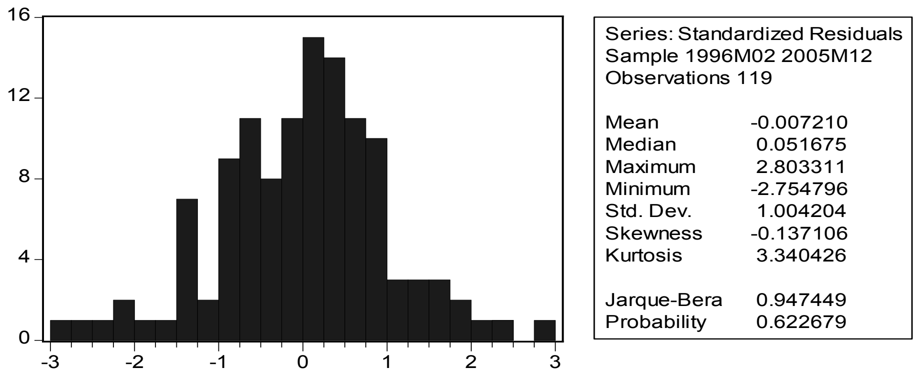


Figure A.22 Normality for Dried Fig Exports to the World

A.23 Estimation Results for Feldspar Exports to Italy

Table A.23.1 Unit Root Test for Feldspar Exports to Italy

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.20	ADF(e)=-2.64
ADF(dp)=-15.72	ADF(de)=-6.68

Table A.23.2 Regression for Feldspar Exports to Italy

Dependent Variable: DLP Method: Least Squares Sample (adjusted): 1996M03 2005M12 Included observations: 118 after adjustments				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
DLE	-1.1768	0.1832	-6.4218	0.0000
D972	0.6049	0.1057	5.7256	0.0000
D974	-0.4472	0.1105	-4.0475	0.0001
D985	0.5585	0.1061	5.2612	0.0000
DLP(-1)	-0.4444	0.0660	-6.7293	0.0000
R-squared	0.5476	Mean dependent var		0.0289
Adjusted R-squared	0.5316	S.D. dependent var		0.1544
S.E. of regression	0.1056	Akaike info criterion		-1.6160
Sum squared resid	1.2612	Schwarz criterion		-1.4986
Log likelihood	100.3426	Durbin-Watson stat		1.9662

Table A.23.3 Test Results for Feldspar Exports to Italy

Type of Test	Statistic	Prob.	
DW	1.9662	n/a	n/a
Serial Correlation LM Test	1.0706	Prob. F(5,108)	0.3808
ARCH LM Test	2.0210	Prob. F(5,107)	0.0814
White Test	0.7714	Prob. F(7,110)	0.6125

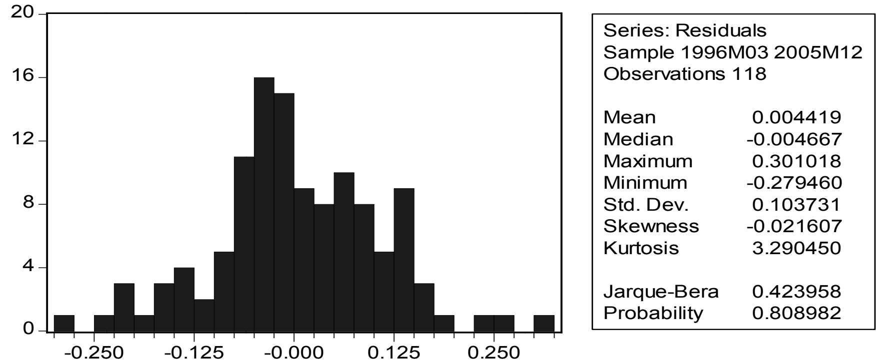


Figure A.23 Normality for Feldspar Exports to Italy

Table A.23.4 Income Effect for Feldspar Exports to Italy

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
DLE	-1.1121	0.1842	-6.0372	0.0000
D972	0.6455	0.1065	6.0595	0.0000
D974	-0.3829	0.1142	-3.3525	0.0011
D985	0.5664	0.1050	5.3948	0.0000
DLP(-1)	-0.4391	0.0653	-6.7225	0.0000
DLIPSA	**-2.3040**	**1.1987**	**-1.9221**	**0.0571**

A.24 Estimation Results for Feldspar Exports to Spain

Table A.24.1 Unit Root Test for Feldspar Exports to Spain

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.45	ADF(e)=-2.41
ADF(dp)=-18.59	ADF(de)=-6.77

Table A.24.2 Regression for Feldspar Exports to Italy

Dependent Variable: DLP Method: Least Squares Sample (adjusted): 1996M02 2005M12 Included observations: 119 after adjustments Convergence achieved after 7 iterations Backcast: 1996M01

Table A.24.2 (Continued)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-1.2049	0.0914	-13.1767	0.0000
D023	-0.3421	0.1010	-3.3885	0.0010
MA(1)	-0.8116	0.0556	-14.6021	0.0000
R-squared	0.4458	Mean dependent var		0.0326
Adjusted R-squared	0.4363	S.D. dependent var		0.2213
S.E. of regression	0.1661	Akaike info criterion		-0.7272
Sum squared resid	3.2016	Schwarz criterion		-0.6571
Log likelihood	46.2670	Durbin-Watson stat		2.0433

Table A.24.3 Test Results for Feldspar Exports to Spain

Type of Test	Statistic	Prob.	
DW	2.0433	n/a	n/a
Serial Correlation LM Test	0.3949	Prob. F(5,111)	0.8514
ARCH LM Test	1.3127	Prob. F(5,108)	0.2640
White Test	0.2758	Prob. F(3,115)	0.8428

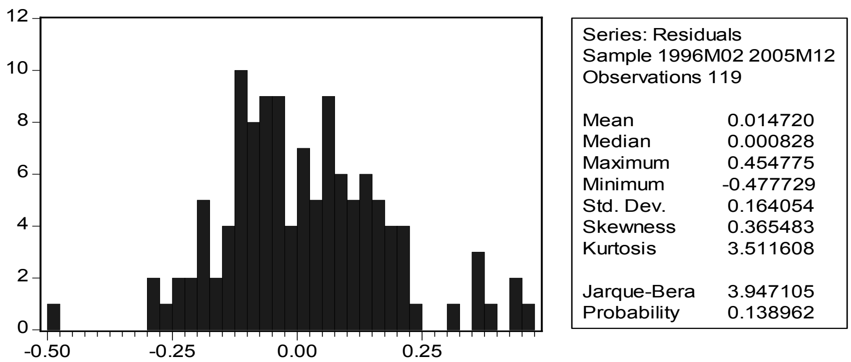


Figure A.24 Normality for Feldspar Exports to Spain

Table A.24.4 Income Effect for Feldspar Exports to Spain

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-1.1867	0.0961	-12.3440	0.0000
D023	-0.3314	0.1024	-3.2367	0.0016
DLIPSA	**0.6345**	**0.8998**	**0.7051**	**0.4821**
MA(1)	-0.8082	0.0566	-14.2922	0.0000

A.25 Estimation Results for Feldspar Exports to Spain

Table A.25.1 Unit Root Test for Feldspar Exports to Israel

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.05	ADF(e)=-3.13
ADF(dp)=-14.17	ADF(de)=-6.97

Table A.25.2 Regression for Feldspar Exports to Israel

Dependent Variable: DLP Method: Least Squares Sample (adjusted): 1996M04 2005M12 Included observations: 117 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.3670	0.7990	-0.4594	0.6469
DLP(-1)	-0.8218	0.0759	-10.8225	0.0000
DLP(-2)	-0.3998	0.0760	-5.2617	0.0000
D036	-2.3290	0.5033	-4.6269	0.0000
D041	-2.1518	0.5123	-4.2002	0.0001
R-squared	0.5572	Mean dependent var		0.0242
Adjusted R-squared	0.5413	S.D. dependent var		0.7394
S.E. of regression	0.5008	Akaike info criterion		1.4965
Sum squared resid	28.0863	Schwarz criterion		1.6145
Log likelihood	-82.5427	Durbin-Watson stat		2.0270

Table A.25.3 Test Results for Feldspar Exports to Israel

Type of Test	**Statistic**	**Prob.**	
DW	2.0270	n/a	n/a
Serial Correlation LM Test	0.6778	Prob. F(5,107)	0.6412
ARCH LM Test	1.3344	Prob. F(5,106)	0.2554
White Test	1.7501	Prob. F(8,108)	0.0950

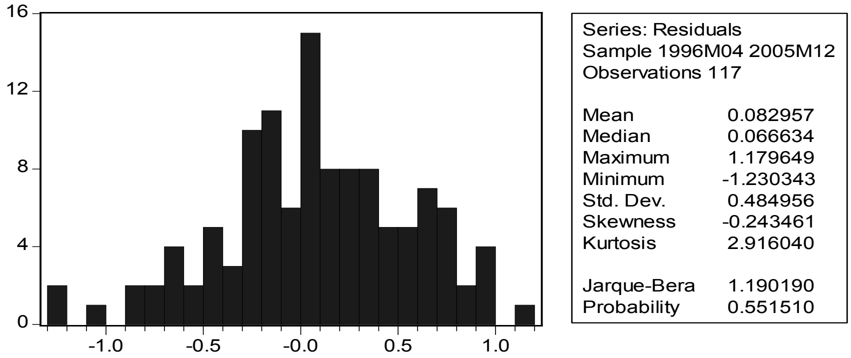


Figure A.25 Normality for Feldspar Exports to Israel

Table A.25.4 Income Effect for Feldspar Exports to Israel

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.1529	0.8157	-0.1874	0.8517
DLP(-1)	-0.8105	0.0763	-10.6218	0.0000
DLP(-2)	-0.3908	0.0762	-5.1322	0.0000
D036	-2.3435	0.5023	-4.6656	0.0000
D041	-2.0387	0.5192	-3.9267	0.0001
DLIPSA	**-2.8585**	**2.3084**	**-1.2383**	**0.2182**

A.26 Estimation Results for Feldspar Exports to the World

Table A.26.1 Unit Root Test for Feldspar Exports to the World

$p \sim I(1)$	$e \sim I(1)$
ADF(p)=-2.04	ADF(e)=-2.56
ADF(dp)=-10.88	ADF(de)=-6.71

Table A.26.2 Regression for Feldspar Exports to the World

Dependent Variable: DLP Method: Least Squares Sample (adjusted): 1996M03 2005M12 Included observations: 118 after adjustments Convergence achieved after 8 iterations Backcast: 1996M02

Table A.26.2 (Continued)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLE	-0.9431	0.0888	-10.6147	0.0000
D973	5.0216	0.1109	45.2625	0.0000
D974	-4.9424	0.1161	-42.5584	0.0000
DLP(-1)	0.0593	0.0226	2.6308	0.0097
MA(1)	-0.6953	0.0700	-9.9286	0.0000
R-squared	0.9708	Mean dependent var		0.0277
Adjusted R-squared	0.9698	S.D. dependent var		0.6334
S.E. of regression	0.1101	Akaike info criterion		-1.5336
Sum squared resid	1.3695	Schwarz criterion		-1.4162
Log likelihood	95.4848	Durbin-Watson stat		1.9923
Inverted MA Roots	0.7			

Table A.26.3 Test Results for Feldspar Exports to the World

Type of Test	Statistic	Prob.	
DW	1.9923	n/a	n/a
Serial Correlation LM Test	1.6376	Prob. F(5,108)	0.1562
ARCH LM Test	1.6273	Prob. F(5,107)	0.1590
White Test	2.0195	Prob. F(3,111)	0.1153

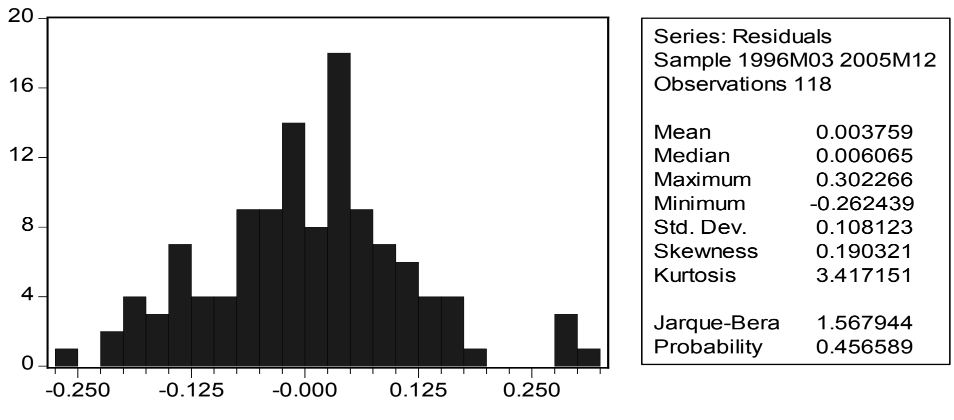


Figure A.26 Normality for Feldspar Exports to the World

APPENDIX B

CN-CODES AND SYMBOLS

Table 27 CN-Codes of the Included Variables

CN-Code	Product Description
80222000011	Hazelnut Kernel (standard extra)
80222000012	Hazelnut Kernel (standard I)
80222000013	Hazelnut Kernel (standard II)
80222000014	Hazelnut Kernel (standard III)
80222000015	Hazelnut Kernel (mediocre)
80222000016	Hazelnut Kernel (standard other)
80222000018	Hazelnu Kernel (wrinkled)
80222000022	Shredded Hazelnut (from natural hazelnut kernel)
80222000023	Sliced Hazelnut (from natural hazelnut kernel)
80620120011	Dried Grape; furrant extra; packed =<2 kg
80620120012	Dried Grape; furrant first class; packed =<2 kg
80620920011	Dried Grape; furrant extra; packed >2 kg
80620920012	Dried Grape; furrant first class; packed >2 kg
81310000011	Dried Apricot; extra
81310000012	Dried Apricot; first class
81310000013	Dried Apricot; second class
81310000014	Dried Apricot; indıustrial
80420900011	Dried Fig; extra dry
80420900012	Dried Fig; first class dry
80420900013	Dried Fig; second class dry
252910000011	Feldspar; crude
252910000012	Feldspar; grint
252910000013	Feldspar; skimmed
252910000019	Feldspar; other

Source: Undersecretariat of the Prime Ministry for Foreign Trade, Republic of Turkey

A.28 Symbols in the Estimations

Table A.28 Symbols of the Variables in Estimation Equations

Symbol	**Variable**
DLP	First difference of logarithm of the export price in YTL
DLE	First difference of logarithm of the exchange rate (foreign currency in terms of YTL)
DLIPSA	First difference of logarithm of the seasonally adjusted industrial production
MA(n)	nth order of moving average process
D”yym”	Dummy variables for the month “m” of the year “yy”