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# **Analysis of wood-based panels import to Iran: Simultaneous equations model approach**

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The consumption of forest product commodities in Iran is primarily based on import. So, the knowledge of wood and wood product import is of prime importance to the national economy and provides a useful guide to producers and importers of such commodities and the policy makers. In this paper, the import for wood based panels including particleboard, plywood and veneer in Iran during the period of 1984 to 2008 is empirically analyzed using a three-stage squares simulation model (3SLS). Prior to estimation, Augmented Dickey Fuller (ADF) test was applied to investigate the stationary character of the data Table 1. The results indicate that the behavior of demand for imports of these products is not identical in response to changes in the effective factors. The price elasticity for particleboard and plywood imports were calculated as -0.56 and -1.23 respectively. Whereas the import of veneer was price -inelastic. The income elasticity for imports of particleboard, plywood and veneer were calculated as 2.03, 3.39 and 3.91 respectively. The export petroleum income showed positive impact on demand for imports of veneer, but cannot influence imports demand of particleboard and plywood. Demand for import of all the mentioned products is affected by exchange rate variations. The domestic production quantities of plywood and veneer have adverse impact on demand for import of these products. However, for particleboard, the out dated production structure of domestic manufacturing facilities causes the inefficiency of locally produced particleboard to affect the demand for import. For the studied commodities, import variable with the first lagged have adverse impact on the current demand for their imports. The impact of explanatory variables on import demand for particleboard, plywood and veneer are consistent with economic theories.

**Key words:** Elasticities, import demand, particleboard, plywood, simultaneous equations, veneer.

## **INTRODUCTION**

The need for wood and wood -based panels in Iran have increased in the recent years, and over the last ten years, the consumption of particleboard, plywood and veneer shows the average annual growth of 8, 5 and 6% respectively (Mofrad, 2010). However, due to insufficient available production capacities, out dated machineries, the lack of suitable raw material as well as inadequate investment, production quantities of these products have not been sufficient to satisfy the growing domestic demands. Therefore, considerable volume of consumption requirements has been supplied through imports.

The results show that during the mentioned period, the import quantities of these products reveal the growth of almost 30, 41 and 35% respectively (Mofrad, 2010). Thus, the dependence of Iran wood- based panels is very high. Therefore, from the economic point of view, studying the country's demand for wood -based panels import and monitoring its evolution over the time, is an important issue that merits careful examination. This kind of analysis could be useful for the industry as well as the policy makers to improve the exiting industries and encourage the establishment of new facilities. Considering the importance of such phenomenon and vast volume of forest products trade on international scale, it is necessary to provide better understanding of the forces driving the demand for imports of wood -based panels

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in general.

Demand for forest product imports, or the demand for exports, has been studied in several papers during the last decades. Some of them have focused on the price differential between domestic and import product as factors influencing the demand for imports. It was shown that the domestic to imported products price ratio of forest products in Iran is the most important factor in imports (Saber, 1995). Other studies concentrated on the additional explanatory variables perceived to be demand driving; for example exchange rate changes. Uusivuori and Buongiorno (1990) concluded that while exchanges may influence the import quantities in the short-run, there is no evidence of long-run effects. Kim et al. (2003) analyzed the effect of currency value change on the forest products import in South Korea and explained; the currency value change accounts for approximately 10% of variation in import quantity of hardwood round wood. The studies by Shahvahid (1991), Blatner (1989) and Chou and Buongiorno (1982) cover additional explanatory variables perceived to be demand-driving; for example industrial production or purchasing power. In the most of studies, both import and export are considered intimate substitutes for domestic products of importing country. Zhang and Gan (2007) expressed that "as a result of economic growth and lack of wooden resources in China, import of forest products have increased in the recent years". The effects of tariff liberalization on forest products sector are studied and it is tried to forecast its impact on global wood trade initiating from the elimination of import tariffs (Zhu et al., 2001). Elimination of all tariffs on forest products could increase their global consumption and change the composition of trade (French, 1999; Zhu et al., 2001), although, environmental groups are concerned with increased deforestation to meet the higher demand (French, 1999). Moreover, Gan (2004) demonstrated that China's accession to WTO (World Trade Organization) would significantly increase its imports of forest products and reduce its domestic market prices of lumber and wood products as well as pulp, paper and related products.

Arabatzi and Klonaris (2009) analyzed the Greek aggregate import demand for unprocessed wood (such as logs) processed wood (such as sawn lumber), veneer and wood manufactured parts during the period 1969 to 2001 using the linear approximation of quadratic AIDS model. The results indicated that imports of unprocessed wood, veneer and wood manufactured parts are price – elastic. In contrast to processed wood imports, processed wood, veneer and wood manufactured parts imports are found to be expenditure–elastic while unprocessed wood is found to be an inferior good. Substitution possibilities are found to be significant between veneer and other wood imports and between processed wood and unprocessed wood.

Currently, despite the heavy reliance of Iran on wood and wood product imports as it was aforementioned,

empirical economic research on the country's demand for imported wood and wood products is limited and mainly descriptive (Saber, 1995; Bayat et al, 2007). However, there are numerous studies estimating import demand elasticities for a wide variety of forest commodities (Turner and Buongiorno, 2004) and others such as Li et al. (2002), Parthama and Vincent (1992) and Saber (1995). Of course, the coverage on forest products is imperfect, and the results of previous studies are difficult to compare because of differences in product definition, data sources, period covered, model form and estimation methods.

Most of the previous investigations on demand for forest products imports, individually apply econometric models (simple regression analysis and multiple regression analysis) (Turner and Buongiorno, 2004; Li et al., 2002), but in this paper, we estimated demand for imports functions of wood-based panels in Iran using simultaneous equations system. The reason to use such model is the existence of reciprocal effects of mentioned products imports on each other. In this situation, applying methods that could investigate the effectiveness of the variables on imports of these products simultaneously are important.

The objective of this paper is to provide an empirical investigation of the demand for wood-based panel imports (particleboard, plywood and veneer) and the quantification of the responses of different imported wood-based panel products in response to changes in price and income. For this purpose, we used annual data for the period of 1984 to 2008 and systematic approach of iterative three stage least squares (3SLS). Due to the existence of the correlation between residual terms in structural equations of demand for import, the 3SLS was selected. Another reason to use this method is its strength and perfection among the other systemic approaches with FIML (full information maximum likelihood). However, both methods are consistent and efficient (Abrishami, 1999). Price and income elasticities of wood-based panel demand for imports can be derived from the estimated model. By comparing the result of our model with previous studies, this research emphasizes the implication of including delayed (lagged) quantity dependent variables in market modeling.

## MATERIALS AND METHODS

### Theoretical models

The key issues in modeling import demand are the correct selection of explanatory variables, choice of functional form and the characterization of dynamic adjustments (Parthama and Vincent, 1992). Here, the demand for import of wood-based panels in Iran including particleboard, plywood and veneer, as endogenous variables is considered as function of several explanatory variables. The procedure to select the variable was based on the theoretical background of economic theories and influential macroeconomic data. Demand for import of wood-based panels is estimated

applying simultaneous equations according to the 3SLS procedure and the time series data for the period of 1984 to 2008. The functional form of import demand equations is in the form of log-log equations, which allows direct interpretation of estimated coefficients in terms of elasticity. This model includes three logarithmic equations for imports of particleboard, plywood and veneer ( $i=1, 2, 3$ ) respectively.

### Particleboard

$$\ln(IM_{1t})=C_1+C_2\ln(R_{1t})+C_3\ln(GDP_t)+C_4\ln(OL_t)+C_5\ln(ER_t)+C_6\ln(Q_{1t})+C_7\ln(IM_{1t-1})+U_{1t} \quad (1)$$

Where  $IM_{1t}$  is import demand of particleboard in Iran in year  $t$ ,  $R_{1t}$  is the imported price-domestic price ratio of particleboard in year  $t$ ,  $GDP_t$  is the Gross domestic product in year  $t$ ,  $OL_t$  is the Iran's petroleum export income in year  $t$ ,  $ER_t$  is the nominal exchange rate in Iran in year  $t$ ,  $Q_{1t}$  is the quantity of particleboard production in Iran in year  $t$ ,  $IM_{1t-1}$  is the imported particleboard into country in the previous year and  $U_{1t}$  is the import demand residual term of particleboard. According to the afore-stated function, it is expected that the coefficient signs of variables will be as follows:

$$C_2<0, C_3>0, C_4>0, C_5<0, C_6<0, C_7>0$$

### Plywood

$$\ln IM_{2t}=C_8+C_9\ln R_{2t}+C_{10}\ln GDP_t+C_{11}\ln OL_t+C_{12}\ln ER_t+C_{13}\ln Q_{2t}+C_{14}\ln IM_{2t-1}+U_{2t} \quad (2)$$

In this equation,  $IM_{2t}$  is import demand of plywood in Iran in year  $t$ ,  $R_{2t}$  is the imported price-domestic price ratio of plywood in year  $t$ ,  $Q_{2t}$  is the quantity of plywood production in Iran in year  $t$ ,  $IM_{2t-1}$  is the imported plywood into country in the previous year and  $U_{2t}$  is the import demand residual term of plywood. It is expected that the coefficient signs of variables will be as follows:

$$C_9<0, C_{10}>0, C_{11}>0, C_{12}<0, C_{13}<0, C_{14}>0$$

### Veneer

$$\ln IM_{3t}=C_{15}+C_{16}\ln R_{3t}+C_{17}\ln GDP_t+C_{18}\ln OL_t+C_{19}\ln ER_t+C_{20}\ln Q_{3t}+C_{21}\ln IM_{3t-1}+U_{3t} \quad (3)$$

Where  $IM_{3t}$  is import demand of veneer in Iran in year  $t$ ,  $R_{3t}$  is the imported price-domestic price ratio of veneer in year  $t$ ,  $Q_{3t}$  is the quantity of veneer production in Iran in year  $t$ ,  $\ln IM_{3t-1}$  is the imported veneer into country in the previous year,  $U_{3t}$  is the import demand residual term of veneer. It is expected that the coefficient signs of variables will be as follows:

$$C_{16}<0, C_{17}>0, C_{18}>0, C_{19}<0, C_{20}<0, C_{21}>0$$

### Data

The time series data from 1984 to 2008 were used to estimate the equations. Import quantities of particleboard, plywood and veneer (expressed in  $m^3$ ) were taken from Iran Foreign Trade Annual book. The data for the domestic and imported prices of mentioned products in rials were collected from the Ministry of Industries and Mines and Islamic Republic Iran customs administration respectively. The quantities of particleboard, plywood and veneer produced in  $m^3$  were received from the Statistical Center of Iran. All

data related to exported petroleum income, nominal exchange rate and gross domestic product (GDP) were collected from Central Bank of Iran and the values were deflated based on the year 1997.

The term "stationary" is used to define a condition that must be assessed for time series analysis. A time series is said to be stationary if the mean and auto-covariance of the series do not depend on time. This means that the series does not show an upward or downward trend over time. Standard estimation procedures cannot be applied to a model that contains a non-stationary variable. Also, a non-stationary time series has the possibility of spurious regression. Therefore, we should check whether a series is stationary or not before using it in a model. The formal method of testing the stationary character of a series is the unit root test. To find out if any series is stationary, the regression was run on:

$$y_t = c + \sum_{i=1}^n \alpha_i y_{t-i} + U_t$$

Where  $y_t$  is the vector for import demand quantities of particleboard, plywood and veneer. Also, it was determined whether the absolute value of any  $\alpha_i$  was statistically equal to one on the basis of  $t$  statistics. The estimated coefficient was divided by its standard error to compute the statistics, and the results were referred to the Dickey-Fuller table. If the absolute computed value exceeded the Dickey-Fuller absolute critical value, then the hypothesis that the given time series is non-stationary was rejected. On the other hand, if it is less than the absolute critical value, then the time series was found to be non-stationary. The test was run with an intercept and a trend, against intercept but not a trend. If the series was non-stationary, it was transformed by taking the first derivatives over 1 year. The above procedure was repeated until a stationary series was reached. Delays (lags) of endogenous variables impose impacts on the mentioned products import demand because the response of dependent variables to changes in independent variables may take several time periods. However, these delayed (lagged) quantity variables are mainly correlated with imported quantities.

## RESULTS

The results of unit root test indicated that some of the variables are non-stationary at 5% level but after the first and second differentiation, the data will be stationary. Therefore, variables are designated as  $I(0)$ , integrated of the order 0, as  $I(1)$ , integrated of the order 1, as  $I(2)$ , or integrated of the order 2, and then introduced to the model. The results of Augmented Dickey Fuller tests are summarized in Table 1.

Before the estimation, we examined the equations considering the identifiability and all of them are assigned the order and rank conditions over the identified condition. Then, we were able to estimate the coefficients that are summarized in Tables 2, 3 and 4 respectively.

As observed in the demand for import function of particleboard, the intercept (the average effects of all omitted variables from model on dependent variable) is significant at the 5% level. The coefficient of relative price for imported particleboard (imported price-domestic price ratio) was estimated as -0.56, which is significant, indicating that whenever either the imported price or domestic price increases or decreases by 1% respectively, demand for import of particleboard decreases

**Table 1.** Augmented Dickey \_fuller tests for individual variables.

Variable	Trend and intercept		Intercept		Results
	ADF-statistics	Critical value*	ADF-statistics	Critical value*	
LnIM <sub>1t</sub>	-3.61	-3.89(0)			Stationary
LnR <sub>1t</sub>	-3.63	-4.29(2)			Stationary
LnQ <sub>1t</sub>	-3.64	-5.33(3)			Stationary
LnIM <sub>2t</sub>	-3.61	-1.29(0)	-2.99	-1.37(0)	Non-stationary
D( LnIM <sub>2t</sub> )			-2.99	-3.54(0)	Stationary
LnR <sub>2t</sub>	-3.64	-3.9(3)			Stationary
LnQ <sub>2t</sub>	-3.61	-3.90(3)	-2.99	-0.32(1)	Non-stationary
D(LnQ <sub>2t</sub> )	-3.62	-6.18(0)	-2.99	-5.63(0)	Stationary
LnIM <sub>3t</sub>	-3.61	-2.07(0)	-2.99	-1.55(0)	Non -stationary
D( LnIM <sub>3t</sub> )	-3.62	-3.86(0)	-2.99	-3.94(0)	Stationary
LnR <sub>3t</sub>	-3.61	-4.63(0)	-2.99	-3.38(0)	Stationary
LnQ <sub>3t</sub>	-3.62	-3.81(1)			Stationary
LnGDP <sub>t</sub>	-3.62	-3.99(1)			Stationary
LnOI <sub>t</sub>	-3.64	-2.03(3)	-3.00	-2.20(2)	Non-stationary
D(LnOI <sub>t</sub> )	-3.65	-3.95(3)	-3.00	-4.56(1)	Stationary
LnER <sub>t</sub>	-3.64	-3.95(3)	-3.01	-2.02(3)	Non-stationary
D(LnER <sub>t</sub> )	-3.64	-2.18(2)	-3.01	-1.55(2)	Non-stationary
D(LnER <sub>t</sub> ,2)	-3.67	-4.16(3)	-3.02	-4.22(3)	Stationary

\*indicates statistical significant at 5% level.

**Table 2.** Import demand 3SLS coefficients estimate for particleboard.

Import demand function LnIM1t: Dependent variable	Coefficients	Standard error	T- statistics
Constant	-89.84*	19.75	-4.54
LnR1t	-0.56*	0.19	-2.89
LnGDPt	2.03*	3.53	2.38
LnOI <sub>t</sub>	0.94	0.92	1.01
LnER <sub>t</sub>	-8.10*	3.02	-2.68
LnQ1t	-0.33	2.15	0.15
LnIMt-1	0.60*	0.15	3.95
R <sup>2</sup> =0.85			

\*indicates statistical significant at 5% level.

**Table 3.** Import demand 3SLS coefficients estimate for plywood.

Import demand function LnIM <sub>2t</sub> :Dependent variable	Coefficients	Standard error	T - statistics
Constant	113.57*	19.75	-4.54
LnR <sub>2t</sub>	-1.23*	1.03	-5.30
LnGDP <sub>t</sub>	3.39*	2.44	-1.38
LnOI <sub>t</sub>	1.21	1.76	0.68
LnER <sub>t</sub>	-13.81*	5.14	-2.68
LnQ <sub>2t</sub>	-7.16*	1.29	-5.51
LnIM <sub>2t-1</sub>	2.38*	0.36	6.55
R <sup>2</sup> =0.90			

\*indicates statistical significant at 5% level.

**Table 4.** Import demand 3SLS coefficients estimate for veneer.

Import demand function $\text{LnIM}_{3t}$ :Dependent variable	Coefficients	Standard error	T- statistics
Constant	-10.29	16.79	-0.61
$\text{LnR}_{3t}$	-0.21	0.24	-0.85
$\text{LnGDP}_t$	3.91*	1.34	2.91
$\text{LnOI}_t$	0.64*	0.24	2.61
$\text{LnER}_t$	-3.17*	1.10	-2.86
$\text{LnQ}_{3t}$	-0.97*	0.31	-3.10
$\text{LnIM}_{3t-1}$	0.56*	0.26	2.13
$R^2=0.87$			

\*indicates statistical significant at 5% level.

partially by 0.56%. The minus sign in the coefficient is in accordance with demand theory. The small magnitude of own-price elasticity is consistent with reports for other forest commodities. For instance, Turner and Buongiorno (2004) calculated the price elasticity for import demand of particleboard applying different methods from -0.50 to -2.05. But, Li et al. (2002) estimated import demand function for paper and paperboard in China using both OLS and 2SLS and discovered that import demand for paper and paperboard are price-inelastic. The coefficient of gross domestic product was estimated 2.03 which is significant at 5%. The income elasticity shows that any one percent increase in real GDP leads to 8.44% increase in import demand for particleboard and the positive sign of the coefficient was also expected. Li et al. (2002) found that income elasticity for import demand of mentioned products is 0.91 and 1.05 respectively, while, Turner and Buongiorno (2004) indicated that such quantity for particleboard is from 0.47 to 3.09. The coefficient of exported petroleum income variable was not significant at 5%, so it is obvious that there does not exist any relation between this variable and import demand for particleboard in Iran. The other important variable affecting import demand for particleboard in Iran is the nominal exchange rate. The results show that the coefficient of this variable is estimated as -8.10 which indicate that any one percent increase in exchange rate in country could decrease the import demand for particleboard. The coefficient of domestically produced particleboard was not significant, which indicates that this variable has no effect on import demand for particleboard. The coefficient of the first lagged quantity of import variable was estimated as 0.60 which is significant and indicates that any increase in import for particleboard in the previous year will increase import the demand quantity by 0.60%. The coefficient of determination ( $R^2$ ) was calculated as 0.85, which indicates explanatory variables are responsible for 85% of the variation of the dependent variable. This is the reason for the best fit of the demand function.

As shown in the import demand function of plywood

(Table 3), the intercept is significant at the 5% level. The coefficient of relative price for import demand of plywood is significant and indicates that any one percent increase or decrease in imported or domestic price of plywood causes the demand for import of plywood to decrease by 1.23%. So, plywood compared to particleboard is more sensitive to price fluctuation. The results of other research on price elasticity of import demand for plywood varies from -0.51 (Kreinin, 1973) to -2.81 (Parthama and Vincent, 1992). Turner and Buongiorno (2004) found that import demand price elasticity for this product using different methods varies from -0.76 to -1.78.

The income elasticity of demand for imported plywood was calculated as 3.39 and thus, any one percent increase in GDP will increase import demand for plywood by 3.39%. Such elasticity varies from 1.10 (Chou and Buongiorno, 1982) to 5.56 (Parthama and Vincent, 1992) and from 0.65 to 1.72 using different methods (Turner and Buongiorno, 2004). Similar to particleboard, the effect of exported petroleum income on import demand of plywood was not significant at 5% level which result that the demand for import of such commodities is independent of changes in income from petroleum exports. The coefficient of nominal exchange rate is estimated as -13.81 and it is significant, so any one percent increase in nominal exchange rate could decrease demand for import of plywood by 13.81%. The negative sign of coefficient was expected and reveals that any increase in exchange parity between Rial and foreign exchanges could decrease commodities imports. In contrast to particleboard, the quantity of produced plywood in country has negative effect on demand for its import. Thus any one percent increase in the production volume will decrease demand for import of plywood by 7.16%. The results indicate that import of this product is very sensitive to changes in its production quantities. The coefficient of the first lagged quantity of plywood import variable is estimated as 2.38 and significant at 5% level, which indicates while import quantity in the previous year will increase by one percent, the current demand for plywood import increases by 2.38%. The coefficient of

determination ( $R^2$ ) was evaluated as 0.90, indicating that explanatory variables will respond to 90% of dependant variable variations.

The results of estimating of veneer import demand function is indicated in Table 4. As observed, intercept is not significant at 5% level. The coefficient of relative price of veneer (imported price-domestic price) is not significant. Thus it can be found that demand for import of this product is price-inelastic. Due to the lack of suitable raw material and consequently undesirable investment in Iran, production facilities are not able to satisfy the growing needs and therefore, regardless price changes, the demand for import of veneer will rise. Although, such finding is in contrast to the results of other research works. For example, Chou and Buongiorno (1984) found that price elasticity for import demand of veneer is -1.17 and Turner and Buongiorno (2004) using different methods calculated from -0.76 to -1.78.

The coefficient of GDP variable is estimated as 3.91, which is significant at 5% level. Therefore, veneer impact on economy is similar to the two mentioned products Sensitivity to income changes and of course the income elasticity for import demand is higher. Chou and Buongiorno (1984) and Turner and Buongiorno (2004) found that this quantity is 7.94 and 0.65 to 1.72 respectively. In contrast to the other products, the exported petroleum income exerts positive effect on demand for import of veneer and therefore could result in any one increase in petroleum income as explanatory variable introduced to the model will increase demand for import of veneer by 0.64%. The coefficient of nominal exchange rate was estimated as -3.17, which is significant at 5% level. Thus any increase in this rate could decrease import demand for veneer by 3.17 %. Thus the coefficient of domestic produced veneer was significant and has negative effect on import demand of this product. Any 1% increase in domestic production leads to 1% decrease in import demand for veneer. The coefficient of the first lagged quantity of import variable was estimated as 0.56 which is significant at 5% level and indicates that there is positive relationship between the previous and current quantities of imported veneer. The coefficient of determination ( $R^2$ ) was calculated as 0.87, which indicates explanatory variables are responsible for 87% of the variation of the dependent variable. This is the reason for the best fit of the demand function.

## DISCUSSION

The results of simultaneous estimation of import demand for wood-based panels including particleboard, plywood and veneer using the available annual data for the period of 1984 to 2008 and the 3SLS procedure revealed interesting findings. The strength of the applied system lies in its potential to handle the existence of interactions

among variables and the robust results derived from the utilized data. Our results indicate that demand for import of particleboard and plywood are own price elastic and plywood compare to particleboard is more sensitive to price changes, but veneer import demand is price-inelastic, whereas all the studied products import are own income elastic. The results reveal that the demand for veneer import is the most sensitive to changes in GDP as an index of household income. The adverse impact of relative price of the mentioned products on their import demand is in accordance with import demand theory which states that the import for goods in any time has an adverse relation with relative price, Therefore, any increase in the imported price or decrease in the domestic price of these goods will divert most of consumers away from these products and then demand for import will decrease. There exists a positive relation between GDP and demand for import of particleboard, which indicates that as household incomes increase and the technology and products in other related industries improve, the demand for wood-based panels including particleboard in Iran shift from inferior to superior quality grades. The current supply structure in Iran cannot satisfy the newly emerging demand any more, which opens up new opportunities for the imported high-quality products.

The exported petroleum income could not influence demand for import of particleboard and plywood. Due to low import value of these products in each year, regardless of fluctuations in country petroleum income, the balance of required quantities to satisfy the growing domestic demands are supplied through imports, but in the case of demand for veneer import, the positive relationship between these two variables are available, perhaps because of the considerable volume of allocated currency. While the petroleum price decrease in world markets, will decrease the demand for import of veneer in Iran. Demand for import of the all mentioned products is affected by exchange rate fluctuation. The adverse impact indicates that any change in exchange rate could lead to change in imported price. Therefore, as was discussed earlier, any increase in exchange parity between Rial and foreign currency could decrease demand for import of these products. Plywood compare to other two products is more sensitive to exchange rate changes.

The domestic production quantities of plywood and veneer, imposes adverse impact on demand for import of these products. The reason is clear; any increase in production quantities of domestic production could raise their shares in the market and consequently demand for import will decrease. But in the case of particleboard, the out dated production structure of local facilities due to utilization of old technology and machineries causes the produced particleboard in Iran to be of low quality and consequently, the demand exists for the imported product. For all the studied commodities in this report,

import variable with the first lagged quantity have adverse impact on the current demand for their import, which indicates that any increase in import of these products will reduce their price in the domestic market and therefore, producers are likely to continue the trend of reducing price in the following year. This will decrease the supply and will increase the import of studied products in the following year.

The positive and negative effects of all explanatory variables on the dependent variables equations (demand for imports of particleboard, plywood and veneer) are in accordance with expectations and are based on theoretical principles (the theory of import demand).

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