



MODELS FOR FORECASTING THE IMPORTS AND EXPORTS OF FURNITURE

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INTRODUCTION

Intense competition, which comes as a result of globalization and the imminent entry into the full membership of the European Union, leads us to the necessity of looking at the current market situation, in order to predict the situation in the future.

Interpreting economic data and forecasting the future economic values are under the influence of environment and government policies, starting from the basic economic theories that operate in the market (Fair and Case, 1989).

This paper discuss a possibility to predict future export and import values of Croatian furniture industry on the basis of established values in the period 2000.-2010.

Because of turbulences in this market and the length of analyzed time series the prediction is limited to the year 2015.

MATERIAL AND METHODS

Analysis of Croatian furniture manufacturing follows the time course of two key macroeconomic variables, imports and exports for period 2000.-2010. The data were gathered from database of Croatian's State Bureau of Statistics (DSZ), Ministry of Finance and Financial Agency (FINA). The data are shown in Figures 1 and 2.

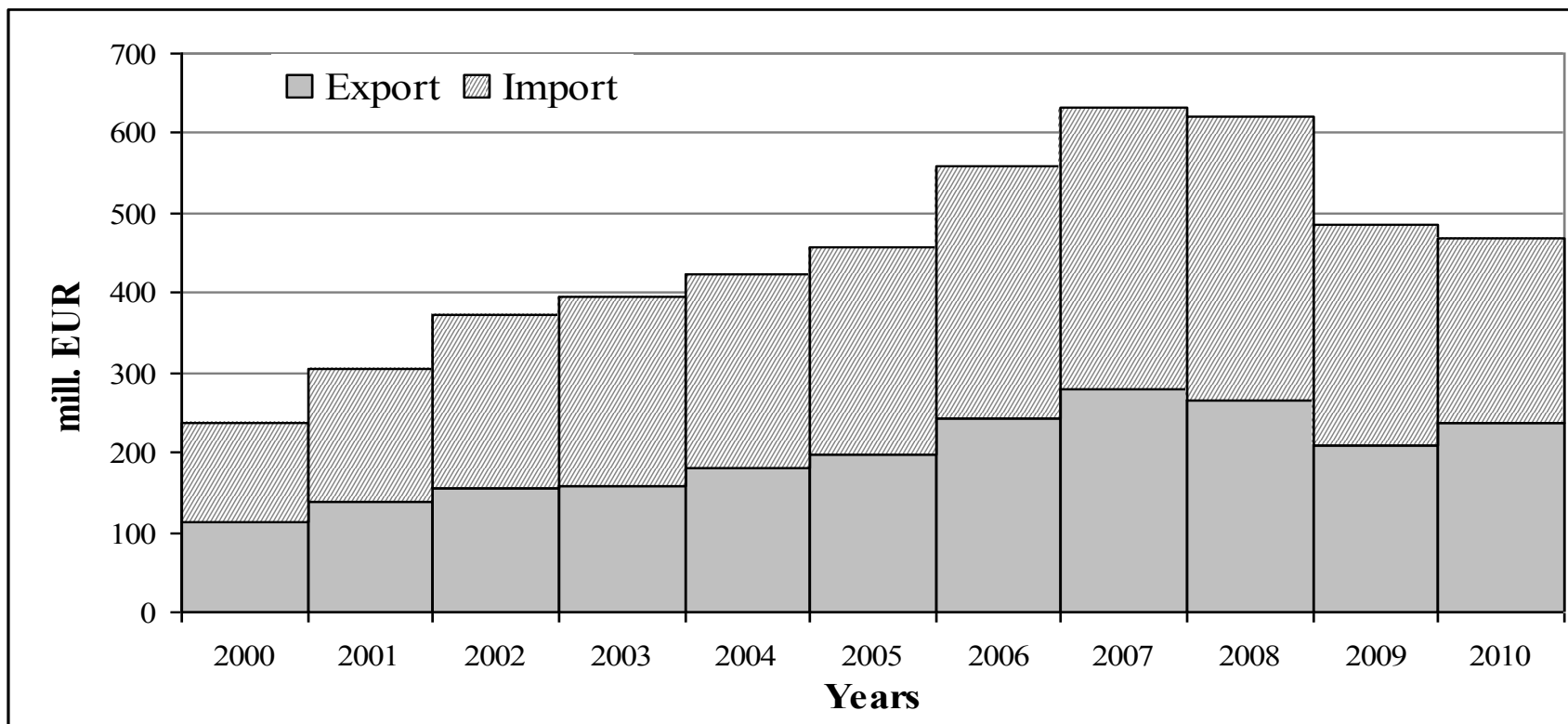


Figure 1. Export and import of furniture for period 2000.-2010.

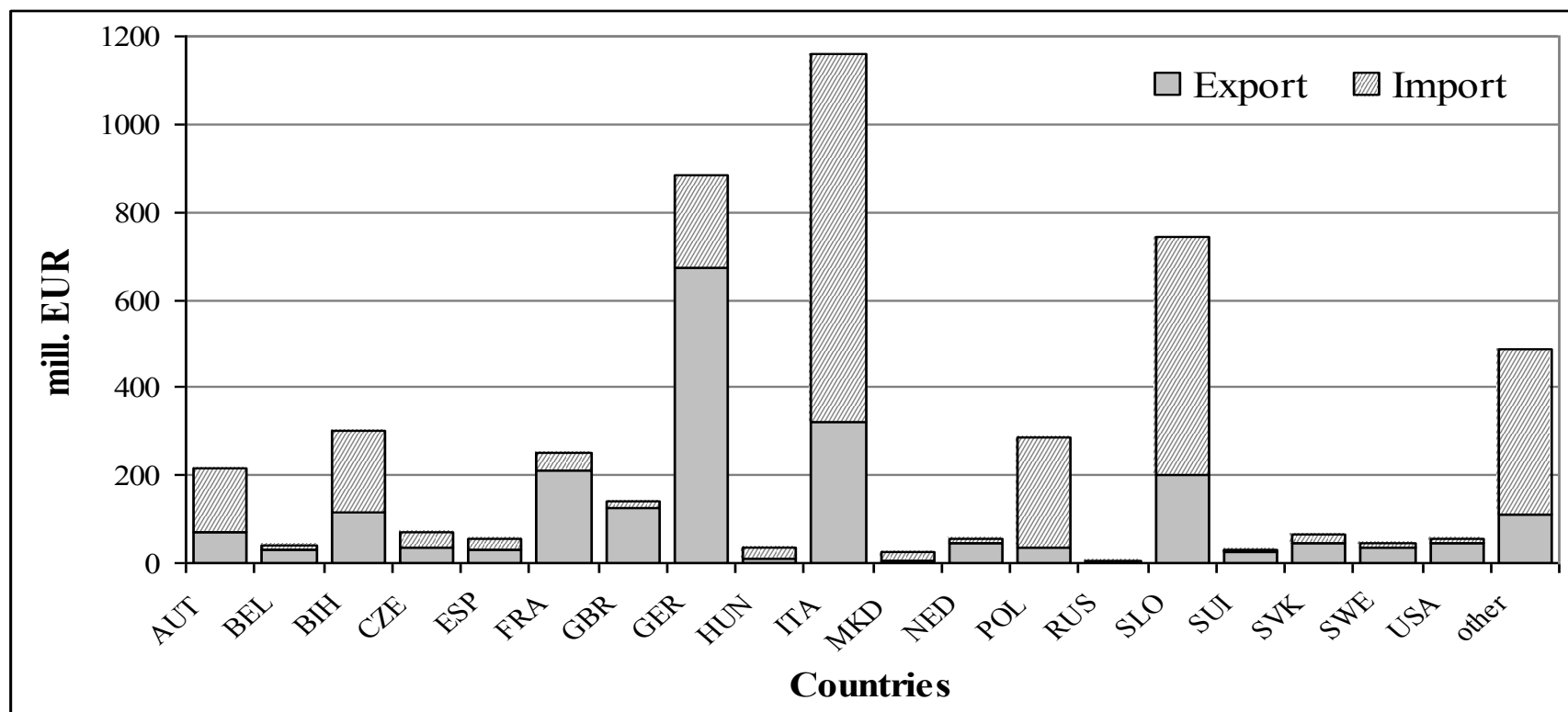


Figure 2. Share of furniture foreign trade for period 2000.-2010. according to countries

For the purposes of forecasting future trends in the indicators of market conditions (export and import of furniture), the dynamic economic analysis of time series data was performed. Two types of time series models were built: models based on average rates of change (models A) and linear trend models (models B).

RESULTS AND DISCUSSION

Descriptive statistics (means and standard deviations in mill. €; coefficients of variations and average rates of change (\bar{s}) in percentage) were determined for annual export and annual import of furniture for period 2000.-2010. Results are given in Table 1.

Table 1. Descriptive statistics for annual furniture foreign trade in period 2000.-2010.

Country	Code	Export				Import			
		Mean (mil. €)	Std. Dev. (mil. €)	Coef. Var. (%)	\bar{S} %	Mean (mil. €)	Std. Dev. (mil. €)	Coef. Var. (%)	\bar{S} %
Austria	AUT	6,5	2,4	36,5	11,2	13,2	8,0	60,6	15,7
Belgium	BEL	2,7	1,3	48,1	2,7	0,9	0,3	31,2	-6,6
Bosna and Herzegovina	BIH	10,5	1,9	17,8	-2,4	16,8	8,2	48,8	26,2
Czech Republic	CZE	3,3	2,6	77,5	30,3	3,0	2,0	65,4	13,2
Espana (Spain)	ESP	2,9	2,4	81,8	47,2	2,0	0,8	41,4	12,5
France	FRA	19,1	5,7	29,7	-4,9	3,7	1,9	51,0	16,5
Great Britain	GBR	11,4	3,5	31,1	-9,8	1,5	0,5	33,1	3,2
Germany	GER	61,2	28,5	46,5	15,2	19,0	6,9	36,1	10,4
Hungary	HUN	0,8	0,4	53,7	4,5	2,5	0,8	33,9	14,2
Italy	ITA	29,1	7,3	25,0	3,0	76,5	16,9	22,1	0,7
Macedonia	MKD	0,6	0,4	61,7	9,1	1,8	1,2	64,8	17,5
Netherlands	NED	3,9	0,9	22,7	7,7	1,2	0,6	53,1	15,6
Poland	POL	3,4	3,1	90,4	38,3	22,4	6,4	28,3	-0,8
Russian Federation	RUS	0,2	0,1	89,4	4,8	0,2	0,1	58,9	8,3
Slovenia	SLO	18,0	11,4	63,2	10,9	49,7	11,0	22,1	-2,0
Switzerland	SUI	2,1	0,8	40,5	11,3	0,6	0,3	52,2	12,2
Slovakia	SVK	4,2	7,3	173,1	84,7	1,8	0,4	23,1	2,6
Sweden	SWE	3,3	1,0	29,9	1,1	0,8	0,3	35,5	-9,4
United States	USA	4,1	2,5	61,0	-11,9	0,9	0,5	54,6	-3,2
Other countries	other	10,2	4,2	40,8	8,0	34,1	24,3	71,3	32,7
Total	Σ	197,6	54,1	27,4	7,7	252,6	71,7	28,4	6,4



Germany is the most important export market for Croatian furniture which achieved 31% of total exports. At the same time 30% of the total imports value of furniture in Croatia is generated from Italy.

Generally, 56,3% of total furniture foreign trade amount goes to three main export-import markets: Italy, Germany and Slovenia. Results for these three most important markets are given in Table 2.

Table 2. The most important countries in furniture foreign trade for period 2000.-2010.

Country	Code	Export		Import		Total	
		mil. €	%	mil. €	%	mil. €	%
Italy	ITA	320,4	14,7	841,2	30,3	1161,5	23,5
Germany	GER	673,1	31,0	208,9	7,5	882,0	17,8
Slovenia	SLO	198,5	9,1	546,5	19,7	745,0	15,0
Other countries	other	981,7	45,2	1182,0	42,5	2163,7	43,7
Total	Σ	2173,7	100,0	2778,5	100,0	4952,2	100,0

Based on the average rates of change for export (7,7%) and import (6,4%) of furniture in the observed period, models A for prediction of future values of exports and imports were developed.

Correlation analysis to determine the degree of correlation between the values of export and import as dependent variables and time (t) as independent variable was used.

Pearson's linear correlation coefficient (r) which describes the direction and strength of the correlation relationship was positive and high in both cases, $r=0,8532$ for export and $r=0,7205$ for import of furniture in the observed period, so we developed models B for prediction of future values of exports and imports .

According to the linear trend models (models B), the expected linear increase in the annual value of Croatian furniture export is 13,9 million € and expected linear increase in the annual value of imports of furniture for 15,6 million €. The predicted values of exports using model A and model B, are graphically compared in Figure 3, and in Figure 4 are compared the predicted values of imports.

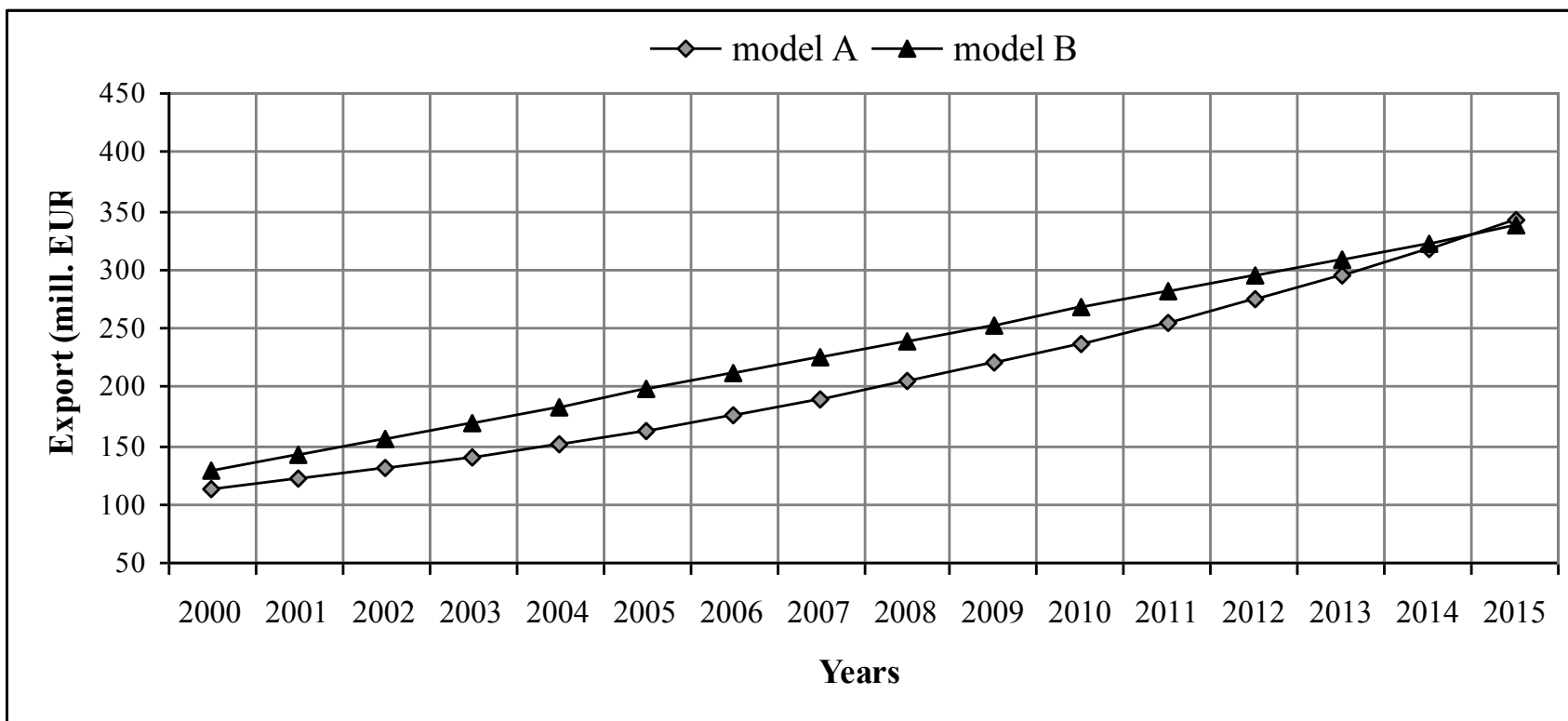


Figure 3. Comparison of the predicted values of furniture export

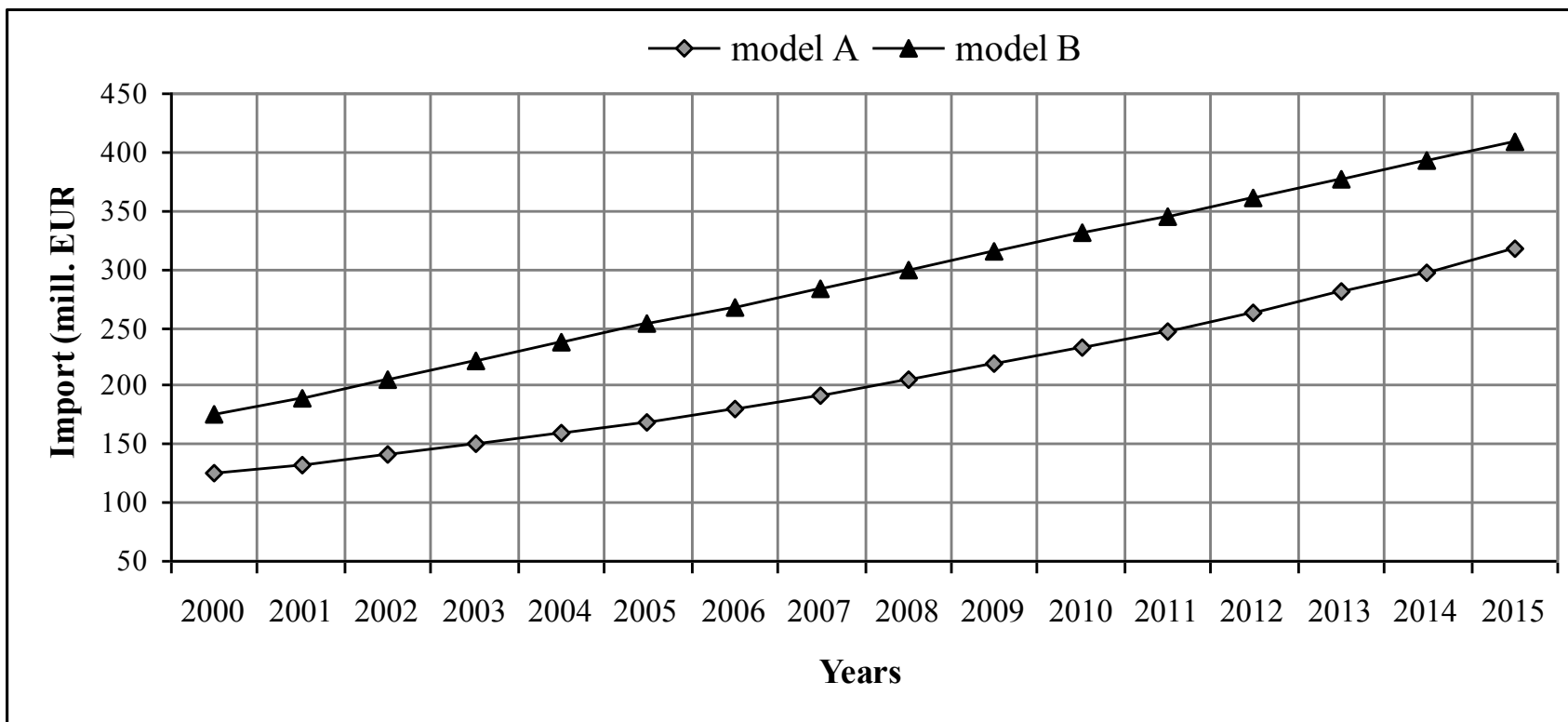


Figure 4. Comparison of the predicted values of furniture import

CONCLUSION

Help at the strategic, tactical and/or operational level planning and decision making in managing the furniture industry, our companies can provide with the application of methods that have not been traditionally used. Using time series models companies in the furniture industry will be able to define the future business strategy, and the paper could also help to research institutions for decision-making and strategy development.



THANK YOU FOR YOUR
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