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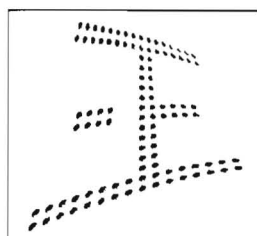
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European timber trade analysis: An economical overview and regional market potential

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Abstract: *The analysis of internal and external European timber trade is the purpose of this survey, in order to provide a precious tool in the decision-making process for the European enterprises of the timber sector; particularly those that import raw material of sawnwood (furniture sector, building activities etc), but also those that process round wood and export their products or think about exports. The analysis can also contribute to the determination of suitable policies of the member - countries of EU for the above - mentioned sector. The analysis of a 39 year time series (1964-2002), the creation of indicators, and the determination of forecasting models for the imports, exports, production, apparent consumption and sawnwood self-sufficiency indicators for the EU25, result that the above variables show augmentative tendencies in volume, a reduction of product price at 35.6%, for the last decade and a self-sufficiency indicator of 93%, while countries such as Finland, Sweden, Latvia, Lithuania, Estonia, Czech Republic, Slovakia and Denmark have an overabundance of sawnwood and can develop their comparative advantage for the conquest of new global markets.*

Introduction

The study and the analysis of the existing situation of timber product trade in the European Union constitutes an important decision-making tool for the timber sector enterprises. The shrinkage of the timber sector in all Europe, as well as Greece and the intensely competitive market, at a global level, impose the knowledge and spread of research results about the perspectives (opportunities, dangers, threats) that curve the future of enterprises and the possibility of their adaptation to the exterior environment (Bolkesjo and Buongiorno 2006, Shogren 2007). Indicatively, we report the example of China's entry in WTO with an increase of 25.6% in timber products imports, at a value of US$ 446.2 million, after 2003 (Gan 2004). China is considered to be a target – market for countries with timber overabundance, such as the Scandinavian countries, Estonia, Latvia, Czech Republic etc. The information about the demand and offer of various products of timber, as well as the forecast for their future are often capable, alone, to limit the risk of enterprises to some important degree.

Furthermore, the knowledge and the possession of criteria for the choice of various timber products and new markets in various geographic exports regions, the international experience, the market orientation and the planning of particular marketing strategies in industrial markets curve new directions for wood enterprises.

Within the E.U. policy framework, both the trade and the environment constitute the central subject of multifaceted commercial negotiations, after the completion of Uruguay Round/ and the organisation of World Organism of Trade (Blake et all, 1999).

In general, if we analyze the existing situation of timber production in the developed countries worldwide, we will realise that their economic derotation that is forecasted for next years, will cause the increase of their needs in timber and its products. Besides, as long as the entry of Canada and the countries of former USSR is shifted to the most inaccessible regions of their forests, the cost of coniferous exported timber production will arise and consequently its prices. The already intense demand for tropical timber imports, from the tropical forests of underdeveloped countries, will intensify still more (Stamou 2005).

The tendencies and the prospects of European timber for the 21st century are described in a particularly important and recent research (UNECE and FAO, 2004), in which the mainer ascertainments are focused in the following: a) The demand for the forest products in Europe will be continuously, regularly increasing for the next 15 years at least, with a given rate of GNP increase, roughly at 1-2% annually, b) European production of forestal products will increase up to 2020, in constant real prices and expenses, by a 25-35% for the sawnwood. c) The degree of self-sufficiency in products of timber in Europe will approach 100, provided that: 1st) the timber from the European forests is competitive, regarding price and quality, compared to the main competitors in the world markets and 2nd) the industries that will process this raw material must also be competitive at a world scale, that is to say, big units, with sufficient invested capital and strict production cost controls; and d) markets of sawnwood production and sales are very likely to be rather different in 2020 from the today ones, mainly because of the application of technological innovations, which will aim at the reduction of production cost, as well as the improvement of products' quality and the development of new uses and markets. There will appear new production processes, new composite materials, new glues and surface finishings, etc.

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The removal of restrictions for the release of trade in the European Union has contributed considerably to the economic growth of certain countries, among which is also Greece, and this action strengthened their position in the global free economy.

The EU produces the 25% of world production of relative products. Nevertheless, for a consumption of 300 million of m³ of round wood as raw material, the EU imports 20 to 25 million of m³, mainly from Russia (coniferous and non coniferous), the CEECs (coniferous and non coniferous), Northern America (non coniferous) and the southern hemisphere (coniferous and non coniferous) (FBI 2006).

The value of imports and exports of sawnwood at a world level for 2004 amounts to 30 billions $ roughly for a quantity of 90 millions m³ (UNECE and FAO 2006). Generally, the EU has a negative commercial balance for timber products and imports sawnwood of non coniferous from Northern America and panel wood – based types from South-eastern Asia. Recent increases inside the EU have begun to decrease these flows, e.g. the important export of plywood from the EU to the USA.

The production and the trade of European forestal products accelerated in 2000 as a result of the powerful requirement within the regions of EU / EFTA, that increases the consumption in the CEECs and the increasing demand from exterior Europe. Nevertheless, the forecasts for 2001 were for a deceleration in a lot of markets, which were followed by the general improvement in 2002 ((UNECE and FAO, 2004).

The EU is the biggest trader and the second biggest consumer of forest products in the world, with a positive trade balance overall. However, within this context, the EU is a net importer of raw materials, mainly round wood which comes mostly from the CEECs and CIS.

The effects of globalisation on trade in the EU F-BI can be seen in the increased worldwide procurement of raw materials, such as wood and pulp, as well as in growing worldwide trade in forest-based products and technology products needed by the forest industry.

New low-cost competitors from Asia, Latin America and the CEECs constantly challenge the industry in the EU. Asia showed the highest growth in new investment outside the EU during the 1990's, which has resulted in a loss of market share of the EU F-BI in certain sectors, such as in the wood-based panels industry (F-BI 2007).

Regarding Greece, the general course of Greek exports of timber sector was not particularly good the last decade, as the export extroversion indicator of the Greek economy (the value of Greek exports as percentage of nominal GNP), follows a declining course from 1995 and afterwards (from 10.5% to 7.6%) (SEVE et all 2004).

The mainer countries –recipients of Greek exports in timber industry, in value, are 12. The 5 most important ones at a declining order are: Albania, Cyprus, Holland, Lebanon and Italy. It is particularly important to notice the percentage increase of the sector's export activity in 2002 to countries such as Holland (10fold increase), Italy (255.1%) and Germany (200.4%). The mean increase of exports of Greek timber industry amounted in 2002 to 26.7% (IERS and SEVE 2006).

The analysis of the representative indicators of export extraversion of Greece indicates a progressive, light reduction of exports, concerning the total crude value of timber industry production (4.4% in 2002 and 6.8% in 1995). The very same tendency is also observed by the analysis of the total value changes of sector exports for the 1995-2002 period, as well as by the percentage (%) of exports change on the total of Greek exports, which started at a 0.5% in 1995 and have reached a 0.3% in 2002. Furthermore, the share of imports on the total of Greek imports is maintained constant at 1.3% (1995 -2002) with certain small losses during the specific time interval.

The aim of this study is the presentation and supply of condensed information to timber enterprises not only about the existing situation, but also about the prospects of the internal and exterior trade of sawnwood in the EU25 generally, and more specifically, the analysis of data for each country in the Union.

Methodology

For the achievement of the aims of research, we used the important UNECE and FAO data base (2004), which constitutes a time series of 39 years, for the 1964-2002 period. This data base was retabulated and processed and new data were derived regarding the production, imports, exports and the apparent consumption in quantity, as well as in value, of sawnwood of the 25 countries in the European Union for the above mentioned period. We applied the time series analysis (Koutsogianni 1977, Ostrom 1990, Anderson et all 1996, Mutanen 2006). Then we compared and analysed the changes of all parameters for the last decade (1992-2002), and we also created a system of indicators, such as: self-sufficiency indicator, the percentage of net exports on the production, the domestic consumed production and the imports –exports ratio (Stamou 2005) for every country in 2002. The time series analysis of the self-sufficiency indicator for each country constitutes a basic criterion for evaluating the strengths and weaknesses and determining the growth opportunities of international trade - at least between the EU countries.

Finally, the suitable regression models were determined. They reflect the relations between the dependent variables: imports, exports, production and apparent consumption and the independent variable of time. The analysis was done using the statistic SPSS ver11 (Dennis and Duncan 2003).

Results

The diachronic development of the quantity (in volumes) of production, imports, exports and apparent consumption of sawnwood (coniferous and non coniferous) in the countries of EU is presented in Figure 1. Initially, we can notice a progressive light increase of all the above parameters, at least up to 1992, while afterwards the increase becomes bigger. Particularly after 2000, the apparent consumption exceeds the dam of the 100 million m^3. This fact reveals the increased consumption of the particular product from the EU consumers, and furthermore, the great tendency of the EU enterprises to increase the exports, naturally in profit - making prices.

Fig. 1. *Production, imports, exports and apparent consumption of sawnwood in 1000 m^3 in Europe at the period 1964-2002.*
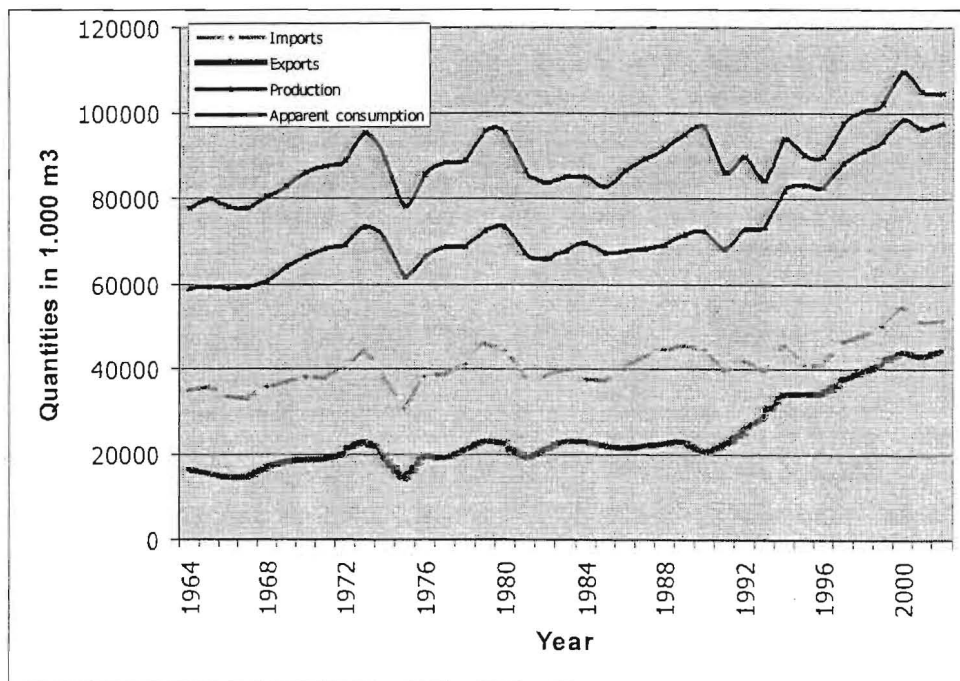

Figure 2 denotes the bigger value of imports related to the exports one, which confirms the above observation on the increase of consumer faith and preference of European customers to European products. It also underlines the leading role of EU25 in the export activity of sawnwood in the world trade, so that the achievement of economies of scale is feasible. Besides, the EU policy is alone a strong point for the timber sector, both because of the enlargement, and also because of the increased amounts, supplied for innovation and particularly for R&D.

The value of sawnwood imports (coniferous) is bigger – almost double - than that of non coniferous. The difference between imports and exports of coniferous and non coniferous is very big, since, the last years, the exports of coniferous appear to exceed the imports, while the exports of non coniferous from EU countries appear to be minimal, in value and quantities.

Fig. 2. Value of imports and exports of sawnwood in 1000$ in Europe at the period 1964-2002.
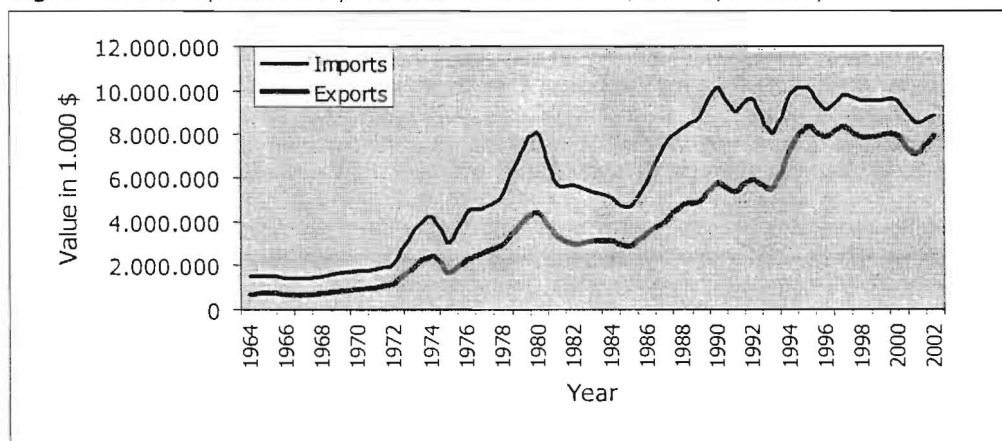
In Table 1 we note that the mainer countries regarding coniferous sawnwood imports in the EU are UK (Tomson 2004), Italy, Germany, Denmark and France, while Greece possesses the 11nd place, among the 25 countries of EU. The mean price of coniferous sawnwood import has decreased by 35.6% and more specifically from 240.5 to 155.0 $/m3, during the period 1992-2002. All the above countries (except Germany) have increased their quantities of imports of coniferous sawnwood during that period.

Table 2 presents the mainer countries of coniferous sawnwood exports in EU, which are Sweden, Finland and Austria, with a significant increase in change of quantities and value during the period 1992 - 2002. The mean price of coniferous sawnwood export has decreased by 25.9% and more specifically from 231.6 to 171.6 $/m3, for the above period.

Table 1. Change of quantities (in 1000 m³) and value (in 1000 $) of imports of coniferous sawnwood; period 1992-2002 in the 5 first countries of Europe and Greece

i/n	Countries	Quantities (in 1000 m3)			Value (in 1.000 $)		
		1992	2002	Change %	1992	2002	Change %
1	UK	6899.3	7584.9	9.9%	1340000	1353220	1.0%
2	Italy	4402.0	6092.0	38.4%	1170000	905859	-22.6%
3	Germany	4458.3	4173.0	-6.4%	1340000	703264	-47.5%
4	Denmark	1660.0	4005.0	141.3%	420000	383166	-8.8%
5	France	1404.0	2749.2	96.2%	386092	483338	25.2%
11	Greece	473.0	915.0	93.4%	122000	159224	30.5%
	Total EU25	**26464.5**	**37453.6**	**41.5%**	**6365005**	**5805251**	**-8.8%**

Source: Elaboration of UNECE TIMBER database 2003

Table 2. Change of quantities (in 1000 m³) and value (in 1000 $) of exports of coniferous sawnwood; period 1992-2002 in the 5 first countries of Europe and Greece

i/n	Countries	Quantities (in 1000 m3)			Value (in 1.000 $)		
		1992	2002	Change %	1992	2002	Change %
1	Sweden	8240.0	11454.0	39.0%	1925113	2160975	12.3%
2	Finland	4268.0	8167.2	91.4%	1027496	1355148	31.9%
3	Austria	3871.0	6462.5	66.9%	866673	1011316	16.7%
4	Germany	945.1	3850.0	307.4%	288673	652207	125.8%
5	Latvia	42.3	2289.6	5312.8%	288860	310281	6247.8%
23	Greece	3.1	4.0	29.0%	557	634	13.7%
	Total EU25	**22447.3**	**40474.5**	**80.3%**	**5199629**	**6944515**	**33.6%**

Source: Elaboration of UNECE TIMBER database 2003

Four indicators are reported in Table 3 for each country separately, in 2002: self-sufficiency, the percentage of net exports on the production, the domestic consumed production and the imports – exports ratio. Thus, the indicator of self-sufficiency shows that the EU25 is almost self-sufficient in sawnwood (93%). On the contrary, Hungary, Italy, Greece, Cyprus, Holland, Denmark and Malta are found at a level of under 20%, which proves their weakness and the dependence - to a large extent- on importing sawnwood from the rest EU countries, as well as from other countries of the world market. This fact can be attributed to the following reasons: (a) these countries do not have the suitable natural resources (forests) for the production of timber, (b) the forests' management was not the proper one during the last 100-200 years, (c) the forests carry out only protective and recreation aims and are managed in a relative way, (d) there have not been made any appropriate investments on the creation of wood processing units, and (e) there exists a delay in productivity. On the other hand, countries like the Scandinavian ones (Finland, Sweden), the former USSR (Latvia, Lithuania, Estonia), as well as Czech Republic, Slovakia and Denmark enjoy an overabundance of sawnwood, mainly because of the rich natural vegetation, but also because of the proper and sustainable management of their forests. This fact strengthens these countries' position in the international timber market (e.g. China, India etc.).

Table 3. *Relations of domestic production, international trade, consumption and relative indicators of sawnwood (in 1000 m^3) in 2002 for the 25 EU countries*

i/n	COUNTRIES	IMPORTS (I)	EXPORTS (E)	Production (P)	Ca	Sg%	pE%	pEI%	pP%
1	Austria	1674.1	6645.6	10415.0	5443.5	191%	48%	25%	36%
2	Belgium&Lux	2057.3	1016.7	1308.4	2349.0	56%	-80%	202%	22%
3	France	3287.4	1406.4	10540.0	12421.0	85%	-18%	234%	87%
4	Germany	4862.0	4439.0	16879.2	17302.2	98%	-3%	110%	74%
5	Denmark	10206.7	105.0	281.0	10382.7	3%	-3595%	9721%	63%
6	Greece	1117.0	14.0	122.6	1225.6	10%	-900%	7979%	89%
7	Estonia	236.0	1248.0	1900.0	888.0	214%	53%	19%	34%
8	Un. Kingdom	8263.0	294.0	2539.0	10508.0	24%	-314%	2811%	88%
9	Ireland	842.4	315.9	969.0	1495.5	65%	-54%	267%	67%
10	Spain	2916.2	256.8	3524.0	6183.4	57%	-75%	1136%	93%
11	Italy	7857.0	187.0	1605.0	9275.0	17%	-478%	4202%	88%
12	Cyprus	77.3	0.2	7.5	84.6	9%			97%
13	Latvia	157.9	2857.2	3947.2	1247.9	316%	68%	6%	28%
14	Lithuania	306.6	918.4	1250.0	638.2	196%	49%	33%	27%
15	Malta	18.5	0.0	0.0	18.5	0%			
16	Norway	941.0	625.7	2225.0	2540.3	88%	-14%	150%	72%
17	Holland	3294.0	304.0	253.0	3243.0	8%		1084%	-20%
18	Hungary	1227.0	286.0	221.0	1162.0	19%	-426%	429%	-29%
19	Poland	495.8	788.6	2910.0	2617.2	111%	10%	63%	73%
20	Portugal	274.0	250.0	1298.0	1322.0	98%	-2%	110%	81%
21	Slovakia	50.0	864.0	1265.0	451.0	280%	64%	6%	32%
22	Slovenia	186.7	368.5	446.0	264.2	169%		51%	
23	Sweden	439.0	11475.6	16560.0	5523.4	300%	67%	4%	31%
24	Czech Rep.	381.0	1448.0	3800.0	2733.0	139%	28%	26%	62%
25	Finland	257.4	8187.0	13390.0	5460.4	245%	59%	3%	39%
TOTAL EU		**51425.3**	**44301.6**	**97655.9**	**104779.6**	**93%**	**-7%**	**116%**	**55%**

Ca=Apparent Consumption = Production (P) + Imports (I) - Exports (E)
Sg% = Indicator of self-sufficiency = P * 100 /(P-E+I)
pE% = Percentage of net exports on the production = (E-I)*100/P
pP% = Domestic consumed production = (P-E)*100/P
pEI% = Imports - exports ratio (percentage) = (I-E) * 100

The indicator pE% stands for the percentage of net exports (exports –imports) on the production. Denmark presents a very high percentage (3595%), while the indicator is negative for Greece, Italy, Hungary, Ireland and Belgium.

The indicator of net consumed production appears to be particularly low in Latvia, Slovakia, Estonia, Sweden and Finland, and shows the overproduction of sawnwood in relation to the quantity, consumed in this countries.

Finally, the indicator of imports - exports ratio presents a mean percentage of 55%, in the EU25. A percentage bigger than 80% appears for Cyprus (97%), Spain (93%), Greece (89%), Un. Kingdom (88%), Italy (88%), France (87%), Portugal (81%) and reveals their particular dependence on sawnwood exports.

Figures 3,4 and 5 present the diachronic development of self-sufficiency indicator among the 25 EU countries, sorted in 3 groups (the first group with an indicator > 100%, the second one presents an indicator between 50% and 100% and the third one with an indicator smaller than 50%).

Figure 3 shows that all countries follow a relatively constant course, with the exception of Latvia and Slovakia, which present an intense fluctuation of self-sufficiency indicator. Upward trends figure for Sweden and a light bending for Austria.

Figure 4 records an intense fluctuation of Portugal's self-sufficiency indicator, which has notably decreased the last decade. We record a continuous rising course for Ireland and Germany and naturally for the mean of all EU25 countries.

Figure 5 presents Hungary and Cyprus with an intense reduction of self-sufficiency indicator of sawnwood, particularly during the last decade. The same reduction is noted for Greece and Italy, but to a smaller degree. United Kingdom is the only one to present a slight upward course.
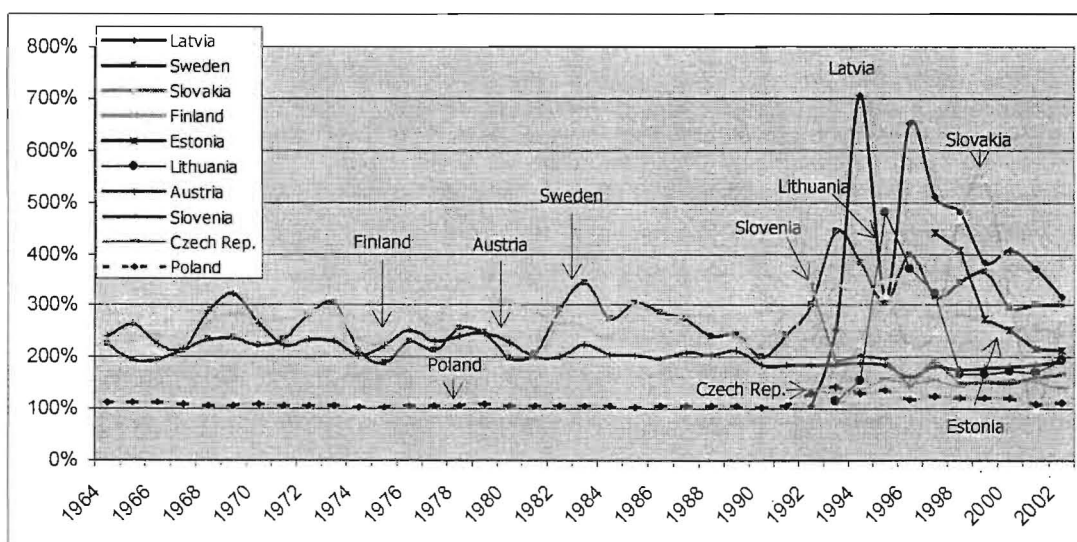

Fig. 3. Diachronic development of sawnwood self-sufficiency indicator (SFI); First group EU25 countries with SFI> 100, at the period 1964-2002.
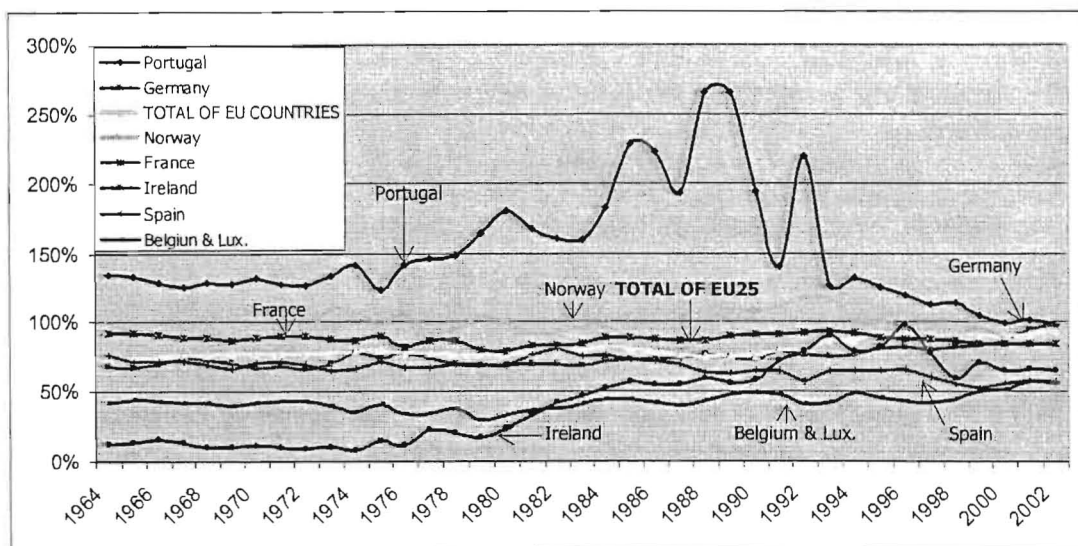
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Fig. 4. Diachronic development of sawnwood self-sufficiency indicator(SFI); Second group EU25 countries with 50<SFI< 100, at the period 1964-2002.
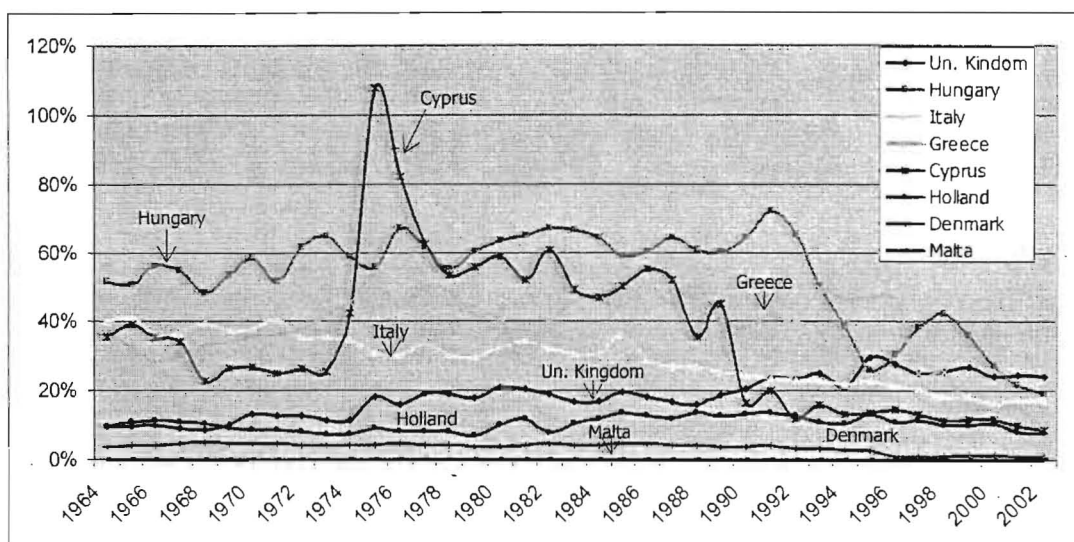

Fig. 5. Diachronic development of sawnwood self-sufficiency indicator (SFI); Third group EU25 countries with SFI< 50, at the period 1964-2002.

The following forecast models for the European sawnwood resulted from the regression analysis:

(1) For imports: $Y(I) = 32110.853 + 1171.886t - 62.404t^2 + 1.184t^3$ ($R^2 = 0.698$, F=26,9, Sig = 0.000 and S.E. = 3086.49).

(2) For exports : $Y(E) = 13464.727 + 1053.03t - 65.402t^2 + 1.561t^3$ ($R^2 = 0.943$, F=193.9, Sig = 0.000 and S.E. = 2158.11).

(3) For the production: $Y(P) = 54669.883 + 2495.417t - 150.115t^2 + 3.029t^3$ ($R^2 = 0.930$ και F=154.6, Sig = 0.000 and S.E. = 3021.32).

(4) For the apparent consumption: $Y(Ca) = 73316.008 + 2614.272t - 147.118t^2 + 2.652t^3$ ($R^2 = 0.723$, F=30.5, Sig = 0.000 and S.E. = 4349.04)

(5) For EU25 self - efficiency: $Y(Sg) = 0.752 + 0.004t + 8.15E-0.006t^3$ ($R^2 = 0.813$, F=50,8, Sig = 0.000 and S.E. = 0.027)

$t_{1964} = 1$, for all models.

The above relations can forecast the development of all parameters at a very satisfactory degree, with a significant reliability and precision. The forecast is more precise for the parameters that refer to exports, production and sawnwood self-sufficiency of EU25.

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Indicatively, the analysis of model (5) results to the conclusion that the 100% sufficiency of EU25 in sawnwood will be achieved in year 2030, provided that all parameters that so far influence it, develop at the same rate.

Conclusions & Proposals

The tendencies in volume quantity of production, imports, exports and apparent consumption of sawnwood (coniferous and non coniferous) in the 25 countries of EU present to be regularly augmentative, with the apparent consumption to have already exceeded the amount of the 100 million m^3, since 2000.

The EU25 has a leading role in the export activity of sawnwood in the world trade and thus the achievement of economies of scale is feasible. During the period 1992-2002, the mean price of roundwood import has decreased by 35.6%, and more specifically from 240,5 to 155.0 $/$m^3$. The mainer countries of coniferous sawnwood imports in the EU are UK, Italy, Germany, Denmark and France, while for exports are Sweden, Finland and Austria.

The self-sufficiency indicator in sawnwood of EU25 amounts to 93% and is expected to reach the 100% percentage, up to 2030. Countries with the lower indicator of self-sufficiency (< 20%) today, are: Hungary, Italy, Greece, Cyprus, Holland, Denmark and Malta. On the other hand, Finland, Sweden, Latvia, Lithuania, Estonia, Czech Republic, Slovakia and Denmark have an overabundance in sawnwood and can exploit this comparative advantage to conquest new global markets.

The forecast models of production, imports, exports, apparent consumption and sufficiency indicator of sawnwood of EU25, which resulted from the present research, can be applied with a significant reliability and precision.

In the today's international competitive environment, the identification and translation of the external factors (e.g. the competitive position, the market uncertainty etc), as well as the internal ones (e.g. the product development process, the technological competitiveness, the administrative capabilities, the internal information in market knowledge acquisition, the communication and the marketing) constitute a critical point for the successful prospects of a product (Brent et all, 2000).

Strategic plans are imposed to be drawn up, for the timber sector enterprises to penetrate in new markets at international level. The plans should include: a) the evaluation of enterprise's strengths and weaknesses, b) the mission statement and the definition of the comparative advantage, c) the analysis of the enterprise environment, including the changes that take place in it, d) the definition of long-range aims of the enterprise, e) the recognition and the choice of specific markets / products that offer the more attractive opportunities for the enterprise, its possibilities given, f) the determination of specific and measurable objectives that are required for the achievement of the longterm aims of the enterprise and e) the growth of strategic programs.

The promotion of exports of certain countries should constitute a permanent goal and state policy, through the mobilisation of their diplomatic services and the imitation of best practices of countries with exemplary extraversion, successful internationalisation and export performance (Finland, Ireland, N. Zealand and Chile), the close collaboration of the public and private sector, based on objectives and strategy and the linkage between technological research and exports. At the same time, the European timber enterprises should invest in entrepreneurship abroad, branding, research and technology, the creation of distribution networks abroad and in the quality, certification and labelling of both enterprises and their products.

References

Anderson, D.R., D.J. Sweeney and Th. A. Williams 1996. Statistics for Business and Economics. West Publishing Company. Minaeapolis.

Blake, A.T., Rayner, A.J., Reed, G.V., 1999. A computable general equilibrium analysis of agricultural liberalisation: The Uruguay Round and common agricultural policy reform. American Journal Agricultural Economics 50, 400-424.

Bolkesjo, T.F. and Buongiorno, J., 2006. Short – and Long-Run Exchange Rate Effects on Forest Product Trade: Evidence from Panel Data. Journal of Forest Economics, 11, 205-221.

Brent M. Wren, WM. E.Souder, 2000. Berkowitz, "Market Orientation and new product development in global industrial firms", Industrial Marketing Management 29, 601-611

Dennis, H., Duncan, C., 2003. Statistics with SPSS 11 για WINDOWS. Klidarithmos Publishing, Athens.

Forest-Based Industries, 2007. Available from http://ec.europa.eu/enterprise/ forest_based/woodworking_en.html

Gan, J., 2004. Effects of China's WTO Accession on Global Forest Product Trade. Forestry Policy and Economics 6, 509-519.

Institute of Export Researches and Studies, SEVE, 2006. Course of Greek Exports, Athens

Koutsogianni, A., 1977. Theory of Econometrics. An Introductory exposition of econometric methods. The Mac Millan Press Ltd. London.

Mutanen, A., 2006. Estimating Substitution in Coniferous Sawnwood Imports into Germany. Journal of Forest Economics, 12, pp 31-50.

Ostrom, C.W., 1990. Time series analysis. Series: Quantitative Applications in the Social Sciences. A Sage University paper. London.

SEVE, University of Macedonia, General Secretariat of Industry, YPAN, 2004. Applied Research for the configuration of follow-up indicators of export records of Greece

Shogren, J.F., 2007. Behavior in Forest Economics. Journal of Forest Economics, 12, 233-235.

Stamou 2005. Science of Commerce of Forestall products. Academic Lectures, AUTH. Thessalonica

Tomson, M., 2004. International Markets in Wood Products. Forestry Commission, Edinburgh, 1-6.

UNECE, FAO, 2004. European Timber. Trends and Prospects Into 21st Century.

UNECE, FAO, 2006. Forest Products Trade Flow Data 2003-2004. Timber Bulletin, V.LIX, No 5. pp 29-31.