

ASSESSING THE GLOBAL TRADE COMPETITIVENESS OF GREEK WINE

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Abstract

This paper deals with an ex-post evaluation of the long-term competitiveness performance (years 1961-2006) of Greek wine on the basis of foreign trade information.

Methodologically, competitiveness assessment is estimated by the calculation of global trade indices, i.e. trade flows, trade balance, import coverage index, relative comparative advantage or Balassa index, import penetration index, etc. and by examining of the evolution of their size. For the research needs, FAOSTAT time-series compiled data is used.

These indices are presented in diagrams and their trends are investigated by employing the ordinary least squares regression method and by examining various algebraic forms in order to select the best fitted ones.

Finally, an overall discussion of the Greek wine competitiveness findings is presented and strategic global trade future orientations are proposed.

Key-words: Analysis of time-series, competitiveness indices, exterior trade, wine.

1. Introduction

“From the earliest times, wine has been exported from one country to another. Evidence has been found that the ancient Greeks transported their wine by ship in the 3rd century B.C.” (Wagner, Olsen and Thach 2007, p. 283)

Wine, although is a traditional product in the agro-food economy of Greece, faces serious competitiveness problems in the international context due to economic globalisation and trade liberalisation.

This product is exportable and used to be important for the balance of payments and foreign trade.

However, wine is still generating local value added and employment in rural areas of Greece.

Greek wine competitiveness adaptation is necessary, together with concentration on quality and specialty products, by making best use of the comparative advantages of the country.

The meaning of competitiveness is wide and varies. Competitiveness analysis depends mainly on the target and on the level of investigation, e.g. for the overall economy, for a particular sector and for a specific product (or a product mix) (Maclaren 1991, McFetridge 1995).

The present approach adopted here is based on the calculation of appropriate indices concerning the capability of a country (Greece) to offer specific product (wine), in a particular market (domestic), at the same price or at better prices than those from the other supplier countries (aggregate data of export and import values are used) (Frohberg and Hartmann 1997, Porter 1998, Oster 1999, Baltas 2000). For this purpose, the external trade performance is studied.

2. Methodology

The measurement of the wine sector's competitiveness is based on calculation of the trend of twelve (12) representative indices showing the external trade dynamism and its performance.

These are, as follows: trade flows in quantities, trade flows in values, trade balance in quantities, trade balance in values, the import quantities coverage index, the import values coverage index, the import quantities penetration index, the import values penetration index the relative comparative advantage in quantities, the relative comparative advantage in values (Balassa indices), excess value of imports vs. value of exports per unit and terms of trade (Kaldis 2003).

Trade flows is the algebraic equivalent of exports quantities (or value) plus imports quantities (or value) for a particular year of reference. It shows the sector's supply chain of external trade continuity and level of importance in terms of volume (or currency).

Trade balance is the algebraic equivalent of exports quantities (or value) minus imports quantities (or value) for a particular year of reference. It shows gains or losses from external trade. A positive trade balance contributes to the national economy from various points of view, e.g. strengthen the productive basis and

bring foreign currency. A negative trade balance means expatriation of foreign currency in order to cover local needs, as well as dependence of the country on foreign productive bases.

The import coverage index is a percentage index showing the dynamism of exports quantities (or value) performance in order to cover the country's spending for imports for a particular year of reference (= exports quantities or value/imports quantities or value *100).

The import penetration index shows the performance of imports quantities (or value) in a specific country in relation to the country's "resistance" expressed on the sum of exports and imports. It is equal to: imports quantities or value/(exports quantities or value + imports quantities or value).

The relative comparative advantage index (also known as Balassa Index in honour of the person who introduced it in trade analysis) is a specialisation index and is calculated by the formula: (exports quantities or value - imports quantities or value)/(exports quantities or value + imports quantities or value). Prices range between -1.0 (exports quantities or value is zero) to +1.0 (imports quantities or value is zero). When import quantities or value is equal to the quantities or value of exports, the index's figure is 0. Negative sign of the index means lack of competitiveness.

Excess value of imports vs. value of exports per unit index is the algebraic equivalent of exports value per unit minus the exports value per unit for a particular year of reference. It shows the value significance of exports or imports value per unit.

Terms of trade shows the performance of imports values per unit in relation to the corresponding exports values per unit (=imports values per unit/exports values per unit).

The data used for the above calculations derive from FAOSTAT/FAO Statistics Division (29-09-2009).

In order to estimate the trendline of the above referred trade indices in Greece for the period 1961-2006, based on FAOSTAT data, it is assumed that these variables are related – ceteris paribus – with time (Intriligator, 1983, pp. 120-121).

Then, the relationship is estimated by applying a simple regression analysis (Robinson 1998).

The simple regression analysis is the widely used statistical procedure for the estimation of the average relationship between a dependent variable (Y: specific trade index) and an independent one (time).

This analysis, which is based on the method of ordinary least squares, attempts to find a line (regression line) where the sum of the squares of the errors takes the smallest possible value.

The simple regression analyses were conducted by simple means, i.e. EXCEL trendline routine (Papathanasiou 2005).

The estimation, of the statistically significant parameters of the derived functions, permits projections (Chalikias 2001). This helps the risk minimisation for the Greek wine global trade decision-making prospects.

3. Findings

The equations of the fitted models for the Greek wine competitiveness indices are as follows:

Competitiveness Index	Trend Line Algebraic Form
Trade Flows - Volume (th. tonnes)	$y = 0,0025x^6 - 0,3357x^5 + 17,005x^4 - 381,71x^3 + 3328,8x^2 - 1376,2x + 13954$ $R^2 = 0,3912$
Trade Flows - Value (th. US \$)	$y = 1008,6x^{1,1012}$ $R^2 = 0,9081$
Trade Balance - Volume (th. tonnes)	$y = 0,0016x^6 - 0,2131x^5 + 9,978x^4 - 194,63x^3 + 1086,4x^2 + 7955,3x + 4754,9$ $R^2 = 0,4398$
Trade Balance - Value (th. US \$)	$y = 1287,7x^{0,9542}$ $R^2 = 0,7934$
Import Coverage Index - Volume (%)	$y = 73121e^{-0,1199x}$ $R^2 = 0,6524$
Import Coverage Index - Value (%)	$y = 8972,3e^{-0,0772x}$

Competitiveness Index	Trend Line Algebraic Form
Value (%)	$R^2 = 0,7264$
Import Penetration Index - Volume (%)	$y = 0,1444e^{0,1137x}$ $R^2 = 0,6619$
Import Penetration Index - Value (%)	$y = 1,1712e^{0,07x}$ $R^2 = 0,732$
Relative Comparative Advantage - Volume (Balassa Index)	$y = -5E-09x^6 + 8E-07x^5 - 5E-05x^4 + 0,0014x^3 - 0,0167x^2 + 0,0688x + 0,9325$ $R^2 = 0,6547$
Relative Comparative Advantage - Value (Balassa Index)	$y = -5E-09x^6 + 7E-07x^5 - 4E-05x^4 + 0,0011x^3 - 0,0129x^2 + 0,0543x + 0,9101$ $R^2 = 0,7348$
Terms of Trade	$y = -3E-07x^6 + 4E-05x^5 - 0,0024x^4 + 0,0645x^3 - 0,8146x^2 + 3,895x + 4,2428$ $R^2 = 0,5823$
Excess value of imports vs. value of exports per unit (US \$/tonne)	$y = -6E-08x^6 + 9E-06x^5 - 0,0004x^4 + 0,0102x^3 - 0,102x^2 + 0,3528x + 0,6021$ $R^2 = 0,4457$

It is known that the estimations and examination of the competitiveness indices can show the performance of an industry and the degree to which it can cope with differentiated commercial challenges (Salinger 2000). The derivation of these indices (appendix: Table 2 and 3) is based on the relevant Greek wine trade data presented in appendix: Table 1.

The evolution of these indices is also illustrated in a diagrammatic form in appendix: Figures 1 and 2.

It is obvious, that the evolution of the competitiveness indices of Greek wine showed a negative trade performance and a dramatic degradation of trade performance due to an effective and rapid import penetration for the period of reference 1961-2006.

4. Conclusions and Recommendations

The overall analysis shows the deep problems of the Greek wine global trade performance. The Greek wine sector had to face a competitive trade environment.

The response of the Greek wine trade to the wider market is rather problematic and distressing.

This response is the result of inadequate preparation of the Greek wine industry to deal with the challenge of a wider and more competitive wine market that operates with higher standards concerning quality, price competition and availability of wine compared to the domestic market of Greece.

Due to these defects, imports displacing domestic products and the competitiveness indices declined.

For reversing this situation and for achieving competitiveness, there is a need for structural changes aiming at the modernisation of the wine production and marketing system, the best use of cooperative action and the employment of activities that result in differentiated and high quality wine products that embody value added services.

This must be based on a well-balanced sectoral strategic plan, concerning the mobilisation and coordination at all components across the Greek wine value chain.

If a concerted action to that effect is not undertaken, one can reasonably expect that under the conditions of the globalised market the situation of the Greek wine sector will deteriorate.

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Appendix

Table 1: Greek Wine External Trade Data, Years 1961-2006

Year	Exports Quantities (th. tonnes)	Exports Value (th. US \$)	Exports Value per Unit (US \$/tonne)	Imports Quantities (th. tonnes)	Imports Value (th. US \$)	Imports Value per Unit (US \$/tonne)
1961	21915	2412	0,11	52	50	0,96
1962	25172	2876	0,11	50	47	0,94
1963	32980	3496	0,11	70	74	1,06
1964	26935	3672	0,14	70	64	0,91
1965	47499	5484	0,12	61	66	1,08
1966	56604	5811	0,10	87	98	1,13
1967	55566	5828	0,10	99	110	1,11
1968	82216	6923	0,08	86	99	1,15
1969	91403	8880	0,10	98	115	1,17
1970	116157	12046	0,10	1830	293	0,16
1971	88776	11159	0,13	2138	316	0,15
1972	76285	11144	0,15	1203	327	0,27
1973	91569	19757	0,22	38893	5542	0,14
1974	57918	16099	0,28	25779	4042	0,16
1975	99488	22694	0,23	613	348	0,57
1976	75022	19191	0,26	230	533	2,32
1977	88612	22928	0,26	274	530	1,93
1978	86231	25974	0,30	422	947	2,24
1979	91811	33638	0,37	280	724	2,59
1980	25502	17802	0,70	270	708	2,62
1981	22335	17893	0,80	250	680	2,72
1982	23754	18136	0,76	320	667	2,08
1983	19947	18314	0,92	352	968	2,75
1984	44023	19052	0,43	468	915	1,96
1985	129078	32496	0,25	700	971	1,39
1986	96030	42110	0,44	496	950	1,92
1987	69477	49263	0,71	929	2432	2,62
1988	41687	30921	0,74	1395	3466	2,48
1989	92067	52186	0,57	3777	7055	1,87
1990	93005	64742	0,70	5428	10642	1,96
1991	58564	52477	0,90	7655	13495	1,76
1992	62107	75714	1,22	5424	11202	2,07
1993	52043	57921	1,11	4959	10898	2,20
1994	54610	58910	1,08	4222	9907	2,35
1995	54411	74543	1,37	3967	11043	2,78
1996	48464	71334	1,47	3957	10624	2,68
1997	46206	69890	1,51	4025	10447	2,60
1998	59342	75782	1,28	4664	10893	2,34
1999	49266	69447	1,41	6984	14521	2,08
2000	42973	58058	1,35	6287	13353	2,12
2001	55261	45125	0,82	7285	15296	2,10
2002	29071	47659	1,64	10718	41564	3,88
2003	36445	72792	2,00	30460	25076	0,82
2004	35044	78605	2,24	24351	30673	1,26
2005	33637	71562	2,13	13315	28821	2,16
2006	31721	69484	2,19	16027	33776	2,11

Source: FAOSTAT Database compiled data

Table 2: Competitiveness Indices of Greek Wine, Years 1961-2006

Year	Trade Flows Volume (th. tonne)	Trade Flows Value (th. US \$)	Trade Balance Volume (th. tonne)	Trade Balance Value (th US \$)	Import Coverage Index - Volume (%)	Import Coverage Index - Value (%)
1961	21967	2413	21863	2362	42144,231	4824,00
1962	25222	2877	25122	2829	50344,00	6119,15
1963	33050	3497	32910	3422	47114,29	4724,32
1964	27005	3673	26865	3608	38478,57	5737,50
1965	47560	5485	47438	5418	77867,21	8309,09
1966	56691	5812	56517	5713	65062,07	5929,59
1967	55665	5829	55467	5718	56127,27	5298,18
1968	82302	6924	82130	6824	95600,00	6992,93
1969	91501	8881	91305	8765	93268,37	7721,74
1970	117987	12046	114327	11753	6347,38	4111,26
1971	90914	11159	86638	10843	4152,29	3531,33
1972	77488	11144	75082	10817	6341,23	3407,95
1973	130462	19757	52676	14215	235,44	356,50
1974	83697	16099	32139	12057	224,67	398,29
1975	100101	22695	98875	22346	16229,69	6521,26
1976	75252	19193	74792	18658	32618,26	3600,56
1977	88886	22930	88338	22398	32340,15	4326,04
1978	86653	25976	85809	25027	20433,89	2742,77
1979	92091	33641	91531	32914	32789,64	4646,13
1980	25772	17805	25232	17094	9445,19	2514,41
1981	22585	17896	22085	17213	8934,00	2631,32
1982	24074	18138	23434	17469	7423,13	2719,04
1983	20299	18317	19595	17346	5666,76	1891,94
1984	44491	19054	43555	18137	9406,62	2082,19
1985	129778	32497	128378	31525	18439,71	3346,65
1986	96526	42112	95534	41160	19360,89	4432,63
1987	70406	49266	68548	46831	7478,69	2025,62
1988	43082	30923	40292	27455	2988,32	892,12
1989	95844	52188	88290	45131	2437,57	739,70
1990	98433	64744	87577	54100	1713,43	608,36
1991	66219	52479	50909	38982	765,04	388,86
1992	67531	75716	56683	64512	1145,04	675,90
1993	57002	57923	47084	47023	1049,47	531,48
1994	58832	58912	50388	49003	1293,46	594,63
1995	58378	74546	50444	63500	1371,59	675,02
1996	52421	71337	44507	60710	1224,77	671,44
1997	50231	69893	42181	59443	1147,98	669,00
1998	64006	75784	54678	64889	1272,34	695,69
1999	56250	69449	42282	54926	705,41	478,25
2000	49260	58060	36686	44705	683,52	434,79
2001	62546	45127	47976	29829	758,56	295,01
2002	39789	47663	18353	6095	271,24	114,66
2003	66905	72793	5985	47716	119,65	290,29
2004	59395	78606	10693	47932	143,91	256,27
2005	46952	71564	20322	42741	252,62	248,30
2006	47748	69486	15694	35708	197,92	205,72

Source: FAOSTAT Database compiled data

Table 3: Competitiveness Indices of Greek Wine, Years 1961-2006

Year	Import Penetration Index - Volume (%)	Import Penetration Index - Value (%)	Relative Comparative Advantage – Volume (Balassa Index)	Relative Comparative Advantage - Value (Balassa Index)	Excess value of imports vs. value of exports per unit (US \$/tonne)	Terms of Trade
1961	0,24	2,03	1,00	0,96	0,85	8,74
1962	0,20	1,61	1,00	0,97	0,83	8,23
1963	0,21	2,07	1,00	0,96	0,95	9,97
1964	0,26	1,71	0,99	0,97	0,78	6,71
1965	0,13	1,19	1,00	0,98	0,97	9,37
1966	0,15	1,66	1,00	0,97	1,02	10,97
1967	0,18	1,85	1,00	0,96	1,01	10,59
1968	0,10	1,41	1,00	0,97	1,07	13,67
1969	0,11	1,28	1,00	0,97	1,08	12,08
1970	1,55	2,37	0,97	0,95	0,06	1,54
1971	2,35	2,75	0,95	0,94	0,02	1,18
1972	1,55	2,85	0,97	0,94	0,13	1,86
1973	29,81	21,91	0,40	0,56	-0,07	0,66
1974	30,80	20,07	0,38	0,60	-0,12	0,56
1975	0,61	1,51	0,99	0,97	0,34	2,49
1976	0,31	2,70	0,99	0,95	2,06	9,06
1977	0,31	2,26	0,99	0,95	1,68	7,48
1978	0,49	3,52	0,99	0,93	1,94	7,45
1979	0,30	2,11	0,99	0,96	2,22	7,06
1980	1,05	3,82	0,98	0,92	1,92	3,76
1981	1,11	3,66	0,98	0,93	1,92	3,40
1982	1,33	3,55	0,97	0,93	1,32	2,73
1983	1,73	5,02	0,97	0,90	1,83	3,00
1984	1,05	4,58	0,98	0,91	1,52	4,52
1985	0,54	2,90	0,99	0,94	1,14	5,51
1986	0,51	2,21	0,99	0,96	1,48	4,37
1987	1,32	4,70	0,97	0,91	1,91	3,69
1988	3,24	10,08	0,94	0,80	1,74	3,35
1989	3,94	11,91	0,92	0,76	1,30	3,30
1990	5,51	14,12	0,89	0,72	1,26	2,82
1991	11,56	20,46	0,77	0,59	0,87	1,97
1992	8,03	12,89	0,84	0,74	0,85	1,69
1993	8,70	15,84	0,83	0,68	1,08	1,97
1994	7,18	14,40	0,86	0,71	1,27	2,18
1995	6,80	12,90	0,86	0,74	1,41	2,03
1996	7,55	12,96	0,85	0,74	1,21	1,82
1997	8,01	13,00	0,84	0,74	1,08	1,72
1998	7,29	12,57	0,85	0,75	1,06	1,83
1999	12,42	17,29	0,75	0,65	0,67	1,47
2000	12,76	18,70	0,74	0,63	0,77	1,57
2001	11,65	25,32	0,77	0,49	1,28	2,57
2002	26,94	46,58	0,46	0,07	2,24	2,37
2003	45,53	25,62	0,09	0,49	-1,17	0,41
2004	41,00	28,07	0,18	0,44	-0,98	0,56
2005	28,36	28,71	0,43	0,43	0,04	1,02
2006	33,57	32,71	0,33	0,35	-0,08	0,96

Source: FAOSTAT Database compiled data

Figure 1: Competitiveness Indices of Greek Wine, Years 1961-2006

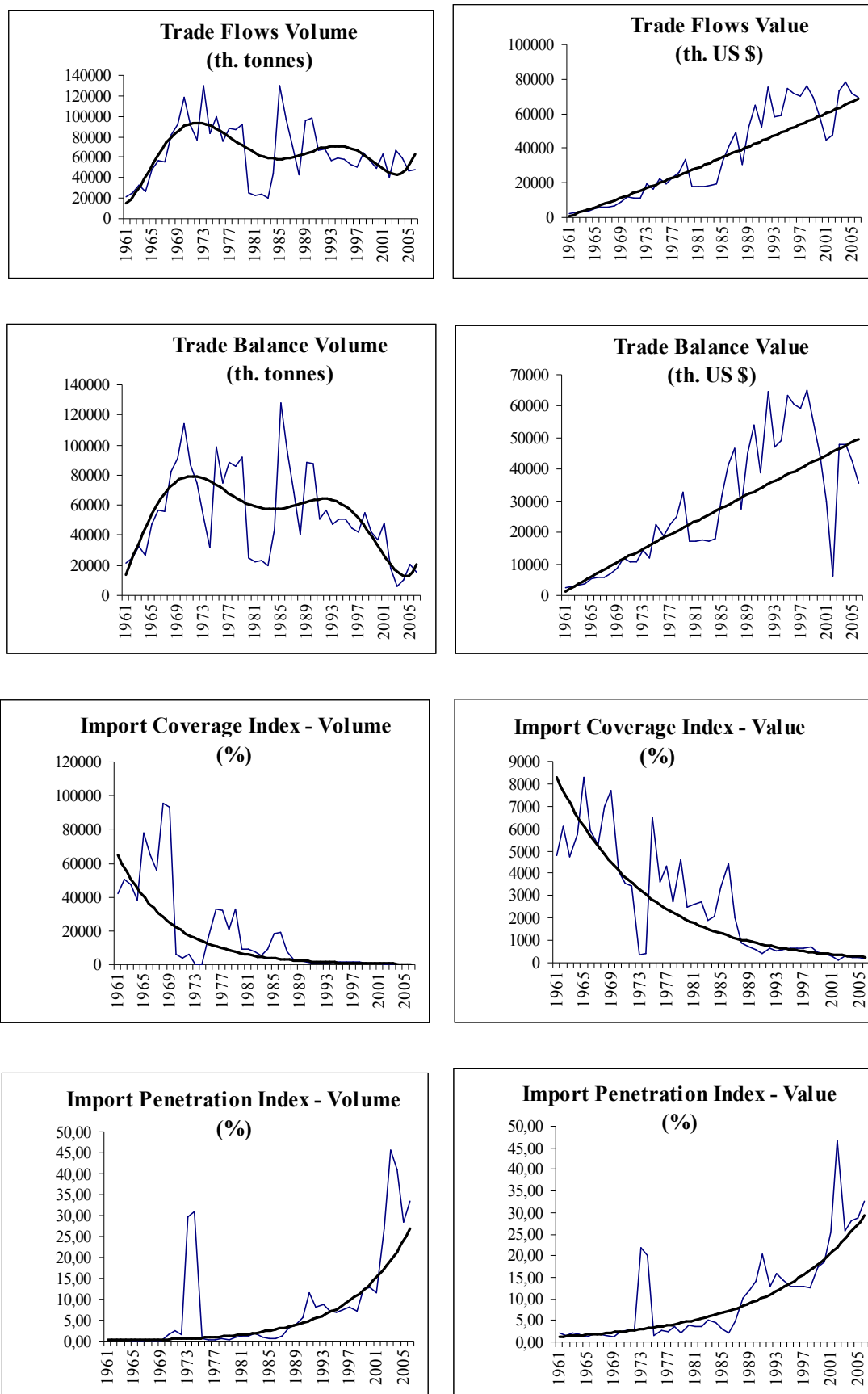


Figure 2: Competitiveness Indices of Greek Wine, Years 1961-2006

