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# ENTREPRENEURIAL STRATEGIES IN GREEK SMALL-MEDIUM ENTERPRISES

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## Abstract

The main purpose of this paper is to investigate the entrepreneurial strategies adopted by Greek entrepreneurs for the establishment and development of their small-medium enterprises. The analysis is based upon a special questionnaire through which are investigated their attitude toward risk-taking, the various activities they undertake in order to differentiate their firms and the ways by which they make their entrepreneurial decisions. These issues are examined in comparison to relevant theoretical conclusions and empirical findings of other economies.

*JEL classification: M13.*

*Keywords: Entrepreneurial strategies, Greek entrepreneurship, growth strategies of SME's.*

## 1. Introduction

In the present paper are analysed by using questionnaire the various strategies of Greek entrepreneurs followed for the establishment and growth of their firms. Their strategies toward firm's differentiation and development process are also examined in terms of their attitude toward risk-taking and their decision making process.

It is used a sample of almost 250 respondents in Attica area, from whom data was elicited using a questionnaire in the Spring of 2004. Our findings are then presented and discussed in detail, before we briefly present conclusions. The structure and representation of the sample being examined, despite the limited number of entrepreneurs taking part, and other shortcomings, is, in general terms, representative of the Greek Economy. More specifically, approximately 63.9% of the entrepreneurs in our sample are from the area of Attica, while only 23.6% are from other major towns in the country, and only 8.9% from smaller market towns and villages. These enterprises belong to the three sectors of the economy,

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composed as follows: 2.8% of the enterprises are in the primary sector, 18.3% in the secondary and 78.9% in the tertiary (trade 36.6%, tourism 6.6% and other services 35.7%). Furthermore, the enterprises in the sample are relatively new; more than 50% have been founded in the last twenty years and their founder is, in 69.5% of the cases, the present-day entrepreneurs, while in 33.5% it is their parents, 2.0% their relatives and 6.0% other individuals.

The paper runs as follows: in the first section is investigated the attitude of Greek entrepreneurs in risk-taking situations. In the second section are analysed the various strategies adopted and the degree that they followed by the entrepreneurs who tried to establish and develop a profitable enterprise. In the third section are examined the various activities taken by the entrepreneurs who wanted to diversify their firms and to exploit consumers' special preferences. In the final section, the way in which entrepreneurial decisions are taken in Greek small-medium enterprises is explored. Our findings are compared with relevant theoretical conclusions and empirical findings of other economies. In conclusion, it is revealed the Greek entrepreneurial "physiognomy" in strategic and decision-taking processes which are crucial factors for the development and competitiveness of the Greek economy.<sup>1</sup>

## **2. The attitude toward risk-taking**

As is well-known, the assumption of various risks (principally the non-measurable kind) by the entrepreneur has been suggested by Frank Knight (1921) as a theory serving as a justification for the entrepreneurial function and its reward (i.e., profit). Despite the fact that this theory was accepted and followed by many economists, recently it has come under criticism for its insufficient justification of other entrepreneurial activities of a more functional nature (see Karayiannis, 1999, ch.9) or by its lack of empirical verification (see Blanchflower, Oswald, 1998). However, entrepreneurs behave differently in regard to the assumption of risk from uncertainty. In case where entrepreneurs are highly risk aversers (a high degree of risk avoidance) and if the society does not forgive economic failure, then the supply of entrepreneurship is decreased (see Gasse, 1982, McGrath, 1999, p. 25).<sup>2</sup>

It is generally accepted from the time of Marshall (1890, p. 509) until recently (see e.g. McClelland, 1961, pp. 207, 210-1; Kiam, 1988, p. 55) that entrepreneurs are mainly acting by assuming moderate risks accompanied by a moderate rate of profit. Such behaviour is also observed among Greek entrepreneurs. According to our data (see Table 1) 67.9% of the entrepreneurs in our sample stated that they

behave moderately toward risks and profits, while only 19.5% of them prefer to adopt strategies with a high risk assumption but which are “promising” high profits. In other words, the Greek entrepreneurs are risk aversers. However, according to some European reports (see e.g. *Flash Eurobarometer*, 2002, pp. 38, 43) are less risk avoiders than the entrepreneurs in other European countries such as England and Spain.

**Table 1.** *Entrepreneurial activities in terms of risks/profits.*

	%	
Low risks and profits	31	12,6
Moderate risks and profits	167	67,9
High risks and profits	48	19,5
Total	246	100,0

The attitude of entrepreneurs in regard to risk assumption depends on various exogenous and endogenous factors (leaving aside the personality of the entrepreneur himself). For example, it depends exogenously on the production sector that entrepreneurs are activated. According to our data the entrepreneurs who assume higher risks in the expectation of higher profit, are those who primarily activated in service sector (47.9%) and only secondarily in manufacture (22.9%). This may be explained by the fact that in the Greek economy, service sector is more competitive and growing than manufacture which is steadily shrinking. Examining the attitude of entrepreneurs in regard to risks- taken activities to some endogenous factor, such as entrepreneur’s gender, is observed from our data that male entrepreneurs are less risk- aversers (hoping a higher rate of profits) than female entrepreneurs. Also, by examining the rate of risk aversion with the person who establishes the firm is deduced by table 2 that those who are the same person who found the enterprise are less risk aversers than those who inherited the enterprise (i.e. they prefer to assume higher risks/profits 22,8% than the others). Such a behavioural trend indicates that creativity is interwoven with the assumption of responsibilities (see Cooper, Dunkelberg, 1986).

**Table 2.** *Firm establishment – Risk assumption.*

Founder		Risks/profits			Total
		Low risks/profits	Moderate risks/profits	High risks/profits	
N.A.		0	1	0	1
	%	0,0%	100,0%	0,0%	100,0%
The entrepreneur		20	112	39	171
	%	11,7%	65,5%	22,8%	100,0%
Family relatives		1	4	0	5
	%	20,0%	80,0%	0,0%	100,0%
Other		1	8	5	14
	%	7,1%	57,1%	35,7%	100,0%
Parents		9	42	4	55
	%	16,4%	76,4%	7,3%	100,0%
Total		31	167	48	246
	%	12,6%	67,9%	19,5%	100,0%

Although may be argued that entrepreneurial success (measured in terms of the rate of sales as a measure of firm's growth, see Davidsson, Wiklund, 2000) is related with their attitude toward risk-taking situations, our data disprove such a thesis. By our data (see table 3) cannot be deduced that the higher (or the lower) risk-taking entrepreneurs are those who achieve the higher (or the lower) success (in terms of sales), and vice versa. Thus, for Greek entrepreneurs, as for entrepreneurs in others countries (see, e.g. Peacock, 1986), it is not easily revealed that their attitude toward risk-taking situations reveal the level of their entrepreneurial success or failure.

**Table 3.**

Sales change		Rate of risk-taking			Total
		Low risks	Moderate risks	High risks	
No alteration		6	21	10	37
	% sales	16,2%	56,8%	27,0%	100,0%
	% rate of risks	20,7%	13,0%	20,8%	15,5%
1%-10% increase		9	55	6	70
	% sales	12,9%	78,6%	8,6%	100,0%
	% rate of risks	31,0%	34,0%	12,5%	29,3%
10%-30% increase		9	45	17	71
	% sales	12,7%	63,4%	23,9%	100,0%
	% rate of risks	31,0%	27,8%	35,4%	29,7%
30%-50% increase		2	25	13	40
	% sales	5,0%	62,5%	32,5%	100,0%
	% rate of risks	6,9%	15,4%	27,1%	16,7%
Reduction		3	16	2	21
	% sales	14,3%	76,2%	9,5%	100,0%
	% rate f risks	10,3%	9,9%	4,2%	8,8%
Total		29	162	48	239
	% sales	12,1%	67,8%	20,1%	100,0%
	% rate of risks	100,0%	100,0%	100,0%	100,0%

### **3. Start-up and Development Strategies**

According to the market form in which the firm is activated, that is, whether it tends toward perfect competition or toward monopolistic competition, the entrepreneurs' strategies are drawn upon two types of behaviour: (a) where the entrepreneurs recognize their competitors and are aware they will react to and "counter-attack" their own strategy; and (b) where the entrepreneurs do not pay the slightest attention to the reactions of their competitors (see, Machlup, 1937, pp. 13-14). But what is certain is that both of these types of entrepreneurial behaviour share the same undisputed interest in the reactions of customers to their strategy.

The entrepreneurs who are not interested in the strategy pursued by their competitors, may feel they have such a strong advantage in costs or goods produced, that they do not face any probable reduction in sales, no matter what strategy their competitors might choose to employ. But this form of entrepreneurial behaviour is compatible only with a powerful monopoly which sets up important entrance barriers to ambitious competitors and is fundamentally shielded either by state management or some other form of privileged protection. Consequently, this entrepreneurial behaviour and strategy is only concerned with a small -though often vital- sector of entrepreneurial activity in free market economies.

Let us now proceed to the other type of entrepreneur, the one who is intensely interested in the strategy and the reactions of his or her competitors, and which constitute the great majority on a free market economy. Before acting on anything, these entrepreneurs, who believe it will provoke reactions from both their customers and their competitors, ask themselves questions such as: how many customers can a specific entrepreneurial strategy take away from the competitors; how many customers will be lost as a reaction to, or as the result of, a new strategy launched by his competitors, and so on and so forth (see, Porter, 1985, chap. 6).

The behaviour of Greek entrepreneurs in regard to risk, as we saw in the previous section, appears to lead them, in what concerns their competitors, toward a “hesitant” strategy in establishing themselves in the market and the acquisition of a competitive advantage. As can be seen in Table 4 only 30.5% believe that their pioneering strategy will be followed by their competitors, while 53.3% think this will only occur sporadically. Also, the replies to our questionnaire of those entrepreneurs who think of themselves as pioneers, and feel that their competitors will follow in their footsteps, have achieved the largest increases in the last three years (an increase of 10-30% in percentages of 31.9% and 32.8% respectively), as opposed to those who do not consider themselves to be forward-looking (an increase of 1-10% in a percentage of 38.5%).

**Table 4.** *Competitive strategies.*

Strategies followed by the competitors		The entrepreneurs follow competitors strategies	
No	40 (16,2%)	No	62 (25,2%)
Some times	131 (53,3%)	Some times	151 (61,4%)
Yes	75 (30,5%)	Yes	33 (13,4%)
Total	246 (100%)	Total	246 (100 %)

The degree to which the entrepreneur takes the strategy of his competitors into account, appears, in most cases, to be a modest one. As the answers given by the entrepreneurs to the related question in our sample indicates (see Table 4), only 13.4% always follow in the steps of the strategy adopted by their competitors for their establishment in the market, while 61.4% do so on occasion and 35.2% never follow it. This is not an indefensible attitude, because the imitation of a strategy for the purpose of achieving a competitive advantage hides high costs caused by –among other things- the inadequate utilization of expert knowledge by the imitating enterprise.

The pioneering attitude pursued by entrepreneurs against their competitors, when seeking to establish and develop themselves in the market, can be achieved in many ways, the most important of which are concerned with: (a) technological progress, (b) research conducted for the creation of new products and services, or their improvement; and (c) increasing the enterprise's productivity (see, Porter, 1985, pp. 97-99, 170-176; Finley, 1990, chap. 5). Let us see how the entrepreneurs in our sample responded to these basic strategies for the development of a competitive advantage.

Based on the answers to the relevant question, as can be seen in Table 5, our entrepreneurs sought, (a percentage 33.3%) to always be better equipped with the latest technology than their competitors, while at the same time a considerable percentage (22.4%) seldom sought this technology. It also appears that during the last three years, the entrepreneurs who always endeavoured to keep in touch with technological progress and made use of the modern technology, have achieved the largest increase in their sales (10-30%, a percentage of 37.5%). Of course, the replacement of mechanical equipment by the enterprise depends not only on the independent (that is scientific) technological progress, but also on its cost. The quicker, chronologically, the technological obsolescence and the higher its cost, the slower is the adoption of the use of new technology (see Frankel, 1955; Barrere, 1961). This was also confirmed by the strategy our entrepreneurs followed. As we observed from our data, the entrepreneurs who are active in manufacturing (with a high cost of obsolescent machinery), adopted modern technology to a smaller degree than those who are active in trade and service sectors.<sup>3</sup>

Examining the desire of entrepreneurs to use a modern and advanced technology in regard to their gender, it appears that men are somewhat more receptive (34.8%) than women (28.3%). This relatively small difference in men's receptivity to follow an innovative technology to that of women, is also shown by the data that correlates the sex of the entrepreneur with the expenditures made for innovations (41.5% of the men as compared to 39.1% of the women).

**Table 5.** *Technological improvement as a competitive strategy.*

Competitive strategy by the adoption of modern technology		Competitive strategy by investment in R&D for innovative products/services	
Always	82(33,3%)	Always	101 (41,1%)
Many times	107 (43,5%)	Few times	92 (37,4%)
Very rare	55 (22,4%)	No	53 (21,5%)
N.A.	2 (0,8%)		
Total	246 (100%)	Total	246 (100 %)

It is well-known that the Greek entrepreneurs have not turned toward innovative activity in a dynamic fashion; there are many and varied reasons for this. According to the data in Table 5, they invest at a moderate level (41.1%) in the creation of new products or services, while an important percentage of them (21.5%) do not invest at all. When they do act innovatively, that is, introducing into their productive process new products or services (more than 10), then again according to our data, they do so primarily in the trade sector (percentage of 63.8%) followed by services (23.4%) and manufacturing (10.6%). This approach to innovation by Greek entrepreneurs shows that they are not pioneers according to Schumpeter's theory (1911). This is not only due to the belated technological progress in Greece, but also (see Karayiannis, 1996) is attributed to various cultural and historical factors which significantly influence entrepreneurship in a given economy (see Casson, 1995, chap. 6; Thomas, Mueller, 2000). Furthermore, it reveals that the entrepreneurs act primarily through utilizing a combination of their own knowledge and the "ignorance" of the consumers in bringing new products into the market (through commercial trade) just as according to Kirzner (1973) the entrepreneur is functioned. This tendency by our entrepreneurs indicates the steady weakening of the manufacturing sector in the Greek economy and the enlargement of retail trade and services sectors. But as it has been correctly maintained by Baumol (1990), Murphy, Shleifer, Vishny (1991) the orientation of entrepreneurs toward productive or parasitic activities is not simply a matter of choice, but is determined to a large degree by the economic policies and the goals of the central authority, something which may also be valid, as has been shown elsewhere (see Karayiannis, 2005), for Greek contemporary economic policy. Notwithstanding the lack of innovative initiative, wherever it may be from, significantly deprives the enterprise of an important competitive advantage (see Porter, 1985, pp. 177-182; Michie, Prendergast, 1997).

A third method by which entrepreneurs can increase their competitiveness, is by increasing the productivity of their labourers through investing in improving their skills and knowledge. Responding to the relevant question, as can be seen in Table

6, 33.3% of our entrepreneurs made such investments, while 40.7% have done so only a few times and 26.0% have never made such investments.

The entrepreneurs who invest the most in the improvement of the skills and the technical knowledge of their labourers, as has been theoretically maintained (see, for example Drucker, 1999, pp. 171-190), and as our relevant data also indicates, have over the past three years achieved the greatest increase in sales (an increase of 10-30%, in percentages of 33.8% and 33% respectively). These expenditures for the increase productivity of labour, as can be seen from the replies to our questionnaire, is mostly adopted by male (34% of them stated they always make such expenditures) than female (30.4%) entrepreneurs. Furthermore, again according to our data, it has been shown that the higher the educational level at which these entrepreneurs graduated, the more they spent on the education of their labourers, thus recognizing the significance of education in increasing labourer’s productivity.

In addition to the expenditures for the education of the labourers, the entrepreneurs by offering them incentives have the potential to further increase their productivity and, by extension, the profitability of their enterprise (see, Syrett, Lammiman, 2002, 94-149).<sup>4</sup> As can be seen in Table 6, 54.1% of the entrepreneurs give their labourers such incentives, while 36.6% do not embrace such a policy aimed at encouraging work effort. The entrepreneurs who always provide such incentives to their labourers achieved a greater increase in their sales over the last three years (10-30% increase in a percentage of 30.5%), as compared to those who did not follow this strategy and who achieved an increase of 1-10% in a percentage of 34.8%. Also such a strategy seems to be followed more by male (56%) than female (45.7%) entrepreneurs.

**Table 6.** *Strategy of increasing labourers’ productivity.*

Investment in labourer’s skill/ dexterity, knowledge		Incentives for labourers	
Always	82 (33,3%)	Always	133 (54,1%)
Few times	100 (40,7%)	Few times	90 (36,6%)
No	64 (26%)	No	23 (9,3%)
Total	246 (100%)	Total	246 (100 %)

#### **4. Differentiation: The Dynamic Strategy for the Future**

The entrepreneur’s field of action is very like that of the natural kingdom described by Darwin’s theory of the survival of the fittest and the extinction faced by weak organs and organisms. This kind of economic environment has been “constructed”

by economists, based on a number of quite limited assumptions, such as those of perfect competition. However, entrepreneurship is unable to function in such an environment of perfect competition as also being in an environment of perfect monopoly (see Kirzner, 1973, chap. 3; Karayiannis, 1999, pp. 23-27, Ikeda, 1990). In the first market case, there are no places for entrepreneurial actions, except for the organizational and administrative control of the enterprise. In the other case, the exclusive possession of a product, which has no close substitutes, means that the entrepreneur will have little desire to compete. It is only in the intermediary space between these two extreme market cases of perfect competition and monopoly, that is, the one of monopolistic competition, in which entrepreneurship is functioned. In other words, the function of entrepreneurship finds a space to act through the creation of differentiated products and/or services.<sup>5</sup>

So now let us see with what method Greek entrepreneurs exploit the information they gather on the market, and how they plan and adopt the strategy of differentiating their products and/or services.

The entrepreneurial strategy is to follow closely the suggestions made by the customers with the aim of improving the products or services offered, accompanied -as one would expect- by increased sales. Indeed, as we have observed from our data, the entrepreneurs who state that they closely follow customer's suggestions, and adopt them, are principally the same ones who in the past three years have achieved the greatest increase in sales (10-30% in a percentage of 32%). On the other hand, those who have listened to customer suggestions, but have adopted them only to a moderate degree, have achieved a smaller increase (of 1-10% in a percentage of 35.6%) (see also Drakopoulou-Dodd, Karayiannis, 2006).

Yet another way for entrepreneurs to improve their possibilities for increased profitability, and the subsequent development of the enterprise, is to get to know "the competitor". In other words, to learn just what their competitors are offering. From the answers given to this specific question, as the data in Table 7 indicates, quite a significant percentage of Greek entrepreneurs (69.5%) know very well what is being offered by their competitors, and only a very small percentage (5.3%) are inadequately informed.

**Table 7.**

Information for competitors	Number	%
No	3	1,2
Very few	13	5,3
In a moderate rate	59	24,0
Very much	171	69,5
Total	246	100,0

In addition to the above information the entrepreneurs gather about the market and their competitors, they have to compare their competitive advantages with those of their competitors. This strategy, which is advised by successful managers (see, for example, Kiam, 1986, p. 111) and used by many successful small firms (see Winter, 1987, Merz, Sauber, 1995), counsels the entrepreneur to look closely at products and/or services similar to his own, so that he could find out where he has an advantage and where he does not. Such a strategy seems to have been adopted and used by quite a number of small Greek entrepreneurs. As they note in response to a relevant question, they are indeed interested in the strategy followed by their competitors and have gathered information related to that. This information shows that many of their competitors offer the same products and services as they do. But a sufficiently large number of them (44.3%), as we can see in Table 8, also note that they themselves offer a greater variety of products or services than their competitors, while 45.9% maintain they offer the same number. In other words, a variety of products and services are sufficiently important in providing a keen entrepreneurial competition for the acquisition of specific market shares (see also Drakopoulou-Dodd, Karayiannis, 2006).

As has been generally accepted (see, for example, Krishna, Winston, 1998), there is a direct positive relationship between the quality of the product or service and the viability and development of the enterprise. That is, the entrepreneurs who offer higher quality products enjoy long-term profits, higher than those of their competitors who offer products qualitatively inferior. The entrepreneurs in our sample, when asked the relevant question, stated that they compare the products or services they offer with those of their competitors. As we can observe from Table 8 the entrepreneurs possess information (in a rate of 41.1%) about their competitors and thus they are in a position to “evaluate” their comparative advantage in terms of quality of the goods and services being offered. Similarly, the entrepreneurs believe, as we can also observe from Table 8, that the products or the services they offer, (a percentage of 44.3%) have been improved in comparison with that of their competitors, while 45.9% of the entrepreneurs believe they are both the same and only 8.5% consider themselves to be very innovative.

**Table 8.** *Differentiation toward competitors.*

In the number of product/services		In the quality of product/services		In the innovation of product/services	
Fewer	24 (9,8%)	Much better his own	101 (41,1%)	Very innovative	21 (8,5%)
The same	113 (45,9%)	Little better his own	58 (23,6%)	Similar with competitors	113 (45,9%)
More	109 (44,3%)	The same	85 (34,6%)	Better than competitors	109 (44,3%)
N.A		N.A.	2 (0,8%)	N.A.	3 (1,35%)
Total	246 (100%)	Total	246 (100%)	Total	246 (100%)

The strategy which the Greek entrepreneurs follow with the aim of differentiating themselves from their competitors, depends on their sector. A percentage of 36.6% of the enterprises which function in services primarily seek to produce ever improved products while 35.6% of those involved with trade aspire to the same thing. In addition, the entrepreneurs who believe they offer greatly improved products and/or services in comparison to those of their competitors, state that during the past three years they have achieved a higher level of sales (an increase of 10-30% in a percentage of 39%), than the others who produce practically the same products and services as their competitors (achieve an increase of sales of 1-10% in a percentage of 35%). Furthermore, the entrepreneurs who believe that they offer more innovative products or services than those of their competitors, also show a greater increase in their sales over the past three years. In addition, it became obvious that the strategy of constantly improving products and services is the one that is conducive to the survival of the enterprise and its development. This strategy is followed by the entrepreneurs of the services sector (34.7%). As our data demonstrates they copy their competitors less (12.1%) when compared to the entrepreneurs who are active in the other sectors, such as trade (57.6%) and manufacture (21.2%).

The above analysis demonstrate, among other things, that indeed entrepreneurs aspire “to know” their competitors and take into account their strategy during the planning of their own activities.

The entrepreneurs, in addition to exploring the market and the “movements” of their competitors, usually develop their own competitive advantage by focusing their

attention on the potentials for improvement which relate to: (a) the quality of their products or services; (b) the discovery and creation of new products and services; (c) the methods used for sales promotion; (d) the method and the process used in production; (e) the personal contact with customers; and (f) expansion into other markets.

As can be seen in Table 9a, the entrepreneurs bestow importance (ranged on a scale of 1 to 5 in terms of importance) to the strategy: the development of personal contact with their customers. The entrepreneurs rank the order of importance as in table 9b the strategies they aspire to adopt.

**Table 9a.**

	<b>Strategy/target</b>					<b>Rate of importance</b>	
	1	2	3	4	5	Total	
(a)	21 (8,5%)	16 (6,5%)	29 (11,8%)	65 (26,4%)	115 (47,7%)	246 (100%)	
(b)	42 (17,1%)	27 (11%)	60 (24,4%)	51 (20,7%)	66 (26,8%)	246 (100%)	
(c)	42 (17,1%)	23 (9,3%)	53 (21,5%)	56 (22,8%)	72 (29,3%)	246 (100%)	
(d)	63 (25,6%)	21 (8,5%)	42 (17,1%)	67 (27,2%)	53 (21,5%)	246 (100%)	
(e)	18 (7,3%)	12 (4,9%)	31 (12,6%)	48 (19,5%)	137 (55,7%)	246 (100%)	
(f)	90 (36,6%)	36 (14,6%)	52 (21,1%)	28 (1,4%)	40 (16,3%)	246 (100%)	

**Table 9b.**

<b>Rate of importance of strategy/target</b>
(a) conduct with customers
(b) improvement of product/services
(c) new marketing techniques
(d) innovation in product/services
(e) innovation in production process
(f) exploitation of new markets

The principal strategy adopted by Greek entrepreneurs of “personal contact with the customers” is of primary importance as personal contacts of individuals are of great help in facilitating the examination of their various needs (as producers and consumers). As Kiam characteristically continues to recommend (1988, p. 87), the entrepreneur must speak with his customers because “the best product is worthless if there is no one to purchase it”. Furthermore, this strategy gives the entrepreneur the potential to develop two individual advantages: (1) the collection of information for the preferences and needs of consumers, which is an important

factor in expanding market share and thereby increasing the profitability of the firm; and (2) the establishment of a degree of personal recognition which will insure an at least steady market share. It has been widely known, and for a very long time (mainly by the time of T. Veblen, 1904, pp. 138-139, 172-173, see also, Griffin, Karayiannis, 2002), that the successful entrepreneur lends his good reputation and recognition to the enterprise something which brings him in turn “faithful” clients.<sup>6</sup> This reputation, as an intangible asset of the enterprise is a marketable value. It has been empirically confirmed that successful entrepreneurs who sell their enterprises usually seek a special price for their reputation and good name which they themselves have created (see, Tadelis, 1999).

Whether the attention paid by entrepreneurs to above six methods (a-f) of improving the goods offered also depends on general factors such as the sector they are functioning. Examining in detail the correlation of greatest attention paid (levels 4 & 5) by entrepreneurs to the variables being examined, we take Table 10 from which the following general conclusions may be drawn: (i) the greatest attention (70-90%) is paid to product or service improvement offered by entrepreneurs who are active in trade, manufacturing and services; (ii) the greatest attention to the improvement of the productive process is sought by entrepreneurs in the agricultural sector; (iii) the greatest attention paid to customer contact is adopted by entrepreneurs in the tourist sector; and (iv) nearly all the entrepreneurs, and in all sectors, show a smaller degree of expansion into other markets.

**Table 10.**

Rate of importance (4 & %)		strategy/target					
		0-40%	40-50%	50-60%	60-70%	70-80%	80-90%
(a)				Agriculture		Trade	
				Tourism		Manufacture	
						Services	
(b)	Tourism		Manufacture	Agriculture			
			Services	Trade			
(c)	Tourism		Manufacture	Trade			
			Agriculture	Services			
(d)			Trade	Manufacture	Agriculture		
			Tourism				
			Services				
(e)			Agriculture		Manufacture	Trade	Services
				Tourism			
(f)	Trade		Agriculture				
	Manufacture						
	Services						
	Tourism						

Through further examination of the above factors and goals of entrepreneurs and the high degree of attention they pay to them (4 & 5 degrees), depending to their

sex, we reach some conclusions which on average show a marginal difference. As can be seen in Table 11, female entrepreneurs pay greater attention than their male colleagues to: (i) the improvement of the products/ services which they offer; (ii) the creation of new products/services; and (iii) sales promotion. On the other hand, male entrepreneurs state that they pay greater attention than their female colleagues to: (1) contact with their customers; (2) the improvement of the production process; and (3) the expansion into new markets.

**Table 11.**

Strategy/target	Rate of importance (4&5)
(a)	Female (76,1%)
	Male (72,5%)
(b)	Female (56,5%)
	Male (45,5%)
(c)	Female (56,5%)
	Male (51%)
(d)	Male (52%)
	Female (34,8%)
(e)	Male (77%)
	Female (67,4%)
(f)	Male (29,5%)
	Female (19,5%)

The entrepreneur’s educational background is a variable which influences the attention they paid to specific strategies. According to our data, of the above goals which attract the attention of entrepreneurs, their level of education appears to have a positive effect in regard to the importance they place on innovation. In other words, the more education they received the more the entrepreneurs value the importance of innovation and thus they give it priority among the strategic goals open to their enterprise. The same high degree of attention is given to sales promotion (marketing) and to the strategy used for the improvement of the production process by those entrepreneurs who graduated from the higher schools of education when compared to those who only received ordinary schooling.

The total number of entrepreneurs in our sample, as can be seen in Tables 9a, 9b, turn, in their majority, more toward marketing and less toward innovation as methods for increasing their profitability and the development of their enterprise. This is confirmed as well by an examination of the course of sales in the last three years in relation to the aims of the marketing strategy which they believed they were pursuing. As our data demonstrates, the entrepreneurs who give a high degree of importance to sales and marketing (5 degrees), achieve a greater increase in sales (10-30% in a

percentage of 37.1%) as compared to those who pay less importance (3-4 degrees) to sales promotion and achieve an increase of 1-10% (in percentages of 30% and 36.4% respectively). We are drawn to the same conclusion if is examined the importance entrepreneurs give to their personal contact with their customers and the increase in sales thereby achieved. From our data is observed that those who paid great importance to customer contact (degree of importance 4-5) achieved a relatively greater increase in sales the last three years, as compared to those who did not think this strategy of such importance. Furthermore, the entrepreneurs who paid greater attention to their expansion into other markets achieved greater increase in sales in the last three years (of 10-30% in a percentage of 41%) compared to the others.

#### **4. Entrepreneurial decision-making**

Since we have examined the various strategies our entrepreneurs adopted with the aim of establishing and developing their enterprises, let us now look at what method they used to make the necessary decisions. Our entrepreneurs, (see Table 12) take their important decisions regarding the function and development of their enterprises to a significant degree (40.2%) in cooperation with family members. Also, as our data shows, the method of decision-making appears to depend on the entrepreneurs' intentions in regard to the future of their enterprise. Those who are looking to leave it to their children make a higher percentage (46.5%) of their decisions in cooperation with their family than those who have other goals.<sup>7</sup> To a somewhat satisfying degree (23.2%) our entrepreneurs also discussed the matter with their labourers, while a smaller number (10.6%) sought out the opinions and recommendations of experts. The high degree of entrepreneurial decision-making involving the exchange of points of view within the entrepreneur's family, confirms two generally accepted truisms: (a) the family character and structure of the Greek enterprises; and (b) the institution of the family constitutes the basis of Greek society.

On the other hand, the relatively satisfying degree of entrepreneurial decision-making in cooperation with the labourers indicates that Greek entrepreneurs -just as in most developed economies (see Syrett, Lammiman, 2002, pp.7, 52-54)- have become more cooperative and "democratic". Taking into account the educational level of these entrepreneurs, according to our data, it is shown that graduates from the higher schools of education (in comparison to the others) are those who make their decisions in the modern "democratic" way, working in close cooperation with the labourers. However, the low degree of entrepreneurial decision-making involving the assistance of experts creates a significant disadvantage for Greek entrepreneurs.

**Table 12.**

Entrepreneur's decision making process	Number	%
N.A.	1	0,4
Alone	43	17,5
High cooperation with the labourers	57	23,2
Low cooperation with the labourers	20	8,1
cooperation with family members	99	40,2
Cooperation with experts	26	10,6
Total	246	100,0

The method by which entrepreneurial decisions are made influences the developmental course of the enterprise. As we observed from the comparison of the relevant questions, the entrepreneurs who achieved an increase of 1-30% sales, made their decisions in cooperation with their family, while those who achieved greater sales growth (30-50%) made their decisions in close cooperation with their labourers. This clearly shows that cooperation is more fruitful than the solitary entrepreneurial decision making process; something observed and for other economies (e.g. see Bird, 1988).

The various process and methods of entrepreneurial decision-making depends on objective, subjective and even other factors. For example, turning to the first kind of factors, we will examine the decision making process in terms of the sectors of economy that the enterprises are operating. According to our data, the entrepreneurs who are activated in the service sector make more of their decisions in close cooperation with their labourers (31.8%), as compared to those entrepreneurs who are involved with manufacturing (24.4%), trade (15.6%), and tourism (12.5%). Furthermore, because of the expert knowledge required for the management of certain enterprises, according to the sector they function in, it is absolutely essential that experts take part in the decision-making process. This is what one finds in tourism (18.8%) and services (13.6%), which outnumber the other sectors in using this method of decision-taking. In addition, by examining whether the sex of the entrepreneur has an influence in entrepreneurial decision-making (at least as a subjective factor) we found that female entrepreneurs (19.6%) have more recourse to the advice of experts during the decision-making process than their male colleagues do (8.5%).

## 5. Conclusions

From the previous analysis of the entrepreneurial strategies followed by Greek entrepreneurs for the establishment and the development of their enterprises, we may reach the following conclusions:

- (1) The Greek entrepreneurs, generally speaking, cannot be characterized as risk-lovers. They prefer to assume moderate risk and receive equally modest profits. The male entrepreneurs are those who take the most risks and those who primarily are activated in the service sector. Furthermore, the most risk-takers of all entrepreneurs (men and women) are those who founded their own enterprise, as compared to those who inherited theirs. This trend confirms the position wherein creativity is interwoven with the level of risk assumption. However, it cannot be maintained that the attitude of Greek entrepreneurs toward risk also demonstrates the degree of their entrepreneurial success or failure.
- (2) From our examination of the various entrepreneurial strategies adopted for the establishment and development of an enterprise, it would appear that the entrepreneurs who are more innovative, achieved greater sales during the last three years than the others. Those entrepreneurs who are activated in the service sector are more likely to follow such a strategy than others functioned to other sectors. Furthermore, male entrepreneurs are more likely to adopt such an innovative strategy than their female colleagues.
- (3) The entrepreneurs we examined are more likely to promote their products/services and less inclined to innovation as a way of increasing their profitability and expanding their market share. In other words, they are activated mostly as a Kirznerian type rather a Schumpeterian type of entrepreneurs.
- (4) The entrepreneurs who adopt a strategy based on the improvement of the knowledge and skills of their labourers achieved higher sales during the last three years than the others. This strategy was adopted more by entrepreneurs with a higher educational level, and by male entrepreneurs as compared to their female colleagues.
- (5) The entrepreneurs who provide their labourers with various material and immaterial incentives attained higher sales than the others. Such a strategy was adopted more by the male than the female entrepreneurs.
- (6) The entrepreneurs often study the strategy of their competitors with the aim of developing their own differentiated products/services. Those who based themselves more on the recommendations of their customers in order to achieve some differentiation in their products/services, realized higher sales than the others. Furthermore, the entrepreneurs who endeavoured to differentiate themselves from their competitors in products/services offered, and more specifically in terms of quality and innovation, proved to be more successful than the others (they achieved greater sales in the latest three year period).

- (7) There is a differentiation in regard to sex (though not very strong) in the strategy pursued and adopted by Greek entrepreneurs for their establishment in the market. Generally speaking, the male entrepreneurs follow a more dynamic strategy in regard to the creation of a competitive advantage on which to improve their production processes and realized as high a level of customer satisfaction as possible. On the other hand, female entrepreneurs aspire more to an improvement of the product/services and the methods of marketing. Unfortunately, in the expansion into new markets, which constitutes the strategy that not only creates a comparative advantage in the “global economy”, but also increases the economy’s potentials for development, Greek entrepreneurs (men and women) do not appear to be paying the attention required. And this despite the fact that, as was observed, all those entrepreneurs who did expand into other markets achieved a greater increase in sales.
- (8) The strategy for differentiation which was based on innovative activity was adopted more by those entrepreneurs who were graduates of schools of higher education.
- (9) Those entrepreneurs who made the greatest use in their enterprise of the strategy of differentiation based on the techniques used for the stimulation of sales and personal contact with customers, achieved higher sales during the latest three year period when compared to the rest.
- (10) The entrepreneurial decisions making process is based on a cooperation of family members showing thus the family character of Greek enterprises. Decision-making process carried out in cooperation with the labourers was most prevalent in enterprises functioning in services and far less so in manufacture. The entrepreneurs that follow this particular process appeared to be more successful than others. On the other hand, the contemporary way of making decisions, involving the fundamentally important contribution of expert advisors, is followed only to a very small degree by Greek entrepreneurs, and usually more by female than male entrepreneurs.

All the above data concerned with the behaviour and the activities of Greek entrepreneur -which still need to be confirmed by more intensive and detailed studies- make up the creative and developmental “physiognomy” of such entrepreneur. The experiential knowledge and detailed analysis of it may serve to indicate economic policies which will more generally strengthen entrepreneurship in Greece and turn it toward those actions which will contribute in the best possible way to economic development.

## NOTES

1. From the time of Schumpeter (1911) and Hagen (1962) to Leibenstein (1968); Leff (1978) and Kent (1982) until the present (see, e.g. Schmitz, 1989; Baumol, 1990; Reynolds, 1999), it has been clearly shown that entrepreneurship is one of the main factors of economic development.
2. According to the data (see Flashbarometer, 2002, p. 36), Greek society, "forgives" entrepreneurial failure more than other European societies, such as France and Spain.
3. Comparing the available data is observed that, in general, the higher the educational level of the entrepreneurs the greater use they made of modern technology.
4. The strategy of providing motives in order to increase the productivity of labourers has been proposed since the time of Xenophon (see Karayiannis, 2003).
5. The differentiation of goods as an entrepreneurial strategy has been recognized by economists at least since the time of A. Marshall, but was developed more during the 1930's by a number of important economists through the development of special models (see, for example, Chamberlin, 1933, chap. IV), and later by other interpretive approaches (for example, Lancaster, 1971; Scherer, 1984). Such a strategy is now well established and is to be found in nearly all the special texts that analyze the various activities of the firm (see, for example, Deeks, 1976, pp. 85-86; Porter, 1985, pp. 150-157).
6. In our time, the personal reputation of the entrepreneur and/or the enterprise is not considered to be only a source of profit but also an element that can be used for the reduction of transaction costs since the buyer is relatively certain beforehand about what he is purchasing (see Casson, 1995, pp. 87, 210-216).
7. Such a decision making process as has already been shown (see, for example, Beckhard, Dyer, 1983; Longnecker, Moore, Petty, 1998, pp. 109-119) it has not necessarily negative impacts on the function and development of the enterprise. Also, such a process of family's member cooperation in entrepreneurial decision making is also a customary way and in other economies (see Syrett, Lammiman, 2002, pp. 40-42, 174-175).

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# HIDDEN ECONOMY AND HYPER-INFLATION IN OCCUPIED GREECE 1941-1944

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## Abstract

The Greek economy during the occupation (1941-1944) is characterized by the aggravation of hyperinflation and hidden economy. The collapse of the tax-collecting mechanism caused the full abandonment of tax controls leading a large part of the economic activity to go underground. The collapse of the public finances led to the imposition of the «inflation tax», with the uncontrolled monetary expansion leading to one of the greatest (and in fact the only one during occupation) hyperinflations recorded in the first half of the 20<sup>th</sup> century. The purpose of this paper is to place the Greek experience in a theoretical and empirical economic framework.

*JEL classification: N1, N14.*

*Keywords: Hidden Economy, Hyperinflation, Greek Economy.*

## 1. Introduction

The period of the triple the triple (German, Italian and Bulgarian) occupation of Greece (1941-1944) can be considered as an unambiguously catastrophic experience for the Greek economy. The market mechanisms were replaced by a system outside any economic logic where ration coupons were combined with a black market of unbelievable scale. Any sense of fiscal rationale was abolished and replaced by an uncontrolled monetary expansion as the only source of financing public expenditure. This in turn led to a hyper-inflation which was justly considered unprecedented by Greek standards and one of the greatest ever by world standards.

The liability of the puppet Greek governments of that period appointed by the occupation forces as far as these developments are concerned, was acknowledged and, to a certain extent penalized after the liberation of the country. A careful assessment and allocation of responsibility between the micro and the macro-economic level of the phenomenon of collaborationism however never took place.

The micro-economic level of economic collaborationism refers to those people who took advantage of the difficult circumstances of the shortage of basic goods

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and operated in an environment of hidden economy and black market profiting at the expense of their compatriots. In many cases they operated in a framework of tolerance or even support on behalf of the occupation forces with which on many occasions they cooperated. The macro-economic level refers to those people who chose to cooperate with the occupation forces and accept posts planning and applying economic policy on their behalf.

For the first group of people the public perception of their role and impact was stronger since they were on an everyday contact with the (black) market, provoking public opinion with their attitudes and fast enrichment. This led the majority of the Greeks to come to consider the black marketers as the main responsible for what happened during the occupation in the Greek economy.

The second group consisted of people (the puppet government ministers, bank governors etc), who effectively carried out the management of the Greek economy during that turbulent period, but were not exposed to their corresponding responsibilities. This mainly happened because the non-elected policy makers are hidden behind those who have appointed them. In a normal parliamentary function, the elected government is liable for its errors and omissions. Under conditions of occupation however they can remain untouched, since the occupation forces have the liability. This is exactly what happened in the case of occupied Greece.

The present paper aims at isolating the responsibility of each of the two levels of economic collaborationism for the developments of the Greek economy during the occupation. The evaluation will chronologically exceed the period of occupation since these developments influenced the Greek economy in the post liberalization period as well. Methodologically, the investigation will be mainly based on the tools of economic analysis and to a much lesser extent on the ones typically used by the historians.

The paper consists of three parts. In the first one the theoretical framework is analyzed. In particular, the analysis will be focused on the operation of the economy and hidden economy under occupation and the relationship between monetary expansion and hyper-inflation according to economic theory. The phenomenon of hidden economy and fiscal policy in occupied Greece are analyzed in the second part; in particular the operation of the market and the fiscal deadlock which emerged. Finally, in the third part, the monetary policy and hyper-inflation are examined on the basis of an empirical investigation of the relationship between money supply and the inflation rate in Greece for the period examined. The final conclusions include an investigation of the economic repercussions of economic collaborationism in the post-occupation period.

## **2. The Theoretical Framework**

### **2.1 Economy and Hidden Economy Under Occupation**

Hidden economy fits into a description of an elephant, easy to identify but difficult to describe. In a sense, the hidden economy includes all the activities that are not embodied and controlled by the established generally acceptable rules and mechanisms of the market. In a narrower definition it includes the activities beyond the drastic caliber of the state control, beyond the rules set by the state and of course out of the reach of taxation. Hidden-economy activities are not by definition illegal. What is certainly illegal however is the operation mechanisms, the distribution channels and its institutional status.

Hidden economy could be seen as a malfunction of the operation of the market mechanism. This happens when extraordinary circumstances, especially on the supply side, limit or even eliminate any sense of competition bringing the supplier to a dominant position where he can dictate the rules of exchange to the consumers without any possibility for state intervention. A shortage of food caused by the suppliers on purpose, for example, leads to huge increase the prices. Any increase in the production cost is shifted to the consumers even when it concerns necessities.

The fact that prices tend to increase is natural and usual. However, the role of the state mainly refers to:

- The imposition of price ceilings, although the effectiveness of this measure is seriously doubted after a certain point.
- Taxing as a disincentive of overpricing (since the state harvests a considerable part of the gross profits), but also as a redistribution mechanism. Hidden economy in the form of tax evasion leaves no room for this function of the state.

The operation of the economy under conditions of occupation by foreign forces differs substantially from the one under normal circumstances. At first, both demand (e.g. needs of the occupation army) and supply side of the economy (destruction of roads, increase in transportation costs) are influenced<sup>1</sup>. Second, the designing and implementation of economic policy is carried out either under the constraints of the war or by puppet governments enjoying little popularity and willingness to cooperate on the part of the citizens of the occupied country.

Puppet governments are usually liable only to those that have appointed it and are subject to no parliamentary control. Their policies therefore mainly serve the priorities and needs of the occupation forces, the main mechanism for the enforcement of these policies. It is very doubtful however, how effective an enforcement mechanism of an occupation army could be for the economic policy of such a government.

Finally, the state mechanisms still operating under an occupation regime (e.g. tax collecting) face the principal-agent problem, with the interests of the puppet government not coinciding with those of the civil servants. As a result, their effectiveness is consciously reduced since tax evasion is now considered by the public opinion a resistance action, the hiding of products from the occupation forces a sign of paramount heroism (no matter if the main motive is speculation) and any effort to control or penalize these phenomena, a shameful cooperation with the enemy.

## 2.2 Money Supply and Hyper-inflation

The relation between money supply and inflation is best described by the Quantity Theory of Money on the basis of the following identity:

$$M \times V = P \times Q$$

where M the quantity of money in circulation, V the velocity of circulation of money P the price level and Q the economy's output. Assuming a relatively constant velocity and level of output in the short run, it follows that an increase in the money supply leads to an increase of the price level, in other words inflation.

Hyperinflation however is something different and economic theory examines it in the context of the Cagan model<sup>2</sup>. In this model hyperinflation occurs when the price increases per month exceed 50% and lasts until the month when price increases fall below that and remain lower than 50% for a period of a year at least.

Cagan examined the cases of six countries that experienced hyperinflation in the first half of the 20<sup>th</sup> century. In particular he examined the cases of Austria for the period October 1921 - August 1922, Germany for the period August 1922- November 1923, Hungary for the period March 1923 – February 1924 and August 1945 – February 1946, Poland for the period January 1923 – January 1924, Russia for the period December 1921 – January 1924 and Greece for the period November 1943 – November 1944, that is towards the end of the occupation.

It is indicative that the Greek Hyperinflation is the only one coinciding with the period of occupation. The Austrian, the German and the first Hungarian coincide with the interwar economic crisis of the countries defeated in World War I and had to pay enormous war compensations in gold. The Russian one coincides with the application of the New Economic Policy by Lenin. In all cases inflation was triggered of by huge increases in the money supply.

Cagan explains hyperinflation as follows: money is a stock of liquid purchasing power for those holding it and therefore the nominal demand for cash balances depends on its market value, that is the price level. In a period of hyperinflation

the demand for cash balances changes substantially. By changing the demand for cash balances individuals cannot influence the nominal value of money in circulation but they can influence the real value of the cash they hold by deciding to spend or hoard money. If they choose to spend they press prices upward, whereas they press them downward if they choose to hoard. The fact that the uncontrolled increase of the money supply increases the cost of holding money, usually leads individuals to increase their spending. Consequently prices increase, not instantly but certainly after a while.

Almost in all cases the substantial increases in the money supply are due to fiscal problems. Governments, having no other way to finance public spending adopt the so called "inflation tax". Hyperinflation comes to an end by the time fiscal pressures and the growth of the money supply de-climax.

In its basic form the Cagan model relates hyperinflation and the money circulation on the basis of the following equation:

$$P_t = (1/1 + \gamma)mt + (\gamma/1 + \gamma) P_{t+1}$$

where  $P_t$  and  $P_{t+1}$  are the logarithms of the price levels in periods  $t$  and  $t + 1$  respectively,  $mt$  is the logarithm of the money supply in circulation in period  $t$  and  $\gamma$  is a parameter expressing the sensitivity of money demand to the changes in inflation. The inflation rate therefore is the weighted average of the current circulation of money and the expected inflation for the next period. Expected inflation however depends on the expected money supply and so on. We therefore end up with the equation:

$$P_t = (1/1 + \gamma) [m_t + (\gamma/1 + \gamma) E_{mt+1} + (\gamma/1 + \gamma)^2 E_{mt+2} + (\gamma/1 + \gamma)^3 E_{mt+3} + \dots]$$

where  $E_{mt+1}$ ,  $E_{mt+2}$  etc are the expected levels of money supply for periods  $t + 1$ ,  $t + 2$  etc. So, current inflation depends on current as well as expected levels of money supply. Inflation simply occurs because people are convinced that the monetary authorities will continue to increase the money supply in the near future.

Since the role of expectations is crucial for the determination of inflation the continuation or the termination of hyperinflation depends on the credibility of the monetary authorities. If individuals are convinced that the monetary authorities mean to slow down the growth rate of the money supply, hyperinflation will eventually come to an end. Otherwise it will continue. The credibility of the monetary authorities however in controlling the money supply depends on the credibility of the fiscal policy. Public spending, in other words, will have to slow down in order to reduce the need for "seigniorage", the discretion that is of the monetary authorities to finance fiscal deficits by printing money.

### **3. Hidden Economy and Fiscal Policy in Occupied Greece**

#### **3.1 The Operation of the Market in the Occupation Period**

The Greek market for goods during the occupation period displays a remarkable dualism as to its operating mechanisms. Effectively two diametrically opposite systems coexisted in their most extreme form namely a command economy and a completely uncontrolled one.

The command economy element refers to the distribution of goods with ration coupons, therefore on the basis of perfectly controlled prices. The uncontrolled section of the economy benefits from the lack of state controls and triggers enormous price increases of necessities mainly, based on shortages the suppliers themselves are causing. The paradox was that those two mechanisms operated in parallel, competing but also complementing each other. When the rationing system ceased to operate, the free space was taken over by the black market<sup>3</sup>.

The immoral operation of the black marketers and their contribution to the shortages of goods in order to increase their prices is historically undeniable. These are actually the reasons why they were morally condemned by the postwar Greek society. There has been an exaggeration however regarding the total attribution of the shortages of goods to the black marketers and the confiscations by the occupation forces<sup>4</sup>.

Regarding the causes of the shortages in basic goods during the occupation of Greece there are two explanations in the literature. The first one is an exaggeration. The second one is simply wrong. The first one (the exaggeration) explains the shortages on the basis of the decline of output due to the war and the confiscations of equipment in the first years of the occupation. It is true that in the period 1941-1942 the country's output fell, but only by 15% (from 23 to 20 billion drachmas)<sup>5</sup>. For the remaining years of the occupation period either there is no data or it is not comparable because of the hyper-inflation. Regarding the production of food of course the decline was relatively higher since the Germans maintained in full operation all the sectors essential to their war effort (e.g. factories producing gun powder)<sup>6</sup>.

The second explanation (the wrong one) is that the shortages were caused by the black market speculators trying to cause price increases by hiding the (certainly) limited goods. What this explanation implies is a cost-push inflation with the supply curve shifted to the left by the black marketers. This is theoretically possible in the case of monopoly market structure or at least a cartel. That is one, or a small number of suppliers reaching a collusive agreement and thus setting the prices higher than the normal levels by hiding (withdrawing from the market) goods and

reducing their supply. All references on the black market in the particular period however sketch a large basis of small size economic units; furthermore a group of people with unclear origin, cohesion and doubtful ability for lobbying<sup>7</sup>. Therefore a cartel or a monopoly market structure were out of the question.

Explaining the shortages in basic goods and the consequent cost-push inflation could be based on taking into account a fact that has been historically identified but not fully analyzed regarding its economic impact. Kazakos<sup>8</sup>, referring to the Greek economy during the period of occupation uses the term “a patchwork economy” consisting of areas not communicating with each other. He adopts the term used by Dragoumis<sup>9</sup>. It is true that the triple occupation divided the country into three parts with very little, if any, communication between them. This violent division of the country broke its economic cohesion and led the different regions to economic isolation. Furthermore the confiscation of the transport equipment, the destruction of the road and railway network of the country, the shortages of fuel and the naval barricade by the allies enhanced the problem<sup>10</sup>.

In this “patchwork economy” every Greek region had to operate under conditions of autarky<sup>11</sup>. This autarky implied that every region had to produce all the necessities regardless of production cost. As a result, areas with no potential in the production of wheat for example, had to produce it in order to feed their population. The production of goods by non-efficient producers took place at a cost (and therefore price) much higher than the one under normal circumstances. The shortages in cereals in Central and Southern Greece (mainly under German occupation) for example were mainly due to the fact that the most productive cereal producing areas of Eastern Macedonia and Thrace were under Bulgarian occupation<sup>12</sup>. Under these circumstances shortages and price increases were inevitable. Confiscations and the black marketers simply exaggerated the problem.

### **3.2 The Fiscal Deadlock**

Greece's public finances before the war were in a very good condition, especially if one takes into account that it was a developing country with an inefficient tax system preparing for the coming war without having finished healing the wounds of the previous ones. In particular, the state budget for the period 1938-39 was balanced besides the extra defense expenditure. The budget for 1939-40 had a small deficit, easily financed by the surpluses of previous years. The implementation of the 1940-1941 budget with a forecasted deficit of 660 million drachmas was proceeding normally until the outbreak of the war against Italy<sup>13</sup>.

The triple occupation undermined the fiscal stability of the country for the following reasons:

- The output decline reduced the tax base (income, turnover) and caused a dramatic fall in tax revenue<sup>14</sup>
- The division of the country analyzed in the previous section, reduced the efficiency of the tax collecting mechanism.
- The expansion of underground economic activity was accompanied by an increase in tax evasion.
- The occupation forces forced the governments they appointed to pay for the cost of the occupation troops. This expenditure was initially 25 billion drachmas in November 1941 and reached 850 billion drachmas in August 1943<sup>15</sup>
- According to the general director of the Ministry of Public Finance the per capita burden of the occupation forces in Greece was five times higher than the corresponding one for France<sup>16</sup>.

Table 1 illustrates the Greek public finances for the period 1938-44. It is obvious that during the occupation, the fiscal system of the country effectively collapsed. The revenue/expenditure ratio of the public sector dropped from 96% for 1938-39 to 6% for 1943-44 and the deficit increased by 1000% in constant 1938-39 prices. The expansion of the deficit was mainly due to the deceleration of the tax revenue representing in 1943-44 only 27% of the corresponding percentage in 1938-39, in constant prices. Public expenditure witnessed an impressive increase in nominal values but a drop in real ones. During that period the cost of the occupation troops represented more than 50% of public expenditure on average. The decrease of this cost as a percentage of total public expenditure from 70% in 1941-42, to 59% in 1942-43 and 33% in 1943-44 was by no means due to lesser requests by the occupiers. What simply happened was that the state had to finance the deficits of state institutions (banks and public corporations) after their financial collapse<sup>17</sup>.

Given the absolute fiscal collapse and the fact that public borrowing (from internal or external sources) was not an option there was only one thing to do: finance the deficit by printing money. In other words impose the “inflation tax”.

**Table 1: The Public Finances of Greece During the Occupation Period.**

In mil. of GDRs.		In mil GDRs constant 1938-9 prices							
Category	Year	1938-9	1941-2	1942-3	1943-4*	1938-9	1941-2	1942-3	1943-4*
1. Revenues		14.7	15.2	123.2	607.9	14.7	0.6	0.7	0.4
2. Expenditures									
A) Government Budget			20.1	225.1	2331.1		0.8	1.3	1.4
B) Occupation Forces			38.0	290.8	3391.1		1.5	1.8	2.0
C) Wider Public Sector			9.9	139.3	3787.0		0.4	0.8	3.0
Total Expenditures		15.3	68.0	655.2	10509.2	15.3	2.7	3.9	6.4
3. Deficit		0.6	52.8	532.0	9901.3	0.6	2.1	3.2	6.0
4. Revenues//Expenditures		96%	29%	18%	6%	96%	29%	18%	6%

\* Including 11 months (April 1943-February 1944)

Source: Bank of Greece, (1947), p. 98.

## 4. Monetary Policy and Hyper-inflation in Occupied Greece

### 4.1 The Monetary Aggregates in the Occupation Period

The impact of a war (or a foreign occupation) upon the currency of a country depends on three factors namely the duration of the war, the way government expenditure is financed and the effectiveness of the price controls<sup>18</sup>. The shorter the war, the lesser the printing of money in order to cover the public expenditure and the more effective the price controls, the smaller the inflationary pressures on the national currency. In the case of Greece this rule applied, as we will see, in reverse.

The period 1939-1944 should not be considered a single one regarding the characteristics of the implementation of monetary policy. Delivanis and Cleveland<sup>19</sup> identify five distinct sub-periods:

- September 1939 – October 1940. Greece remains neutral while arming. The beginning of inflation took place at that point mainly because public defense expenditure was increasing together with the money supply<sup>20</sup>. The inflation rate remained relatively low (in the area of 14% according to the estimations of Delivanis and Cleveland).
- The war against the Italians and the Germans, October 1940-April 1941. During that period money supply increased by 72% (20) on the basis of British debits not

converted in drachmas<sup>21</sup>. The Consumer Price Index (CPI) in the same period increased by only 11.30%. (see table 2).

- The conquest and the isolation of the country, May 1941-October 1942. During that period the Germans, the Italians and the Bulgarians used their own currency in the area of their control. This led to inflationary pressures, acknowledged by the Germans who decided to apply the use of a single currency (the drachma) to the Greek territory in total<sup>22</sup>. As one can see in table 2 the money supply during that period increased from 19.4 σε 238.3 billion drachmas (1,146%) and the CPI by 1,390%.
- The period November 1942-April 1943 could be considered as an interval of temporary improvement and stability since the victories of the allies in Northern Africa triggered expectations that the country would soon be liberated. During that short period the money supply doubled but prices fell by 4.45%.
- Finally the period May 1943-November 1944 deservedly called the period of the monetary chaos since the monetary system of the country collapsed following the decision of the puppet administration of the Bank of Greece to increase the money supply (until October the 19<sup>th</sup>) by 16 million per cent and consequently the CPI by 12 million per cent.

Skeptical as one can be with the use of numbers and their explanatory value, in this particular case, they speak for themselves. During the occupation of the country the money supply increased 5,260,465 times and the CPI 2,305,984,911 times.

Regarding the characteristics of inflation during that period the following points could be made:

- It is clearly a case of hyper-inflation (especially at the end of the period) according to Cagan's definition. In fact it was the third largest one, during the first half of the 20<sup>th</sup> century after the German and the Hungarian ones<sup>23</sup>.
- Regarding its causes it was a rare (in terms of size and impact) combination of demand-pull forces due to the uncontrolled increases in the money supply and cost-push ones caused by shortages in basic goods and increases in the production cost<sup>24</sup>.
- It is indicative that the increase in the money supply was so incredibly large that it exceeded (in fact it was twice as high) the inflation rate. This explains why the percentage of expenditure for the occupation forces in the budget appears to be relatively constant in real terms. Another characteristic of that period was the extended use of golden British Sovereigns in Greece<sup>25</sup>.
- The price increases do not apply to all the goods equally. As one can see from table 2, assuming that the prices for food, other basic goods and house rent were

all equal to 1 in 1939, by the end of 1944 they reached 25,719.24 for food 50,702.96 for the other basic goods and 15 for housing (probably because there were price controls and no shortages in houses).

The catastrophic monetary policy followed by the appointed representatives of the occupation forces and the consequent inflation caused a number of problems for the Greek economy. In particular:

- Hyper-inflation caused a loss of purchasing power estimated by Aggelopoulos<sup>26</sup> in the area of 27 million golden Sovereigns or 540 million dollars.
- The uncontrolled increase of the money supply undermined the credibility of the national currency. By the end of the occupation most of the transactions were taking place either on a barter basis or using British Sovereigns. As one can see in table 2, the golden British Sovereigns kept an exchange rate vis-a-vis the drachma an orbit similar to that of the CPI. It is indicative that this use of parallel currencies went so far that, after a certain point, even the occupation forces were using British Sovereigns for their transactions.
- Inflation caused an extended redistribution of wealth. Depositors and lenders lost, while borrowers and those renting on long-term contracts benefited. In addition to that wage earners and pensioners (people with fixed income) saw their purchasing power shrinking. At the same time black marketers and speculators made fortunes. It is indicative that the wage increases in the public sector in that period represented approximately 50% of the price increases<sup>27</sup>.

**Table 2:** *Money Supply, Inflation and Golden Sovereign/Drachma Rate During Occupation.*

Year/ Month	Money Supply in bil. GDRs (end of month)	Living Cost Index Monthly Average	Average Monthly Price of Gold.Sov in 000s GDRs		Price Indices			
					Food	Products	Rents	
<b>1939 Average</b>					1.00	1.00	1.00	
<b>1941</b>								
March	19.4	1	-	-	1			
April	-	-	1	1,1	1			
May	-	-	-	3,7	3	2,34	1,66	1,00
June	24,1	1,2	-	4,9	4	4,20	3,27	1,00
July.	24	1,2	-	10,4	9	6,30	5,15	1,00
Aug.	29.1	1,5	-	10,4	9	9,05	5,72	1,00
Sept.	33.8	1,7	-	12,5	11	11,50	6,46	1,00
Oct.	39.1	2	-	21.3	18	18.00	14.15	1.00
Nov.	43.5	2	-	27.9	24	29.70	15.64	1.00
Dec.	48.8	2	-	20.1	18	45.20	15.87	1.00

<b>1942</b>								
Jan.	53.1	2	2.3	23.3	20	53.30	16.14	1.00
Feb.	58.5	3	3.3	26.6	23	66.73	18.45	1.00
March	67.9	3.5	4.4	33.5	23	73.69	27.41	1.00
April	79.1	4	4.9	50.4	43	99.81	47.86	1.00
May	92.2	4.7	5.6	59.1	51	139.25	73.66	1.00
June	109.8	5.6	7.5	81.1	69	169.88	150.01	1.00
July	132.3	6.8	8.9	122.8	105	234.13	173.95	2.00
Aug.	155.1	8	10.0	194.7	164	280.38	212.07	2.00
Sept.	185.6	9.5	13.8	214.9	184	326.07	294.47	2.00
Oct.	238.3	12.2	20.1	351.4	301	534.90	468.60	2.00
Nov.	289.7	14.9	20.2	266.5	228	499.33	389.51	2.00
Dec.	335.1	17.2	15.6	149.2	128	419.86	323.91	2.00
<b>1943</b>								
Jan.	367.8	19	15.6	144.5	124	367.65	254.43	2.00
Feb.	401.9	20	13.8	135	115	315.73	217.25	2.00
March.	465.7	24	16.0	162	139	339.25	234.18	3.00
April	560.2	29	19.3	172	148	389.62	393.76	3.00
May	622.8	32	20.1	243	208	413.29	536.26	3.00
une	712.7	37	21.2	309	265	459.97	615.87	3.00
July	869.3	45	26.3	320	274	547.17	750.68	3.00
Aug.	1.062	55	29.0	359	308	664.44	788.96	3.00
Sept.	1.301.7	67	37.0	426	364	867.15	1171.85	3.00
Oct.	1.734.7	89	55.1	725	620	1644.78	1854.82	15.00
Nov.	2.303.9	118	113.7	1.271	1.088	3213.15	3054.44	15.00
Dec.	3.114.1	160	157.3	1.541	1.319	4281.21	4729.81	15.00
<b>1944</b>								
Jan.	3.989.6	206	379.8	2.994	2.562	8396.07	12397.80	15.00
Feb.	5.167.8	266	502.0	5.410	4.630	14354.52	28618.80	15.00
March	7.722.2	398	924.3	14.690	2.571	25719.24	50702.96	15.00
April.*	16.839	868	1.807.4	34.534	29.552			
May	31.237.7	161	5.567.2	91.520	78.316			
June	61.133.1	315	10.184.5	123.350	105.553			
July	131.192.9	676	33.100.7	350.050	299.546			
Aug.	552.851.8	2.849	199.403.7	2.290.636	1.960.154			
Sept.	7.241.665	373.281	1.534.136.7	22.877.272	19576.649			
Oct.	102,053 mil.	5,260.465mil	2,306 mil	1,550 mil	1,326 mil.			

\* Since April 1944 any effort to estimate the CPI was in vain because of the enormous fluctuations even on an hourly basis.

Sources: a. Aggelopoulos, (1974), p. 34.  
b. Bakalbasis, (1944), p. 133.

## 4.2 Empirical Investigation of the Relationship Between Money Supply and Inflation Rates

The empirical investigation of the relation between money supply and inflation in Greece during the occupation will be based on an econometric model based on Cagan's theory on hyper-inflation<sup>28</sup>. The econometric investigation aims at constructing a model where inflation (as the dependent variable) will be expressed as a function of (among others) the money supply.

It is useful to define right from the start the limits of the empirical investigation in this particular case. The econometric investigation of the relation between money supply and inflation in occupied Greece is subject to certain limitations. In particular:

- Although the monthly data of table 2 will be used, there are only 32 observations and the degrees of freedom are enough but less than one would need in order to carry out all the statistical tests.
- The enormous numbers, especially towards the end of the period, lead to a series of constraints to the statistical tests of the model.
- The fact that the inflation rate is given in percentages and the money supply in very large numbers (especially for 1944), could give rise to a problem of normality, which given the circumstances is a problem one could go around with.

Using the Ordinary Least Squares (O.L.S.) method, the econometric investigation provided a model very similar to the original one by Cagan's theory:

$$P_t = a + b M^*t + U_t$$

(the asterisk denotes expected values)

where:

- $P_t$  : The inflation rate in period  $t$   
 $M^*t$  : The money supply in period  $t$   
 $U_t$  : The error term in period  $t$

We could express the money supply as follows:

$$M^*t - M^*t - 1 = \gamma(M_t - M^*t-1) \Rightarrow M^*t = M^*t - 1 + \gamma(M_t - M^*t - 1) \quad 0 < \gamma < 1$$

And end up with the initial function in the estimated form:

$$P_t = a^* + b^* M^*t + (1 - \gamma) P_{t-1} + U^*t$$

*(Statistical and other tests of the model are given in an appendix at the end of the text)*

where:  $a^* = a.\gamma$ ,  $b^* = b.\gamma$ ,  $U_t = U_t - 1 - (1 - \gamma)U_{t-1}$   
 and on the basis of the estimation of the model:

$$P_t = 26.4706 + 0.007697 M^*t + 0.31206 P_{t-1}$$

$$\text{so: } 1 - \gamma = 0.31206 \Rightarrow \gamma = 0.68794$$

$$a^* = a \cdot \gamma \Rightarrow 26.4706 = a \cdot 0.68794 \Rightarrow a = 38.478$$

$$b^* = b \cdot \gamma \Rightarrow 0.007697 = b \cdot 0.68794 \Rightarrow b = 0.01118$$

$$\text{So: } \quad \mathbf{P_t = 38.478^* + 0.01118 M^*t}$$

In other words inflation in period (month)  $t$  is positively related to the anticipated (expected) money supply for the same period. An anticipated money supply increase by 1 billion drachmas would lead to an increase of the inflation rate by 0.01118 percentage units.

One could therefore conclude that the monetary authorities due to their policy lost credibility and the expectations on further increases in the money supply were intensifying the inflationary pressures.

## 5. Conclusions

From the analysis so far one could derive the following conclusions:

- The policies followed by the puppet governments determined to a very large extent the developments concerning the Greek economy during the occupation period.
- The *de facto* division of the country into non-communicating areas, coupled with the production decline and the confiscations by the occupation forces, led to shortages of basic goods and cost-push inflation. The black marketers aggravated the problem.
- The economic division of the country coupled with the intensification of hidden economy activities dismantled the tax-collecting mechanism of the state. This, combined with the excessive expenses for the occupation troops and the financing of the public corporations' and banks' deficits by the state led to a fiscal deadlock.
- The exaggerative printing of money exceeded the needs for financing the public deficit and led to hyper-inflation.  
The implications of these events went on after the liberation of the country. In particular:
  - The credibility of the national currency, monetary policy and institutions was only restored in the mid-1950s after a series of devaluations of the drachma, parallel use of the golden Sovereigns, and cutting zeros from the prices in order to introduce the new drachma. All through that period inflation remained high.

- The sizeable hidden economy remains a basic characteristic of the Greek economy<sup>29</sup>. Historically the phenomenon is attributed to the fact that the Greek business class in the early 20<sup>th</sup> century (coming from areas of Turkey or Egypt) was “nurtured” in countries with inefficient fiscal mechanisms and failed to become tax-conscious. The circumstances during the occupation period intensified the problem.

Two important closing remarks:

- Greece is the only case of a country experiencing hyper-inflation during occupation. Germany, during World War II occupied almost all of Europe. In all of the occupied countries except Greece the Germans applied their own policy of controlling inflation by controlling the money supply, given their traumatic experience of hyper-inflation in the 1920s. How they allowed this to happen in a country they (verbally at least) respected is still a question.
- Answering the above question is highlighting the responsibilities of their collaborators on the macro-economic level. The General Assembly of the Bank of Greece in 1947 decided to avoid making any comment on the decisions of the 1941-1944 administrations that could be interpreted as an approval of what they did<sup>30</sup>.

## NOTES

1. Delivanis, (1941a).
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3. Thomadakis in Alexander et al, (1984), p. 136f.
4. Hristodoulou D. (1989), p. 29f.
5. Delivanis, (1945).
6. Xiarhos, (1986), p. 11.
7. Mazower, (1994), pp. 79-90.
8. Kazakos, (2001), p. 60.
9. Dragoumis (1995), p. 58.
10. Thomadakis in Alexander et al, (1984), p. 122.
11. Freris, (1986), p. 118.
12. Xiarhos, (1984), p. 11f.
13. op.cit., p. 7.

14. Evelpidis, (1950), pp. 108-112.
15. Bakalbasis, (1944), pp. 120-136.
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21. Delivanis and W. Cleveland, (1949), pp. 19-101.
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23. Freris, (1986), p. 117.
24. Bank of Greece, (1947), p. 25.
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26. Aggelopoulos, (1974), p. 35.
27. Bakalbasis, (1944), p. 136.
28. The author would like to thank professor Nikolaos Dritsakis (University of Macedonia) for his help in the formulation of the econometric model
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# CONDITIONS AND PROSPECTS OF INTRODUCING THE POLISH ZLOTY TO ERM II

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## Abstract

One of the most important conditions of the Poland's accession to the Economic and Monetary Union (EMU) is the fulfillment of the convergence criteria, among them – the exchange rate criterion. In order to meet it Poland is to introduce the Polish zloty to the Exchange Rate Mechanism II (ERM II) and maintain the chosen central rate without devaluation at least for two years. In our opinion Poland is able to meet the exchange rate criterion and introduce the zloty to the ERM II just now. Taking into consideration the data concerning the changes of the zloty/euro rate during the period 2006-2008 we cannot see the important impediments to maintain the fixed rate through two years in +/-15% bands. In our opinion we should introduce the zloty to ERM II as soon as possible, because it enables the smooth stabilization of the zloty/euro rate in the long term.

*JEL classification: E44, F31, F36.*

*Keywords: ERM II, Poland, exchange market.*

## 1. Introduction

On 1<sup>st</sup> May 2004 Poland attained the membership of the European Union (EU). Simultaneously, it became a participant of the Economic and Monetary Union (EMU), and was granted the status of a member state with derogation from adopting the Euro. This means deferment of the EMU membership until Poland meets the convergence criteria which concern the principal economic indicators - the conduct of monetary policy, fiscal and budgetary matters, and exchange rate stability. The monetary criteria establish that there must be a sustainable degree of price stability and an average inflation rate and a long-term nominal interest rate.<sup>1</sup>

It is noteworthy that as far the monetary criteria are concerned a reference value is flexible and its value depends on the level of inflation and an average interest

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rate in the member countries of the Euro area, whereas as regards the fiscal criteria the benchmark has been set rigidly: the annual budget deficit is not to exceed 3 per cent of GDP, and total government debt must not exceed 60 per cent of GDP. The currency exchange criteria establish that normal fluctuation margins provided for by the exchange-rate mechanism must be respected without severe tensions. The fulfilment of monetary and fiscal convergence criteria by the accessing country is meant to ensure that the country's economic development within the EMU is balanced and that the joining of the single currency area will not lead to destabilising its economy. Yet there remains a question of the outer balance, among other things, the establishment of such a rate of parity of the zloty against the Euro that would be at a level compatible with the economic reality and contribute to the preservation of the candidate state's competitiveness in an international context and ensure to maintain the balance of payment equilibrium after the conversion of the national currency into the Euro.<sup>2</sup> Before the member state can adopt the Euro, its national currency must participate successfully in the Exchange Rate Mechanism (ERM II), which means specifying a central exchange rate and then maintaining the actual exchange rate within a set fluctuation band around the central parity for the entire examination period. It also provides an indication of the appropriate conversion rate that would be applied when the accession country qualifies and its currency is irrevocably fixed.

This paper aims at assessing Poland's prospects to meet the exchange rate criteria of the convergence at the moment of its earliest possible accession to ERM II. Although Poland has already achieved a substantial degree of the convergence criteria in fiscal and monetary policy, it has not signalled its intention to enter ERM II yet. The fulfilment of the remaining convergence criteria may be assessed systematically by means of comparing the reference values with the parameters which characterize the Polish economy. [Hyz, Gikas, 1995; Hyz 2006]. The assessment of Poland's capability to fulfil the exchange criteria will not be possible until the zloty enters ERM II. It is believed that Poland's present economic situation allows for inserting the zloty into the system at the earliest possible date. Considering the current level of the zloty parity against the Euro, it is evident that Poland was able to satisfy the exchange rate criterion before the prescribed time. Simultaneously, we are aware of the threats associated with changeability of a variety of other economic indicators that might significantly affect the zloty exchange rate.

Some arguments in favour of prompt entry of the zloty into ERM II are as follows:

- The stabilization of the exchange rate of the zloty against the Euro will be spread in time. It is easier to approximate the fluctuation bands at the level of 2-4 per cent around the central parity within the period of 3 to 4 years.

- The stabilization of the zloty exchange rate against the Euro will be advantageous to the convergence of the Polish economy with the Euro-zone.
- The participation in ERM II can ensure the development of mechanisms against the asymmetric shocks, an alternative to absorbing such shocks by means of monetary or exchange rate policy.

One can also find some arguments against prompt insertion of the zloty into ERM II:

- The inclusion of the zloty in ERM II is equivalent to Poland's accession to the Euro area; satisfying all of the convergence criteria means an automatic accession of Poland into the EMU. In the case when Poland is still not ready for entering the Euro area, inserting the zloty in ERM II may appear to be risky, as in the case of Sweden which chose not to introduce the Euro in place of the Swedish currency, so it does not participate in ERM.
- Stabilizing the zloty even within the broad band of plus/minus 15 per cent at the time of unfavourable economic indicators, e.g. a significant level of inflation, may turn out to be rather difficult, as in the case of Hungary, where due to high inflation and the central bank's failure to stabilize the exchange rate, in February 2008 the Forint was allowed to float.
- Stabilizing the parity over the period of 3-4 years is not beneficial as this may increase the high risk and lead to severe tensions in the domestic currency market, especially at the time of unfavourable trends and tendencies in the international financial market.

The structure of this paper has been subordinated to the goal. The first section deals with the essential differences between ERM and ERM II. The second section describes the Polish exchange currency market, while the third section provides an overview of development of the parity of the zloty against the Euro in recent years. The final section provides some conclusions relating to the analyses.

## **2. A justification for the choice of the exchange rate criteria. A comparison of ERM and ERM II**

One of the preconditions for establishing the EMU was to stabilize exchange rates between the currencies of participating member states. In this context, managing the fluctuations of their currencies to avoid exchange rate volatility, and establishing exchange rate relations with each other, is a crucial factor in moving integration forward. Long-term stable exchange rate development of the accession

countries is to be beneficial to the implementation of their economic policies and to holding their relative competitive positions in the international markets. To achieve these objectives there is a need for establishing a mutual system for stabilizing the currencies within the exchange rate mechanism.

The required convergence period should be long enough to ensure that the exchange rate regime is the desired equilibrium exchange rate, but not too long for the central banks to be able to take some measures against speculative attacks, which unless successfully defended are disruptive and may cause external disturbances in the system. The adoption of the exchange rate-based stabilization plan by the Euro-area member states is aimed at providing an external shock absorption system and the way in which the burden of adjustment in the foreign exchange rate levels is allocated across Europe. To abandon this possibility would mean that, apart from various economic adjustment channels, the member countries have to use some of the policy-based adjustment channels which either have not been used at all or hardly used, such as fiscal policies and structural policies in labour.

Towards the end of the 1960s the heads of state of the European Economic Community considered an option for creating the economic and monetary union. The Werner Report proposed gradual, institutional reform leading to the irrevocable fixing of exchange rates. The arrangements known as the 'snake in the tunnel', which were set up by members of the EEC, one of the forerunners of the European Union, came to an end in 1979. The snake was replaced with the European Monetary System (EMS) - an arrangement where most nations of the EEC linked their currencies to prevent large fluctuations relative to one another. The Exchange Rate Mechanism, ERM as a part of the EMS, was to reduce exchange variability and achieve monetary stability in Europe. The basic features of ERM were as follows [Bilski 1989]:

- At the core of this system was the ECU - the European Currency Unit, which was used as the denominator of the exchange rate mechanism.
- Each currency had a central parity rate with the ECU and with all other currencies.
- Two fluctuation bands were set: a narrow band for stronger currencies and a wide band for weaker currencies.
- Any changes of the central rates were to be carried out when the system was evidently endangered by real exchange misalignments or by excessive nominal exchange rate fluctuations. Decisions were taken by common accord by all parties, including the EEC Commission. Any adjustment of one currency led to the adjustments of the central rates of the other participating currencies.

- On the basis of the parity grid of bilateral rates currency fluctuations had to be contained within a margin of plus/minus 2.25 per cent, except for the weaker currencies which were assigned margins of 6 per cent around the central rates. In August 1993, after the crisis in the EMS, the ministers of the European Union decided to widen the bands of fluctuation from plus/minus 2.5 per cent to 15 per cent above or below the central rate.
- Compulsory interventions at the margins of the band by the central banks issuing the intervention currency would take place whenever spot rates reached the bilateral intervention points. In addition, interventions were conducted intra-marginally to adjust exchange rate levels deemed not adequate.
- Non-compulsory (intra-marginal) interventions were used after the exchange rate of the participating national currency reached the divergence threshold. The indicator of divergence in terms of ECU was adopted as a way of signalling the need for intervention in the foreign exchange market. The divergence threshold was set at 75 per cent of the maximum margin of fluctuation.

Considering the effectiveness of the EMS, it had an efficient credit system. Automatic and unlimited access to very short-term financing facilities, VSTF, consisting of a reciprocal loan facility among the ERM participating banks, was established to facilitate compulsory intervention.

To recapitulate, the Exchange Rate Mechanism was designed as a symmetrical system.

In the exchange rate mechanism of the European Monetary System, central banks of both the weak-currency countries and the strong-currency countries were responsible for the main decisions about exchange rate relations and official intervention in the foreign exchange market in an attempt to influence/defend the exchange rate value. However, it must be remembered that at the time the system was established, the majority of the EC countries, would maintain restrictions on the capital flows, especially highly volatile speculative capital flows. Towards the end of the 90' activities leading to the creation of the common market increased considerably and eventually facilitated the lifting of capital controls. Due to the unfortunate confluence of exceptional circumstances – the shock of German reunification, a recession and continuing exchange rate instability in the member countries, a decision was taken by the EC finance ministers to allow most currencies to fluctuate within a much wider band of plus/minus 15 per cent on either side of their central rates in the system. Although the system witnessed no realignments and was widely regarded as a fixed rate regime, such a substantial widening of the fluctuation bands, brought about the evolution of the EMS to a system of de facto flexible exchange rates. In order to appraise the effectiveness of

ERM, it is noteworthy that the EMS began its operations in entirely different conditions, at the end of the Bretton Woods (adjustable-peg) system and, it ended its activities under different circumstances, in the system of floating exchange rates and capital decontrol ("non-system"). As it was pointed out by Paul De Grauwe [De Grauwe 2003], until 1987 the EMS had operated efficiently and effectively due to an adjustable peg regime where a fixed parity (peg) was publicly announced, with the option to adjust the parity to a new value. Consequently small and frequent adjustments as well as the control of capital flows were possible. After 1987 the EMS system began to evolve towards a de facto fixed exchange rate regime. Apart from that, the removal of barriers to the capital flows was being implemented. That, coupled with the fact that some of the ERM countries, such as Germany and France, began to gradually pursue more autonomous monetary policies,<sup>3</sup> contributed to the 1992-1993 ERM crisis. Thus a conclusion can be drawn that ERM operated effectively as long as the rules that were specially designed for its functioning, were followed. However, the system failed once the rules were changed. The rules had to be changed, as the EU countries were on the way to establishing the monetary union. In accordance with the Maastricht convergence criteria for the UE member states to enter the third stage of the EMU and adopt the Euro, the applicant countries should have joined the exchange rate mechanism – ERM II for two consecutive years and should not have devaluated their currencies during the period. The first eleven countries to qualify for the EMU stabilized their currencies within the wider fluctuation band and symmetric exchange-rate adjustment. The EMS was no longer a functional arrangement in 1998 as the member countries fixed their mutual exchange rates when participating in the Euro. That marked the end of the line for the activities of the EMS and ERM. Its successor, ERM II was launched in January 1999. The system only seemingly resembles ERM. The ERM II features:

- At the centre of this system is the Euro, which is the denominator of ERM II.
- A central exchange rate between the Euro and the country's currency is subject to agreement.
- Standard fluctuation bands of plus/minus 15 per cent around the parity, but a country can decide to maintain narrower fluctuation bands than the standard ones as unilateral commitments, presumably plus/minus 2.25 per cent, as before the changes which took place in 1993.
- When necessary, compulsory interventions at the margins are used to keep the exchange rate against the Euro within the plus/minus 15 per cent fluctuation band.
- The very short-term financing for interventions is available when necessary.

In ERM, the ECU basket of a weighted average of the member states' currencies was discarded. At the core of ERM II is the new single currency, the Euro which has become an anchor for the other currencies of the non-Euro area members participating in ERM II. For the currency of each member state participating in ERM II, a central rate against the Euro and a standard fluctuation band of plus/minus 15 per cent was defined, the same as in the original ERM, while not excluding the possibility of setting a narrower band of plus/minus 2.25 per cent with respect to the Euro.

A more substantial difference concerns the scope and impact of interventions conducted by the central banks in order to stabilize exchange rates. Unlike in ERM, in ERM II the principle of symmetric interventions by two central banks issuing the weakest and the strongest currencies does not apply – in this specific case interventions conducted by the central bank of the member country that is stabilizing its national currency vis-à-vis the Euro and the European Central Bank (asymmetric system). However, the ECB can suspend automatic intervention if this were to conflict with its primary objective of maintaining price stability. In practice this may mean that the main burden of defending the determined rates will be carried out mainly by the central bank of the country issuing a stabilized currency. Considering the fact that there is a free flow of capital among the leading world economies, including the EU, and that the value of the cross-border capital movements is still on the increase, defending the weaker currency without strong financial support from the ECB seems to be either doomed to failure or can be seriously jeopardized. An accession country can devalue its currency on its own initiative, but in this case the formal two-year requirement of participation in the ERM II begins anew.

Although ERM II is partly modelled on its forerunner ERM, their characteristics are rather different. ERM was designed as a symmetric system of equal currencies - at least in principle as the importance and strength of each currency is dependent on the condition of the economy it is based on - as well as the mechanism that ensures equal treatment of the new member states, through the need to take coordinated and systematic measures by the central banks. ERM II is asymmetric and it clearly designates the key currency of the system, the Euro, against which participating currencies are stabilized. Yet interventions are to be made unilaterally by the weaker party. Considering the size of the Euro area economy, it is difficult to imagine the scale of interventions that would have to be made by the European Central Bank for the implementation of the inflation target by it (ECB) to be engendered. There are reasons to believe that ERM was devised to be an exchange rate arrangement which should lead to exchange rate stability for participating countries, whereas ERM II is meant to be a training ground for the pre-in countries in which they should learn how to survive with a fixed exchange

rate system through the interim period. In other words, ERM sought to facilitate monetary integration in the member countries, ERM II should prepare the candidate countries for the accession for the already functioning single currency area.

In determining the possibility of introducing the zloty to ERM II, all relevant circumstances must be taken into account in the context for the requirement of the Polish currency to stay in the mechanism for two years. The experience of the EU member countries in participating in ERM prior to their Euro area membership does not seem valuable for Poland. Nor can Poland draw on the experiences of such states as Slovenia, Cyprus and Malta which introduced the Euro as the first of the ten member states that joined the EMU in 2004, due to marked economic dissimilarities.

In the next section, we will analyze the characteristics of the domestic foreign exchange market.

### **3. An analysis of changes in the volume and structure of the foreign exchange and OTC derivatives markets in Poland in April 2004 and April 2007**

The Polish domestic foreign exchange market is relatively young. Its development began with the adoption of convertibility of the zloty in 1995 in accordance with the IMF standards. Another key stage in the exchange market development was the official establishment of a floating exchange rate regime in April 2000. Step-by-step liberalization in the foreign exchange market at the beginning of the twenty-first century in order to adjust the Polish regulations to the requirements of the EU led to the intensification of transactions on the exchange market. Poland's accession to the European Union in May 2004 and full liberalization of capital flows offered new possibilities for the development of the domestic foreign exchange market.

It is our opinion the volume and structure of the Polish domestic exchange market significantly determines the stability of the zloty and the possibility of the inclusion of the Polish currency in ERM.

This part of paper aims at analyzing the situation on the Polish domestic exchange market in April 2004 and April 2007 from the point of view of the market entities, the types of foreign currency transactions, the term structure of transactions, the structure of foreign currency. The following analysis enables one to appraise the readiness of the exchange market to minimize effects of the zloty exchange rate fluctuations.

### 3.1 The traditional/ real exchange market<sup>4</sup>

In April 2007, the average daily turnover in the domestic foreign exchange market increased by 39% at current exchange rates, compared to the value of transactions in April 2004. An 18% turnover increase, when adjusted by movements in exchange rates such as zloty appreciation.<sup>5</sup> Rather relatively moderate dynamics, considering the fact that concurrently the scope of transactions in the global traditional foreign exchange market grew by 71%, and by 65% in the case of a fixed rate regime.

**Table 1.** Average daily turnover in the domestic foreign exchange market in April 2004 and April 2007 (in million US dollars).

	2004	2007	Percentage change at current exchange rates	Percentage change at constant exchange rates
Spot transactions	1.930	2.405	25	8
Outright-forwards	329	527	60	38
FX swaps	4.095	5.881	44	22
Foreign exchange market	6.354	8.813	39	18

Source: *The NBP Report on the turnover in the domestic foreign exchange currency market in April 2007*, p. 2.

In the period between 2004 and 2007 the structure of transactions in the domestic exchange market did not change significantly. Foreign exchange /FX swap contracts dominated, constituting 64% of the market, and 66% in April 2007. In the analyzed period negative tendencies in the specific entities structure of the domestic market became prevailing. The share of transactions with foreign financial entities concluded in April 2004 amounted to 78%. In April 2007 their share rose to 88%. The so called “client market” - spot contracts with non-financial entities - represented only 5.7% of the entire transactions, as illustrated by the data in Table 2.

**Table 2.** Average daily turnover in specific segments of the domestic foreign exchange market in April 2004 and in April 2007 (in million US dollars).

	2004			2007		
	Resident	Non-resident	Total	Resident	Non-resident	Total
Spot transactions	614	1.306	1.930	806	1.599	2.405
with financial institutions	314	1.300	1.614	309	1.586	1.895
with non-financial customers	310	6	316	497	13	510
Outright-forwards	300	29	329	440	87	527
with financial institutions	12	25	37	21	86	107
with non-financial customers	288	4	292	419	1	420
FX swaps	450	3.645	4.095	665	5.216	5.881
with financial institutions	411	3.645	4.056	584	5.207	5.791
with non-financial customers	39	0	39	81	9	90
Foreign exchange market	1.364	4.980	6.354	1.911	6.902	8.813
with financial institutions	737	4.970	5.707	914	6.879	7.793
with non-financial customers	637	10	647	997	23	1.020

Source: NBP 2004, 2007 as above.

It is evident from the data collected in the survey that transactions with the foreign non-resident financial institutions dominated the foreign exchange market. The average daily value of zloty exchange transactions in April 2007 amounted to 6.879 million US dollars, which constituted 88% of the entire transactions. As for the currency composition, the FX spot contracts with non-resident financial entities amounted to 5.207 million US dollars, a significant increase to 89% in the value of transactions. Typical of the Polish domestic foreign exchange market as compared to the global market was a comparatively large share of foreign entities. Thus, in April 2007, 38% of the transactions in the global market were contracts with local entities, and 62% constituted cross-border transactions. In Poland the respective proportions were as follows: 21% in the domestic market and 79% in the cross-border transactions [BIS 2007, p.6]. The dominance of the FX swaps with non-residential financial institutions among all segments accounted for the fact that the domestic exchange market gradually assumed the qualities of the extraterritorial market. This caused that zloty rate fluctuations were dependant mainly upon the changes of financial parameters in the global market. For example the change of spread between the benchmark securities in the Polish domestic exchange market and the foreign exchange market (USD, EUR).

The situation is not easy to interpret. This may have both positive and negative consequences for the exchange-rate policy of the National Bank of Poland and the market stability, which are as follows:

1. The prevalence of foreign exchange transactions associated with cross-border financial operations in Poland reflects the sensitivity of the market to application of the monetary policy instruments, such as, e.g. exchange rates.
2. The dominant entities on the market such as international banks and hedge funds pursue their own strategies, e.g., through diversification of portfolio holdings across several markets, and may fail to react to the impulses of the Polish exchange rate policy.

Also disadvantageous is the term structure of transactions. Contracts with a maturity of up to seven days prevailed, representing 86.3% share in turnover in April 2004 and 89.5% in April 2007, in the volume of FX swaps. In the forwards category, transactions of up to seven days constituted 51% in April 2004 and 34% in April 2007. The presented data confirm the earlier conclusions concerning the dominance of transactions involving one-day swaps as a form of investment in the Polish treasury bonds, the so-called “carry trade” - a trading strategy used in the FX market.

To include the Polish foreign exchange market in the category of “haute finance” might be an exaggeration. It remained a rather small segment of the global market. The zloty ranked number twenty-one in terms of volume of global currency trade. The percentage share of the zloty in foreign trade operations accounted for only 0.4% in 2004 and 0.8% in 2007, of the global trade volume, in total 200%.<sup>6</sup>

**Table 3.** *Turnover in the domestic foreign exchange market by currency pairs in April 2004 and April 2007.*

	EUR / PLN	USD / PLN	Other / PLN	EUR / USD	Other / USD	Other / EUR
Spot transactions 2004 and 2007	18,6 53,5	34,9 7,9	0,9 2,6	33,3 22,2	9,1 7,6	3,1 6,2
Outright-forwards 2004 and 2007	35,8 57,8	18,7 24,0	2,8 4,8	20,9 10,0	12,9 2,3	8,9 1,1
FX Swaps 2004 and 2007	1,4 4,1	83,9 72,7	0,0 0,0	5,0 8,8	9,4 13,0	0,2 1,4

*Source: NBP 2004 and 2007 as above.*

The data presented here clearly demonstrate the changes that took place between April 2004 and April 2007 in the spot and outright-forwards markets.

In the period under review the EUR/PLN turnover volume grew significantly. One may conclude that probably the change was a consequence of Poland’s accession to the European Union in May 2004, when foreign exchange dealers

presumed that the EUR/PLN pair would be the main currency pair in the market, and began quoting the zloty in relation to the euro, and the USD/PLN rate was treated as a resultant rate, dependent on the EUR/PLN and EUR/USD rates. Among other things, the changes derived from an extensive use of the euro as invoice currency and as currency of denomination and settlement in markets. Thus, as regards the foreign trade in Poland, 70.5% of Poland's export, and 29% of its import payments were invoiced in the euro, whereas 18% of the country's export payments, and 57.5% imports were invoiced in US dollars.

Despite the increasing role of the euro in the domestic foreign exchange market, the transactions USD/PLN still prevail. In the most liquid and dynamic FX swap market, exchanging dollars for the zloty (and vice versa) dominate, mainly for the purpose of investment in the zloty denominated Treasury bonds.

In April 2007 USD/PLN swaps represented 95% of the transactions with financial institutions. The average/standard value of transactions, mainly one-day swaps, amounted to approximately 100 million USD. EUR/PLN transactions dealt rather with longer maturity periods and included foreign trade turnover, direct investments, settlements and transfers in the EU.

### 3.2 Derivatives market<sup>7</sup>

The Polish domestic derivatives market is relatively small and at the initial stage of its development. Poland's share of the global derivatives market stood at 0.1 per cent in April 2007. The role of the derivatives market, both in interest rates and foreign currencies, is clearly less important than that of the global market. For example, the turnover in the foreign exchange and interest rate, derivatives constituted 26% of the total turnover in the domestic foreign exchange and OTC markets. The share of derivatives in the global market in the same year amounted to 39.5%.

**Table 4.** Average daily turnover in the domestic OTC derivatives market in April 2004 and April 2007 (in million US dollars).

	2004	2007	Percentage change at current exchange rates	Percentage change at constant exchange rates
Foreign exchange derivatives	180	411	129	91
CIRS	3	68	2.167	1.943
FX options	177	343	94	62
Interest rates derivatives	958	2.681	180	105
FRA	691	1.435	108	51
IRS	267	1.240	364	247
Interest rate options	0	6	-	-
Derivatives market	1.138	3.092	172	103

Source: NBP Report as above.

As the data show, compared to April 2004 the average daily turnover in the foreign exchange and interest rate derivatives market increased more than twofold. The growth in the volume of foreign trade was the consequence of the need to hedge against exchange rates movements and future unfavourable fluctuation of interest rates.

In the market of foreign currencies, option contracts played a distinctive role. In the management of FX risk, it became more common for Polish companies to use various option strategies. This is reflected in the entity structure of this market segment, where non-financial resident customers, dominate. In April 2007 the share of EUR/PLN rate options in the turnover composition represented 62.7% of the turnover in the foreign currencies options market.

As in April 2004, the FRA contracts were the most liquid interest rate derivatives. See Table 5.

**Table 5.** *Average daily turnover in specific segments of the domestic interest rate derivatives market in April 2007 (in million US dollars).*

	Resident	Non-resident	Total
FRA contracts	714	721	1.435
with financial institutions	713	721	1.434
with non-financial customers	1	0	1
IRS contracts	555	685	1.240
with financial institutions	549	685	1.234
with non-financial customers	6	0	6
including the OIS contracts	426	234	660
with financial institutions	426	234	660
with non-financial customers	0	0	0
Interest rate options	4	2	6
with financial institutions	0	2	2
with non-financial customers	4	0	4
Interest rate derivatives	1.273	1.408	2.681
with financial institutions	1.262	1.408	2.670
with non-financial customers	11	0	11

*Source: NBP Report as above.*

The FRA market was dominated by financial institutions. It is estimated that the participation of residents and non-residents was close to equal and amounted to 714 million USD and 721 million dollars, respectively.

In the interest rate derivatives market, the EUR/PLN pair prevailed, which is indicative of the fact that the Polish banking sector has been strongly integrated with the European banking system.

The analysis presented above leads to the following conclusions:

- The prevalence of the EUR/PLN transactions can be fully understood as the result of the convergence of the Polish economy and the economies of the EU countries.
- The reduction of the budget deficit will result in a decrease in demand for Treasury bonds and help stabilize the volume of the FX swap segment in US dollars.
- Coordination of Poland's monetary policy with the monetary policy of the ECB, e.g. interest rates, will increase a real dependence of the dollar fluctuations on the euro real exchange rates.
- The progressing real convergence will reduce the size of the Balassa-Samuelson effect (estimated at 2-3%).

#### **4. The Polish zloty in ERM II**

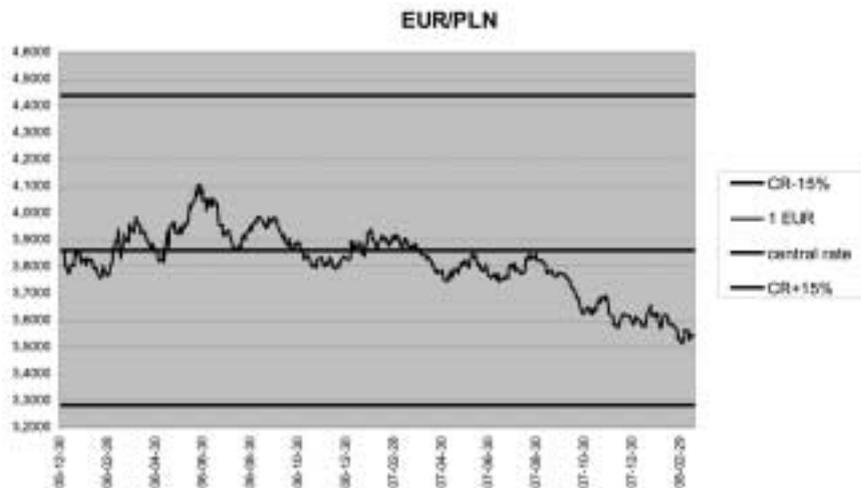
Until the end of 2007 only Poland, as one of new EU members, applied the pure floating exchange rate.<sup>8</sup> The Czech Republic has the managed floating exchange rate. The majority of countries belong to ERM II.<sup>9</sup> Active exchange rate policy run by the new EU members does not exclude applying the direct inflation target strategy. The Czech Republic, Hungary, Slovenia (until the end of 2007) combine exchange rate stabilizing activities with direct inflation targeting. The rest of the countries have the exchange rate anchor.

Three "old" EU members stay outside euro zone: the United Kingdom, Sweden, Denmark. Denmark belongs to ERM II with declared  $\pm 2,25\%$  margins. Sweden and the United Kingdom remain beyond the exchange rate stabilizing mechanism. Most economists believe these countries are outside ERM II for political, not economic, reasons. The United Kingdom demonstrates thus its exchange rate independence. Sweden does not want to enter ERM II as it is the only chance not to meet the Maastricht criteria and postpone the membership in the euro zone. The exchange rate position of the United Kingdom and Sweden has not influenced the fluctuations of their currencies, the exchange rate of the pound and krona to the euro is stable with 1-1,5% bands.

In view of presented facts the reluctance of the Polish monetary authorities to include the Polish zloty in ERM II is not understandable.<sup>10</sup> The ability to keep the zloty within the acceptable margins seems not to be at risk. It can be proved by the analysis of EUR/PLN variability.

The fluctuations of Polish currency are presented in two graphs. In first case (Figure 1) we assumed the market exchange rate dated December 30, 2005 as the theoretical central rate. The analysis embraced years 2006-2007 and was based on daily fluctuations of EUR/PLN exchange rate.

Figure 1. EUR/PLN exchange rate in years 2006-2008.



Source: own calculations, NBP data.

Central rate dated December 31, 2005, 1 EUR = 3,8590 PLN

Upper intervention point +15% - 3,2802

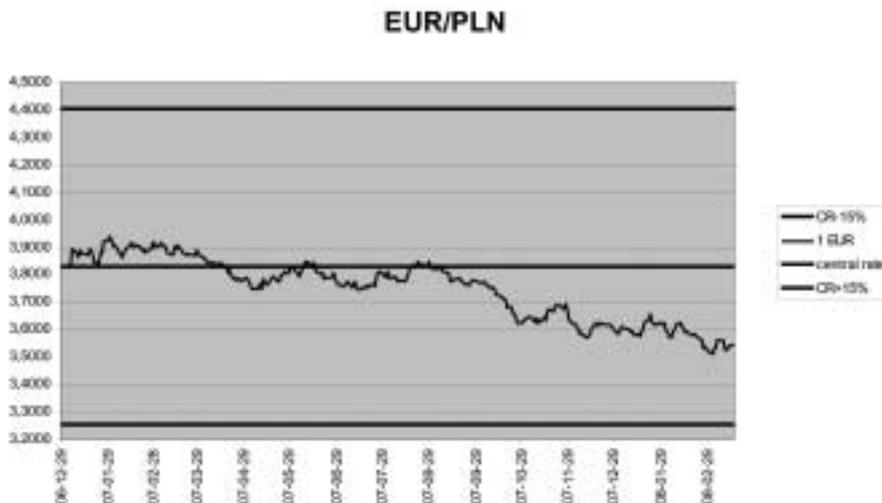
Lower intervention point -15% - 4,4379

The maximum “lower” deviation (depreciation) took place on April 24, 2005 and amounted to 4,27756, it means 4,8%. The maximum “upper” deviation (appreciation) took place on March 3, 2008 and amounted to 3,5117, what means 9,1%.

As results from calculations in the analyzed period, the maximum depreciation to central rate in EUR was 4,8% and appreciation - 9,1%. That indicates the fluctuations are near to 75% on the “strong” side of parity and ca 30% on the “weak” side. We should emphasize the fluctuations took place in the period of a very strong world finances crisis and disturbances on exchange rate markets.

In the second case (Figure 2) we assumed the market exchange rate dated December 29, 2006 as the central rate.

**Figure 2.** EUR/PLN exchange rate in years 2007-2008.



Source: own calculations, NBP data.

Central rate dated December 29, 2006 1 EUR = 3,8301

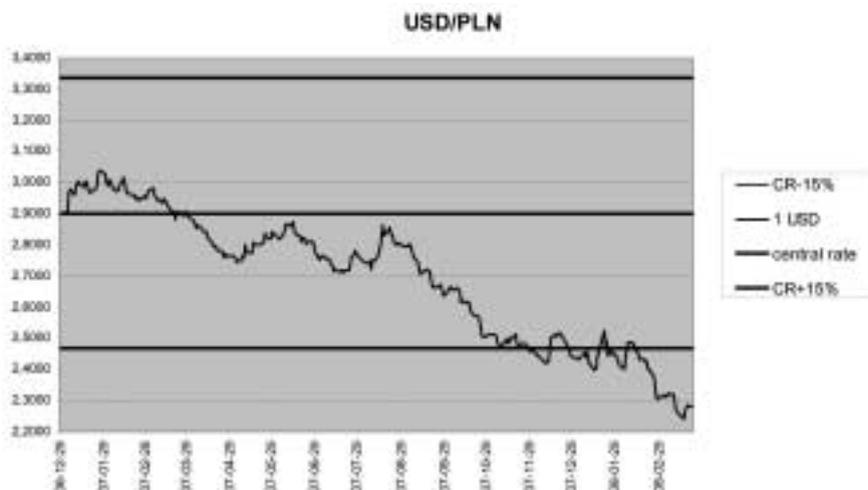
Upper intervention point +15% - 3,2556

Lower intervention point -15% - 4,4046

In this case the maximum “lower” deviation (depreciation) took place on January 29, 2007 and amounted to 3,9240, it means 2,45%. The maximum “upper” deviation (appreciation) took place on March 3, 2008 and amounted to 3,5117, what means 8,07%.

As results from the presented calculations, assuming the market exchange rate dated December 29, 2006 as the central exchange rate, decreased the range of fluctuations in comparison with the first case. The fluctuations range reduction arises due to the fact that the market exchange rate dated December 29, 2006 was closer to the average exchange rate for the given period.

In this place it is worth returning to the analysis presented in the second part of the paper and showing the volatility of USD/PLN exchange rate in the analyzed period. It is illustrated by Figure 3.

**Figure 3.** USD/PLN exchange rate in years 2007-2008.

Source: own calculations, NBP data.

Central rate dated December 29, 2006 – 1 USD - 2, 9020

Upper intervention point + 15% - 3,0370

Lower intervention point –15% - 2,2426

The maximum appreciation of PLN to USD in the discussed area reached 22,73% and the depreciation 4,65%. Summing up these figures results in the ca 27% total range of PLN to USD fluctuations. In that period the PLN to EUR fluctuations amounted to ca 10,5%; the difference is gigantic. This example confirms previously drawn conclusion on positive EUR/PLN exchange rate correlation and negative USD/PLN one, which is connected with the Polish economy convergence with the euro zone and more clearly seen transformations on the currency market.

The presented analysis leaves no doubt that introducing the zloty into ERM II has not and does not post a threat to keep permissible bands. Furthermore, the data indicate the Polish monetary authorities may attempt to create soft target zones at the level of ca 50% acceptable bands.

## 5. Conclusions

Introducing the Polish currency into ERM II would be a clear signal for financial markets that Poland treats the euro zone entrance seriously and institutional anchor for the zloty in the European exchange rate stabilizing mechanism.

For one more reason the Polish currency should enter ERM II as soon as possible. The ECB will assess new countries convergence extent analyzing all convergence criteria as one. That means the level of inflation, interest rates and others will be accepted by the Governing Council if it is accompanied by the exchange rate stabilization. That results from the last ECB decisions on Slovakia). As a consequence, parallel progress in all Maastricht criteria is required. One should not concentrate only on chosen convergence criteria, giving no regard to others.

It is obvious that reaching satisfactory level of inflation with the floating exchange rate does not guarantee the same pace of prices increase after the fixed exchange rate introduction. Similar issues may concern the level of interest rates and even public debt. Delay in introducing the zloty into ERM II blocks initiating in the Polish economy mechanisms that may absorb asymmetric shocks. Now the function is performed mainly by the exchange rate; time is required for the economy to create adjustment policy instruments alternative to the exchange rate. It should be remembered the discussed process in the old EU countries lasted for many years.

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# TOURISM IN THE REGION OF EASTERN MACEDONIA AND THRACE (A STATISTICAL FORECASTING MODEL)

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## Abstract

One of the most important issues for Greek tourism is the intense seasonality of demand. This phenomenon affects the entire travel and tourism sector of Greece but mainly the hospitality sector. In this paper we use monthly percentages of occupancy of all tourist accommodations (except camping sites) for the Eastern Macedonia and Thrace region, from January 1995 until December 2005. Following the Box – Jenkins (1976) method, we construct a statistical model which has the best fit to our data. We analyze the trend and the seasonality of our data and we make forecasts for the following five years.

*JEL classification: C32, C53.*

*Keywords: Time series, Box-Jenkins, forecasting, seasonality, hotels, tourism data.*

## 1. Introduction

Mass tourism is considered as the main applied tourism development model globally and has influenced the tourism development in Greece in the last three decades. An important feature of mass tourism in the Mediterranean basin is its strong seasonality of demand. Butler (2001) defines seasonality as “*a temporal imbalance in the phenomenon of tourism, which may be expressed in terms of dimensions of such elements as numbers of visitors, expenditure of visitors, traffic on high-ways and other forms of transportation, employment and admissions to attractions*”.

Seasonality of demand is a distinctive feature of tourism and recreation-based activity and its associated business. This is because the focus of many holidays is on the summer months, a matter that is itself linked to temporal variation in the

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attractions of tourism resources (Ball, 1989). It is widely seen as a “problem” to be “tackled” at a policy, marketing and operational lever (Baum and Lundtorp, 2001).

In spite of the widespread concern over seasonality and its generally perceived negative effects upon tourism and destination areas, there has been relatively little research published in the academic literature devoted to this topic which has been (Butler, 2001).

One of the most critical issues concerning Greek tourism is that Greek tourism product presents a high degree of seasonality, a fact which mainly affects cost and services quality. Foreign tourism in coastal and peninsula areas of Greece is affected by seasonality with intense concentration in summer. In the past decade, more than 50% of the annual arrivals come steadily during the trimester July, August and September. Any efforts to smoothen the seasonality has had no effect, either because of lack of continuance, or consistency or mainly because they were not based on differentiation/enrichment of the product (SETE, 2003).

The Region of East Macedonia – Thrace makes up the north-eastern part of Greece consisting of the eastern part of the region of Macedonia along with the region of Thrace. To the east it borders with Turkey, to north with Bulgaria and to the south with the Region of Central Macedonia, and in particular with the Prefecture of Serres. To the South – West it is wet by the Aegean Sea and to the south-east by the Thracian Sea. This Region consists of five prefectures: Kavala, Drama, Xanthi, Rodopi and Evros. The Region’s area is 14.157 km<sup>2</sup> corresponding to 10,7% of Greece’s total area.

Combining a variety of traditional forms with a wide range of samples imported from Western Europe, the local architectural tradition reflects the region's rich political, social and economic history.

The hotels come in several categories: from 5 star hotels to other categories, such as A to C. Since hotels are classified by facilities, lobby, room size, breakfast room and many more, the 5 star hotels happen to be the most luxurious. Next, there is the A Category Hotels, which equal to 4 star hotels and B Category, which equal to 3 star hotels, while C Category equals to a 2 star hotel and D category which equal to a 1 star hotel. Regarding the number of hotels by classification in the region (table 1) the majority of the hotels are categorized in C class followed by hotels of Cat D and cat B.

**Table 1.** Region of Eastern Macedonia & Thrace - Hotels' classification.**Number of Beds:** 17.864

Perfection of	5*****	4****	3***	2**	1*	TOTAL
	Hotels	Hotels	Hotels	Hotels	Hotels	Hotels
Evros	0	5	6	28	11	50
Samothraki	0	0	4	6	2	12
Rodopi	0	4	9	6	1	20
Xanthi	0	1	7	5	2	15
Kavala	1	2	10	24	13	50
Thassos	0	5	21	102	57	185
Drama	0	0	4	7	4	15
TOTAL	1	17	61	178	90	347

(Source: Ministry of Tourism – GNTO, 2005).

## 2. A statistical forecasting model for the tourism in the Eastern Macedonia and Thrace region

In this paper we use monthly percentages of occupancy of all tourist accommodations (except from camping sites) for the East Macedonia and Thraki region, from January 1995 until December 2005. Following the Box – Jenkins method, (Box, G. & Jenkins, G., 1976), we construct a statistical model which has the best fit to our data. We analyze the trend and the seasonality of our data and we make forecasts for the following five years.

The data that involves the monthly occupancy of all tourist accommodations of both foreign and domestic tourists came from the official records of the Greek Statistical Office (Greek Organization of Tourism, [www.gnto.gr](http://www.gnto.gr))

The program that we use for this study is Minitab 14.

Firstly we construct the timeplot of our data. With  $C^1$  we denote the monthly percentage of occupancy.

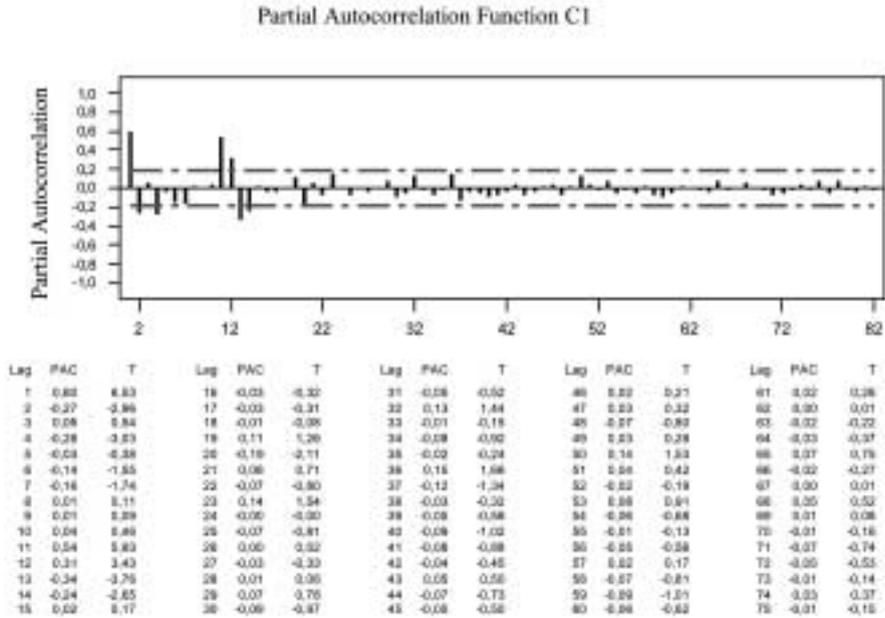
In Figure 1 we can notice a strong seasonality. The occupancy during the high season varies from 60% to 70%, while during the low season varies 20% to 35%. So we observe a great variability in our values.

Next we construct the Ac. F. (Autocorrelation Function) and the P. Ac. F (Partial Autocorrelation Function) diagrams in order to specify the seasonal and non – seasonal factors that are needed in our model.

In Figure 2 we can distinguish great seasonality since we observe large values at lag 12 and 24.

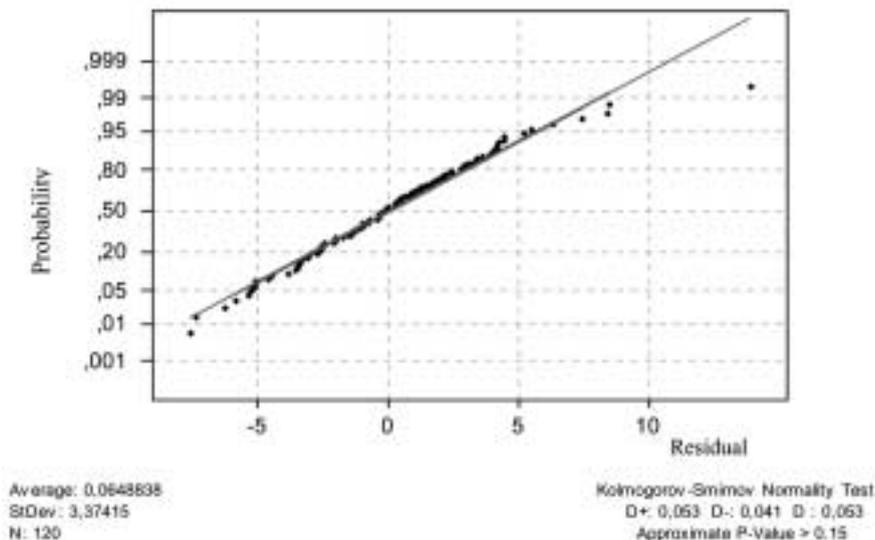


Figure 2.



Examining together the Figures 2 and 3 and after a series of tests, we conclude to the following SARIMA model:  $(1,0,1) (1,0,1)_{12}$ . That means that we use one seasonal MA (Moving Average) and one seasonal AR (Autoregressive) parameters for the seasonal part of our model. For the non - seasonal part of our model we use one MA parameter and one AR. This model has all of its parameters statistically significant ( $p$ -values  $< 0.05$ ) and the residuals have been tested using the Kolmogorov – Smirnov test (Figure 2.4), Kiochos, P. (1990), so we can accept the normality of residuals distribution at any level of significance.

Figure 3.



The final model is:

Type	Coef	StDev	T	P
AR 1	0,8548	0,0675	12,67	0,000
SAR 12	1,0001	0,0029	340,60	0,000
MA 1	0,3688	0,1227	3,01	0,003
SMA 12	0,9316	0,0662	14,08	0,000
Number of observations:			120	
Residuals: SS =	1355,31	(backforecasts excluded)		
MS =	11,68	DF =	116	

Modified Box-Pierce (Ljung-Box) Chi-Square statistic

Lag	12	24	36	48
Chi-Square	7,4	29,9	39,9	44,6
DF	8	20	32	44
P-Value	0,497	0,072	0,158	0,447

F – Test is:  $213.1439 \gg 2.4435 - F_{4,116,0.05}$ , so we can conclude that the total model is statistically significant.

From the Ljung & Box test, (Ljung & Box, 1978) we can consider that the residuals are not correlated. Then we calculate the mean of the residuals ( $\mu$ ). We test  $H_0 : \mu = 0$  against  $H_1 \mu \neq 0$  in significant level  $\alpha = 5\%$ . The results are:

Variable	N	Mean	StDev	SE Mean	T	P
RESI1	120	0,065	3,374	0,308	0,21	0,83

We conclude that the mean of residuals  $\mu = 0$  in any level of significant. Then we construct the Ac. F. (Autocorrelation Function) of residuals and P. Ac. F (Partial Autocorrelation Function) diagrams (Figure 5 and Figure 6).

Figure 5.

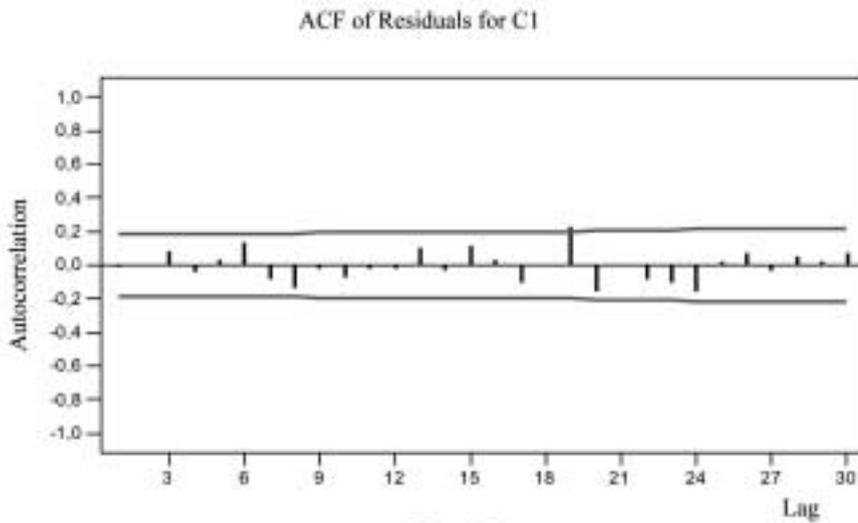
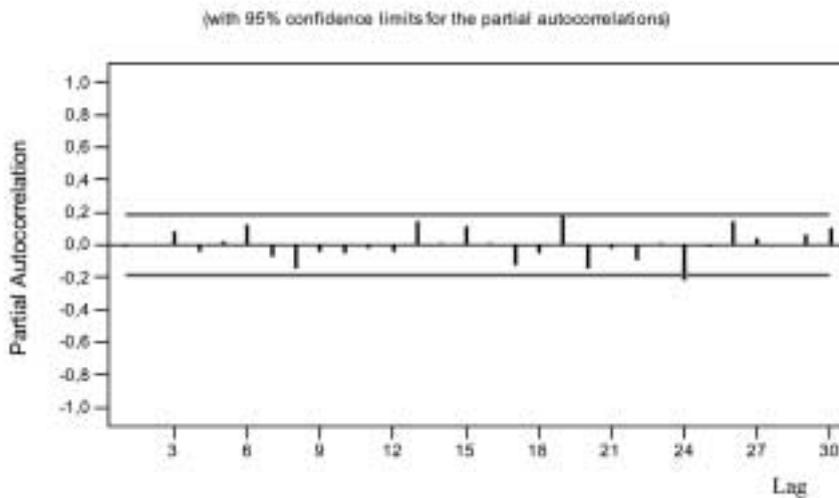


Figure 6.



From the Figures 5 and 6 we observe that there is not any value outside the confidence intervals and this means that the residuals are not autocorrelated.

Our I model has the best fit to data because

- 1) all its parameters are statistically significant ( p-values are less 00.05) and
- 2) its residuals have mean equal to zero, are normally distributed and are not autocorrelated.

We will use this model in order to predict the percentages of occupancy of accommodation in the specific region for the next five years. We are aware that a good fit of the model does not always provide good prediction ability. In order to have the ability to judge the forecasts using real data, we excluded the last 12 observations of our time series, Xenakis, A. (1998). We estimate the model without these observations and take forecasts for this latter interval. Finally we compare these forecasts with the data that we kept outside of the procedure above.

The results of the forecasts from period 109 are the following:

Period	Forecast	95 Percent Limits		Actual
		Lower	Upper	
109	<b>32,4747</b>	25,7738	39,1756	<b>32,9000</b>
110	<b>36,6411</b>	29,1908	44,0915	<b>36,8400</b>
111	<b>38,0584</b>	30,1050	46,0119	<b>38,1600</b>
112	<b>36,6846</b>	28,3828	44,9864	<b>33,8300</b>
113	<b>38,7116</b>	30,1642	47,2590	<b>37,7800</b>
114	<b>42,5728</b>	33,8504	51,2953	<b>41,2000</b>
115	<b>52,7835</b>	43,9353	61,6317	<b>52,4100</b>
116	<b>63,0923</b>	54,1533	72,0312	<b>62,8200</b>
117	<b>46,5597</b>	37,5550	55,5644	<b>46,7500</b>
118	<b>33,8756</b>	24,8231	42,9281	<b>32,4300</b>
119	<b>39,7682</b>	30,6810	48,8554	<b>40,3200</b>
120	<b>33,1691</b>	24,0566	42,2815	<b>35,2200</b>

Period	Forecast	Lower	Upper
121	33,5354	26,8345	40,2363
122	37,5374	30,0870	44,9877
123	38,8205	30,8670	46,7739
124	37,1350	28,8332	45,4368
125	39,2005	30,6532	47,7479
126	42,9522	34,2297	51,6747
127	53,1640	44,3158	62,0122
128	63,4224	54,4834	72,3613

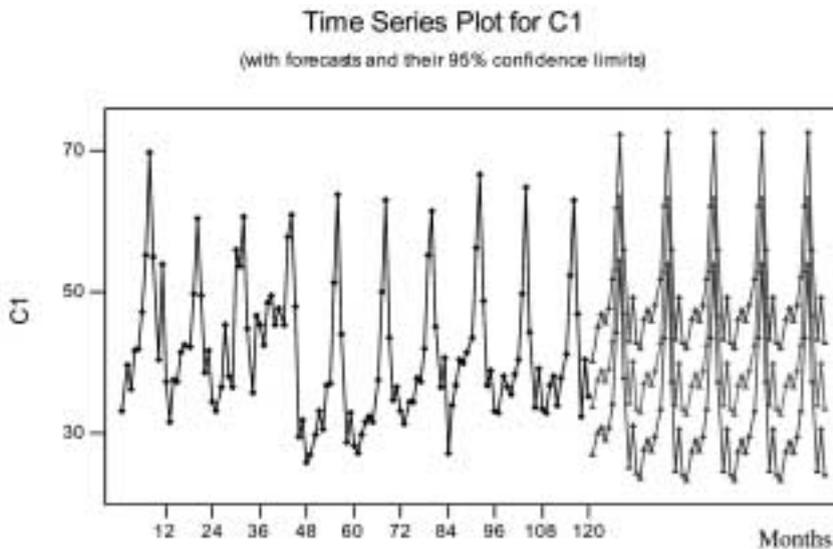
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129	46,8702	37,8654	55,8749
130	34,0304	24,9779	43,0828
131	40,0238	30,9366	49,1110
132	33,4956	24,3831	42,6081
133	32,7648	23,5933	41,9363
134	36,8794	27,6798	46,0790
135	38,2586	29,0386	47,4787
136	36,6551	27,4201	45,8901
137	38,7910	29,5450	48,0369
138	42,6029	33,3491	51,8568
139	52,8669	43,6072	62,1266
140	63,1700	53,9061	72,4339
141	46,6538	37,3867	55,9208
142	33,8449	24,5756	43,1142
143	39,8662	30,5953	49,1372
144	33,3608	24,0886	42,6330
145	32,6499	23,3592	41,9406
146	36,7820	27,4854	46,0787
147	38,1760	28,8750	47,4769
148	36,5848	27,2806	45,8889
149	38,7315	29,4251	48,0380
150	42,5530	33,2448	51,8611
151	52,8257	43,5163	62,1351
152	63,1363	53,8260	72,4466
153	46,6244	37,3134	55,9353
154	33,8192	24,5078	43,1306
155	39,8452	30,5334	49,1570
156	33,3428	24,0308	42,6548
157	32,6349	23,3085	41,9613
158	36,7700	27,4395	46,1004
159	38,1663	28,8329	47,4996
160	36,5769	27,2413	45,9124
161	38,7254	29,3883	48,0625
162	42,5486	33,2104	51,8868
163	52,8234	43,4843	62,1624
164	63,1360	53,7963	72,4756
165	46,6234	37,2833	55,9635
166	33,8178	24,4774	43,1583
167	39,8450	30,5044	49,1857
168	33,3426	24,0017	42,6834

169	32,6351	23,2805	41,9897
170	36,7709	27,4126	46,1293
171	38,1677	28,8066	47,5288
172	36,5784	27,2153	45,9415
173	38,7274	29,3629	48,0919
174	42,5511	33,1855	51,9167
175	52,8270	43,4606	62,1934
176	63,1407	53,7737	72,5077
177	46,6268	37,2594	55,9942
178	33,8202	24,4525	43,1879
179	39,8480	30,4801	49,2159
180	33,3451	23,9770	42,7131

The forecasts from the twelve months (period 109 up to 120) are satisfactory because these forecast values are close to real values and all of them between the lower and upper limits (Figure 7).

**Figure 7.**



From this study it is obvious that the occupancy of all tourist accommodations will be stable during the low and the high tourist season for the next five years.

### **3. Conclusion**

As we observe from our model, in the case of Eastern Macedonia and Thrace, we expect that the occupancy of all tourist accommodation will be stable during the low and the high tourist season for the next five years.

Some of the most important problems faced by the Greek tourism authorities are: seasonality of tourism employment, unequal standards of tourist services, development of para-hotel economy and environmental problems.

Thanks to its environmental protected areas, Eastern Macedonia & Thrace can elect itself as an ideal destination for alternative tourism in the national and international tourism market. Focus should be given to the enhancement and promotion of alternative tourism forms and more specifically ecotourism, which will provide incentives for the prolongation of the tourist period al year long.

The Region of Eastern Macedonia & Thrace has the key characteristics to become a true all-year-round tourism destination and create a competitive economy with conditions for sustainable development, strengthening its role in the broader geographical area.

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# THE EFFECT OF CHANGES IN THE LEVEL OF INTEREST RATES TO THE STOCK RETURNS OF BRITISH BANKS. THE CASE OF GREAT BRITAIN STOCK MARKET

G. ZAFEIROPOULOS\*

## Abstract

The main subject of my paper is to examine the influence of interest rate changes to common stock returns of commercial banks in Great Britain. The interest rate changes are categorized to current and unanticipated changes. In order to predict unanticipated interest rate expectations I will use the Box-Jenkins modeling procedure. I will employ a variant of the capital asset pricing model to analyze the separate effects of market return and current and unexpected interest rate changes on bank stock returns.

The results over the sample period indicate a significant influence of changes in interest rates expectations to the market values of British Commercial Banks.

*JEL classification: G10.*

*Keywords: unanticipated interest rate changes, stock returns of British banks, Box-Jenkins modeling procedure.*

## 1. Introduction

According to empirical evidence on the sensitivity of bank market values to interest rate, many surveys examine that connection. Flannery and James (1984) found on average there was a statistically significant negative relationship between bank stock returns and unexpected interest rate changes while Booth and Officer (1985) arrived at basically the same conclusions but by using different expectation process. Bae (1990) concludes that current and anticipated interest rate changes affect significant adversely stock returns of commercial banks. On the latest survey from Dinenis and Staikouras (1998) these findings are robust while an another factor is considered here, the variability of interest rates which is found to have a positive relationship with stock returns of commercial banks.

These conflicting findings are attributed to the different method that authors used to model interest rate surprises and also to the choice of a specific maturity debt

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index. In overall most of the papers employ the Box-Jenkins methodology to capture the data generating process of the “changes in interest rates” sequence. Also the debt index that used most is the short term debt index, such as 3 month Treasury Bills, since banks and their earnings should be more sensitive to short term rather than long term rates as they typically keep title to the relatively long-term loan portfolios they originate while selling (deposit) contracts of short maturity.

On average most of the studies found significant relationship between interest rate innovations and common stock returns. There are some theoretical considerations of why this direct relationship exists. In particular conventional wisdom has long viewed financial intermediaries such as banks, as being susceptible to interest rate risk. This arises from the fact that banks undertake an asset transformation or intermediation function by lending long (at fixed rates) and borrowing short (often at variable rates). Such mismatch balance sheet structure leads to different weighted duration of assets and liabilities which means that repricing of assets and liabilities is not matched. So if the duration of assets exceeds that of liabilities, repricing of assets in response to changes in the base level of interest rates is slower and since revenues adjust more slowly than costs, the net worth of banks is affected. If we want to model a framework of how revenues and costs are adjusted to interest rate innovations this will take the below form (Akella and Greenbaum 1992):

Lets:  $\lambda_L$ ,  $\lambda_D$  denote respectively the speeds with which the revenue rate (from loans)  $i_L$ , and the cost rate (from deposits)  $i_D$ , adjust to changes in the exogenous interest rate,  $r$ . The adjustment is instantaneous if  $\lambda_L = 1$  whereas  $\lambda_L = 0$  implies that the revenue rate is totally insensitive to the changes. The same is valid for  $\lambda_D$ . So if:

- $\lambda_D > \lambda_L$  An unexpected increase (decrease) in the interest rate reduces (increases) the spread between revenues and costs and lowers stock returns.
- $\lambda_D < \lambda_L$  These effects are reversed.

The structure of my work is organized in three stages. Stage 1 describes the data used, stage 2 the methodology followed to model interest rate sensitivity and the results and finally stage 3 the results.

## 2. Data

My sample consists of 7 commercial banks from the UK bank sector, while the total number of commercial banks was 10, with selection criterion the availability

of data as they were provided by DataStream. My sample includes monthly observations from 8/1992 to 9/2002, in total 120 observations. I didn't use weekly observations in order to have more extended sample since weekly changes in interest rates were negligible. Monthly logarithmic stock returns for all commercial banks were calculated in order to create equally weighted portfolio returns. For a measure of market return index I employed the FTSE all share price index, the widest equity market index in UK. In order to capture current interest rate changes I used the three month Treasury bill middle rate for both markets since, according to the findings of the study of Foyles, John and Tipton (1981), short term government securities influence more commercial bank stock returns, independent of the influence of equity market movements. All my data was taken from Data Stream.

### 3. Methodology

In order to estimate the sensitivity of common stock returns to current interest rates I employed Stone's model, a two index model by incorporating as a significant factor of explaining commercial bank stock returns, changes in interest rates. The reason that I test if current changes influence returns is because a large portion of current changes corresponds to unanticipated changes. The following model is estimated:

$$R_{pt} = \beta_0 + \beta_m R_{mt} + \beta_1 CIC_t + e_t$$

$R_{pt}$  is the monthly return on an equally weighted portfolio of stocks in month  $t$ ,  $R_{mt}$  is the monthly return on market index in month  $t$  and  $CIC_t$  is the current interest rate change in 3 months treasury bills in month  $t$ .  $CIC_t$  is calculated using absolute interest rate changes expressed in percentage terms.

In order my results to not affected by the colinearity of market returns with interest rate changes I calculated the correlation and I found a low negative correlation of  $-0.1407$  for UK market.

Table 1 reports the results of estimating the coefficients (OLS method) for the above model

Market	$\beta_0$	$\beta_m$	$\beta_1$	$R^2$	DW
UK	0.006 (1.71)	1.242 (14.2)	-2.8 (-2.17)	0.65	2.07

The overall fit of the estimated model for UK is good with a coefficient of determination of 0.65. Durbin Watson statistic is very close to 2 so there is no evidence of serial correlation in the residuals for both models. If we want to comment on the estimated parameters we can see that the coefficient on the market returns is statistically significant with a value of 1.24 and is indicating an overreaction of commercial banks stocks in market movements (if market rise by 1% stock returns will rise by 1.2%).

More important the coefficient on the interest rate term is negative but significant in a 95% confidence level with an estimate value of 0.028. So there is a strong negative relationship between current interest rate changes and bank portfolio returns in UK market suggesting that current interest rates represent unanticipated interest rate surprises.

The next step was to model unanticipated interest rate changes since in an efficient market anticipated changes should be already embedded in stock prices (in the sense that investors in order to value stocks and form expectations discount future bank cash flows utilizing, as a discount factor, an expected interest rate) so only unanticipated changes in economic factors should influence stock prices. In order to estimate the effect of unanticipated interest rate changes I followed a two step procedure: First I identified an interest rate expectation equation, then I considered the residuals of this model as interest rate surprises and finally the derived residuals employed as an interest rate factor in the following two factor model:

$$R_{pt} = \beta_0 + \beta_m R_{mt} + \beta_U UIC_t + e_t$$

where  $UIC_t$ : the unanticipated interest rate change in month  $t$ .

Then I employed the Box-Jenkins modeling procedure which consists of a three stage method to select an appropriate model which captures the data generating process of “changes in 3 month Treasury bills” time series.

In conclusion the expectation generating process for UK current interest rate changes is represented by the following restricted autoregressive model:

$$CIC_t = \alpha_0 + \alpha_1 CIC_{t-1} + \alpha_3 CIC_{t-3} + e_t$$

The residuals are utilized as unexpected changes in interest rates

## 4. Results

In order to examine the interest rate sensitivity of commercial banks stock returns to unexpected changes in interest rates I will estimate the coefficients of the below model:

$$R_{pt} = \beta_0 + \beta_m R_{mt} + \beta_{UIC} UIC_t + e_t$$

Our model doesn't suffer from collinearity among the two regressors since the correlation of the FTSE all share and unanticipated interest rate changes is  $-0.12$ . The table below shows the results of the estimated coefficients (estimated by OLS) with their t- statistics in parentheses. For the UK market the coefficient is again negative and significant at the 0.05 level but with a lower value of 0.026. So the interest rate surprises have a substantial impact on UK bank portfolio returns something similar with the finding of Dinienis and Staikouras (1998) for the UK market but with a correlation coefficient much more less than 2.6 (Dinienis and Staikouras report a negative correlation coefficient between bank portfolio returns and unanticipated interest rate changes of 1.2). So as time passed UK banks common stocks seemed to be exposed more to interest rate risk.

Market	$\beta_0$	$\beta_m$	$\beta_{UIC}$	$R^2$	DW
UK	0.008(2.13)	1.29 (14.2)	$-0.026 (-1.83)$	0.65	2.07

## 5. Conclusion

The purpose of my paper was to examine if there is a substantial interest rate sensitivity of commercial British banks stock returns to changes in interest rates from 1992-2002.

The main conclusion is that UK bank stock returns seemed to be affected substantially from interest rate changes, both current and unanticipated, indicating an inappropriate hedging of UK banks of both their assets and liabilities.

A proposed next step of my work could be the assessment of the usage of Futures and Swaps as tools of hedging interest rate risk which arises from wrong structure balance sheets of British Banks.

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# BUSINESS PROFITABILITY AS A MEANS OF MEASURING COMPETITIVENESS

P. CURTIS\*

## Abstract

The scope of this paper is to approach productivity, profitability and competitiveness based on the business and industry level. This task is carried out predominately through the use of financial ratios emanating from financial statement analysis at the firm level. Return on capital ratios above the average in the long run period, is argued that is an indication of attaining, upgrading and preserving competitive advantage. Effectiveness and efficiency in operation for that purpose is required and is achieved through the appropriate strategy. Finally, the notion of competitiveness is transplanted to regional and national level.

*JEL classification: G33.*

*Keywords: Profitability, Productivity, Competitiveness, Performance, Return on Capital, Financial ratios.*

## 1. Introduction

The notion of competitiveness is gaining ground with the lapse of time in the era of globalization. Competitiveness can be defined at nation, industry and company level (Garelli 2003). Competitiveness has been approached as a multi-dimensional and rather relative concept (Shurchuloo 2002) and can be more specific at the firm level.

Financial statement analysis usually exploits ratio analysis to judge business financial soundness. The four aspects employed towards that purpose are liquidity, activity, leverage and return on capital. Liquidity is a short term attribute, while the rest ones pertaining to the long term aspect of the firm or the industry. As a matter of fact the last three aspects are comprising the return on equity capital (ROE), which is the outcome of the return on net assets (RONA) multiplied by the leverage ratio.

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$$\text{Given that RONA} = \frac{\text{Καθαρά Κέρδη}}{\text{Πωλήσεις}} \times \frac{\text{Πωλήσεις}}{\text{Σύνολο Κεφαλαίων}} \quad (1)$$

$$\text{And Leverage} = \frac{\text{Total Assets}}{\text{Equity}} \quad (2)$$

then

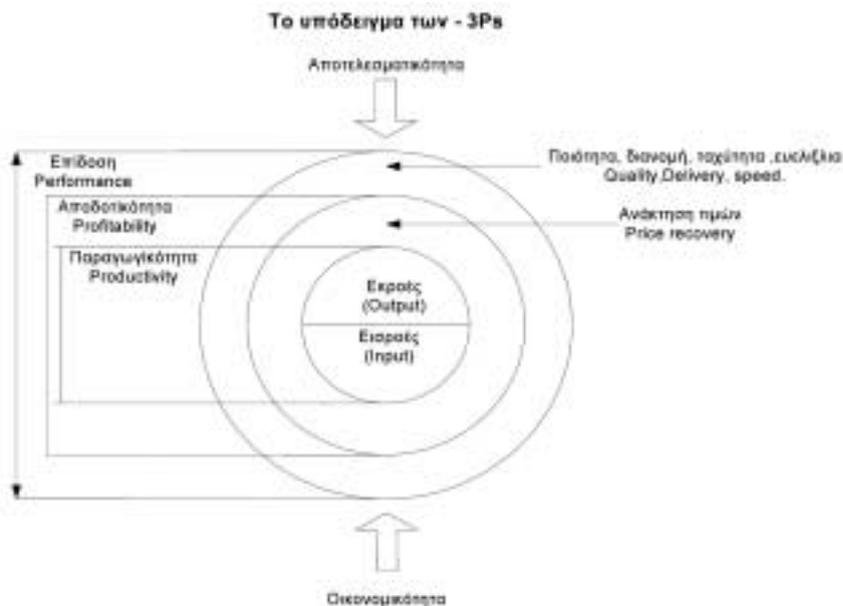
$$\text{The Du Pont – ROE ratio} = \frac{\text{Net profits}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Total Assets}} \times \frac{\text{Total Assets}}{\text{Equity}} \quad (3)$$

Since the capital employed is determined exogenously (to a large extent) by industry requirements, the revenue level from sales can be considered to reflect the degree to which production is aligned to the market requirements. The amount of sales correspondingly represents the basic factor that all the rest economic variables (fixed and variable cost, prices, investment requirements in fixed and working capital, equity and loans, input materials, labour, etc) are depended upon. Revenues in consequence determine the capital turn over ratio of RONA ratio (Curtis 2006). The magnitude of the ratio influences and at the same time is influenced by the net profit margin which measures (to a certain extent), the operational effectiveness in operation. Superior RONA over time presupposes that the net profit margin and return on capital (net assets) are reflecting attained competitiveness in the market place, which in turn incorporates simultaneously operational effectiveness (productivity and efficiency) and appropriate strategy.

Despite the fact that the return on Equity (ROE) suffers from shortcomings compared to RONA, since it can be manipulated by changing the financial leverage factor, it is an appropriate measure of “assessing the overall performance of the firm’s management” (Flamholtz 2000, p. 492) and it is considered “traditionally as the single most important and widely noted benchmark of corporate performance” (Teitelbaum 1996).

Productivity is the indispensable attribute of the net profit margin. The later, measures in practice efficiency in the production process. The transition from the notion of productivity to the one of profitability is attained through the use of prices for inputs and final output (goods and services) and the subtraction of the value of inputs involved (or the total cost of the goods and services sold) from the revenues attained (Tangen 2002). Based on the same reasoning productivity is related to the creation of value. The later presupposes the notion of productivity and without it the value creation-added process cannot be conceived. Tangen summarizes the relation of performance, profitability and productivity as follows:

Figure 1. Productivity, Profitability and Performance.



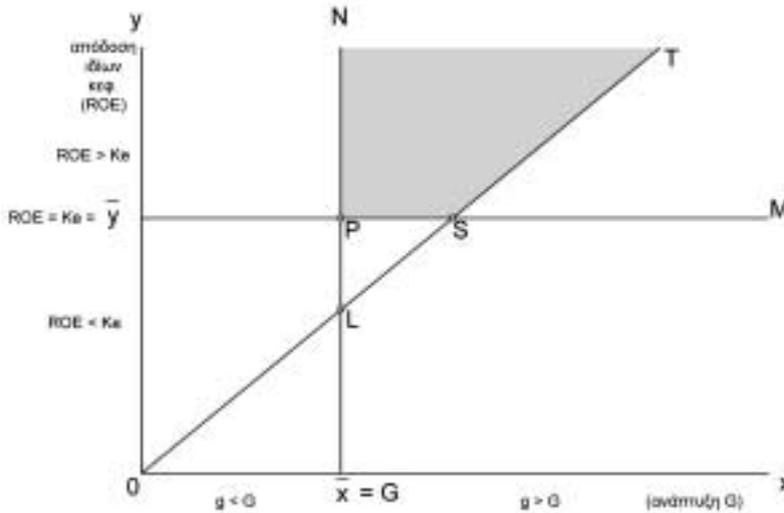
Source: Tangen 2002.

The term of profitability according to Tangen is rather associated with the net profit margin, which is measured with respect to sales. He claims that the performance of a firm is a wider notion that embraces quality, speed and flexibility in the production of goods and delivery services which determine the effectiveness in the operation of it. We feel that at the company level value creation and consequently profitability (given the level of associated risk) represent the ultimate goals and without it business development cannot be achieved. The relationship of revenue increase (business development) and profitability is captured appropriately and elucidated successfully by the Marakon Matrix (Hax and Majluf 1996).

## 2. Revenue Increase and Return on Equity - The Marakon Matrix

According to Marakon matrix (or business development and profitability matrix), the return on equity (ROE) compare to the average cost of equity capital is reflected on the OY axis and the increase in sales (revenues) are plotted on the OX for each company.

**Figure 2.** Increase in Sales and Profitability.



Source: Hax and Majluf (1996).

Axis Y represents the return on equity - ROE) and it is intersected by M. Above this point of intersection the return on capital exceeds the cost of raising it and below it doesn't.

Axis X measures the rate of sales development of the company. Its point G reflects the average rate of increase in sales for the entire industry it operates in. To the right of that point the rate of increase in sales for the company (g) is greater than the one of the industry(G) it belongs and to the left of the point inferior. The line OT is the diagonal that is consisted of the points where self-provided capital through the operation is equal to the one required for investment. When the rate of increase in sale revenues is equal to the return on capital ROE capital emanating from operation is equal to the invested one. Above the diagonal ROE is greater than the rate of sale increase. When ROE is higher than the cost of equity capital  $K_e$  (area YYM), positive economic value is created. Operation in the NGX territory indicates that the company gains market share and expands.

The advised area for operation is the NPST one, where the company expands at a rate higher than the corresponding average of the industry, creating value for the shareholders, with no cash flow problems, since the reinvestment of profits suffice to support expansion without the need for debt capital. Even more expansion,

without jeopardizing the creation of value added, can be achieved with complementary funding beyond the reinvestment of profits that will allow company to operate in the TSM territory. In the area where the expansion and the value are at stake (as in the area  $y_{OGP}$ ) operation is not advised. In the area  $\bar{y}_{OLP}$  cash-flows are sufficient, but self-funding through profits is not creating value. The area LPS, where profitability is sacrificed for the sake of expansion, is advised solely temporarily in order for the firm to attain sufficient market share and achieve economy of scale gains, that will be transformed in to value in the near future.

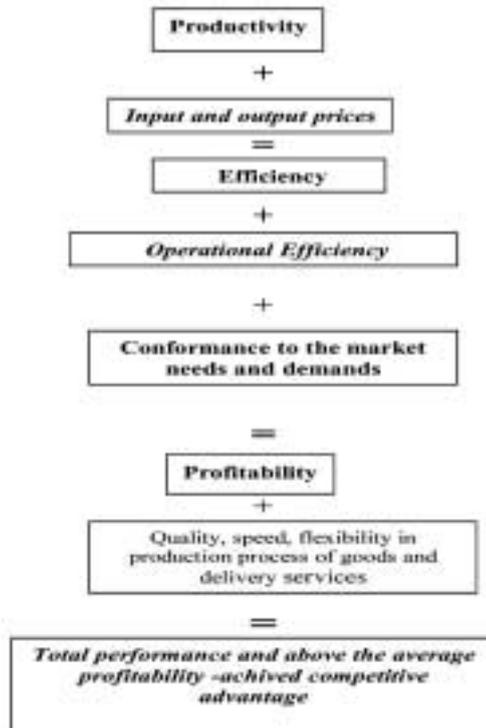
So, the quality of expansion is the goal. It represents the safest way to gaining competitive advantage, value added and viability. Economic Value Added.-EVA, (Al Ehbar 1999), is the result of the competitive advantage attained in the market. It exploits the competitive advantage of the company effectively and create value for the stakeholders (after covering all the expenses involved), without consuming-exhausting it.

Marakon matrix combines sales increase with profitability, it merges the quality of sale development and its sustainability over time. The Balanced Scorecard measures financial outcome (return on capital, EVA) as the concomitant of consumer satisfaction and increase in sales revenues, innovation and internal development, skill development and learning (Kaplan and Norton 1993, Curtis et al 2007).

Performance–Competitiveness is a wider notion that reflects success and embraces beside profitability, quality, speed etc (Tangen 2002).

A different approach to the notions involved, is given by the following figure 3. It pays more attention to the degree a firm, an industry or sector are considered as extrovert. They in fact focus on satisfying the needs the market dictates. It in connection with the productivity, the efficiency and the effectiveness in operation determine the return on capital. Competitive advantage embraces efficiency regarding the cost of inputs used to achieve certain value level of output, which in turn measures the effectiveness in the operation. The first attribute is associated with the process and the second one to the results of it.

**Figure 3.** *Productivity, competitiveness, Profitability and Performance.*



Based on the above, the sustainability of the superior return on equity (performance) presumes in addition quality, flexibility, dependability, after sale service etc in order to align to customer demands and reflect a tangible cutting edge that invigorates the competitive advantage. The sustainability of it embarks upon its uniqueness and the degree of depth, since the industry conditions and competition are developed constantly at an ever accelerating pace. So, total performance or sustainability of profitability (measured as the return to capital) and the creation of the competitive advantage are basically boil down to the same thing. Presuppose efficiency and effectiveness, inward and outward business excellence compare to competitors.

According to M. Porter (1996), operational efficiency refers to the degree of input exploitation in to the accomplishment of the same task. It is not exhausted in to the notion of efficiency and includes the parameters of quality, the time of delivery, dependability etc, factors that can be copied by the competitors without formidable difficulty and cost. Consequently operational efficiency is the necessary,

but not sufficient condition for materializing company's viability in the long term, since it leads into disastrous competition among the companies involved cannot serve as a leading edge factor of competitiveness for a long time period.

Long-term competitive advantage means that beside the operational efficiency, proper positioning in the market place is required (Porter 1996). It means that a number of different actions are carried out in the framework of an adopted strategy, that are being coordinated in a such a unique manner that cannot be imitated easily and without considerable cost, while creating added value for the company under consideration. The more activities are involved in that process and the more harmonized are, the more solid and lasting is the competitive advantage attained. Based on the above operational effectiveness is associated with the attainment of a specific result from an activity, while strategy into the combination of a series of activities that are integrated in to a full-blown proposition that ends at offering to the market an added value for consumers that feedback and enhances the operational effectiveness.

### **3. Regional and national Competitiveness**

The approach put forward by Tangen although concerns the firm level, it becomes more and more suitable in examining competitiveness at regional or even state level which are comprised of a spectrum of competitive and not, firms and industries. This tendency can be discerned in systems of measurements used by international bodies (World Economic Forum of Davos, IMD, etc) or recent attempts in examining competitiveness (Shurchuluu 2002, 2006). Towards that end methodologies are introduced to measure competitiveness at micro(company) based framework of Porter's Diamond Model which is suitable for the macro level analysis (Markus 2008).

The creation of a favourable environment and its upgrading that fosters value creation for the parties involved (shareholders, consumers, employees, the state, the environmental bodies and society at large) through the accomplishment of appropriate and agreed upon goals (effectiveness) with the least necessary means (efficiency), is the basis of competitiveness (Garelli 2003, 712).

The Organization for Economic Cooperation and Development (OECD 1996) maintains that competitiveness is the ability of companies, industries, regions, nations or supranational regions to generate reasonably high factor income and factor employment levels at the same time as being and remaining exposed to international competition.

IMD approaches the competitiveness of a country with the help of standard

competitive factors such as economic performance, government efficiency, business efficiency and infrastructure. These facets are further broken down to factors/variables, for example, business efficiency comprises productivity, labour market, finance, management practices, attitudes and values (Rosselet-McCauley 2004).

Competitiveness at the national level is measured mainly through productivity (The Global Competitiveness Report 2002). Porter goes on to define competitiveness as the sustained ability to profitably gain or maintain world market share leading to prosperity and supporting an attractive standard of living. Productivity allows a nation or industry to support high wages (living standard) and attractive returns to capital, it is then a measure of competitiveness. Profitability is a surplus that accrues to owners of capital after paying all incurred expenses including wages. As a measure of competitiveness profitability should support high wages and attractive returns to capital.

On a regional level competitiveness is expressed by the gross product per capita, which is equal to the productivity per hour, multiplied by the number of hours worked by the people employed, the degree of employment of the active workforce and finally the ratio of active workforce compare to the total population of the region (Gardiner et.al 2004, 22). So,

$$\text{GRPC} = \frac{\text{GRP}}{\text{THE}} \cdot \frac{\text{THE}}{\text{TE}} \cdot \frac{\text{TE}}{\text{PEA}} \cdot \frac{\text{PEA}}{\text{P}}$$

GRPC : Gross Regional product per capita

GRP : Gross Regional Product

THE : Total hours of employment

TE : Total Employment

PEA : Population at the employment age

P : Total population of the region

Among the above mentioned factors, productivity really determines the regional product and the competitiveness in the long term. Despite disagreements regarding the exact notion of competitiveness, productivity represents one of the most important revealed measures of it (Gardiner et.al 2004, 28).

Productivity represents a basic goal of the policy which upgrades competitiveness, although the later can not be limited to the notion of productivity (Garelli 2003, 703). The enhancement of productivity if not followed by growth-development of the entity involved, later on leads to stagnation.

Policies mention by Best and Porter (Pitelis 1998) aiming at boosting competitiveness are in fact directed towards productivity since they consider it as the main determinant of it and are focused at a rather micro level concerning the firm and the industry it belongs. In that way they try to reduce the problems that

are connected with the meaning of competitiveness on a state basis (or geographical region), since at that level may coexist side by side competitive and not competitive firms and industries at the same time.

Competitiveness in the era of globalization presupposes attractiveness for the influx of the necessary foreign capital, the creation of new jobs inside the country and offensiveness abroad through export promotion and/or direct investments in order to create income for the home country (Garelli-IMD 2003, 705).

Regions are considered as a unique combination of related resources and skills (Raines 2001, 6), that form capabilities leading to productivity gains, improved competitiveness, greater market share, profits (at the firm and industry level), income creation, new employment opportunities and sustainable growth and development (Shurchuluu 2002, 409).

#### **4. Summary**

Competitiveness at the business level can be measured by the sustainability of the return on capital, which encompasses efficiency in the use of inputs and effectiveness in achieving the results. Productivity-efficiency and outward-customer orientation are the indispensable attributes of firm and nation competitiveness-profitability.

Productivity is the most tangible attribute of competitiveness at the national level. As in the case of a firm productivity (or efficiency) is a necessary but not sufficient condition of competitiveness. It must also nation's production conforms to domestic and international demand for goods and services as it is reflected to current balance of payments conditions.

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# INSIDE TO REGIONAL GROWTH: EUROPEAN POLICIES & PERSPECTIVES

**S. DRAKOPOULOS\***

## Abstract

European reality of the last decades was severely impacted by the forces of Globalisation and European integration that brought about profound changes and transformations in economic, financial, social and territorial terms. On the one hand, the changing of relations among territorial units manifests itself in processes of “urbanisation” or imbalanced regional development. Urbanisation indicates an increasing concentration of employment, public services and population at selected points of the European territory, the big cities or metropolitan areas. At the same time, rural areas are left on the margin of socio-economic development. On the other hand, European efforts to deepen political, social and economical integration between Member States have set off a process of decentralisation and deconcentration of the activities of national authorities and resulted in a loss of autonomy of decision in fields that have long been subject to the absolute sovereignty of the nation state. In order to face the changing socio-economic conditions and to ease their negative effects, some of the necessary authorities are therefore transferred to regional level, which gives rise to new forms of sovereignty and autonomy of the regions. This transitional changes and the increase in importance of European regions and local areas caused by the processes of Globalisation, also effects people’s sense of themselves as communities giving rise to regions as new units of reference and basis for cultural identity. This paper attempts to analyse the phenomenon of tourism and regional growth in E.U.

*JEL classification: R11.*

*Keywords: European Union, Regional Policies, Growth.*

## 1. Introduction

European regional policies are legally backed up by the European Community’s fundamental principle to “promote throughout the Community a harmonious, balanced, and sustainable development. The aims to “reduce disparities between the levels of development of the various regions and the backwardness of the least favoured regions or islands, including rural areas”. In order to put into action and taking into account the territorial, economical and social changes that Europe has

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been experiencing in the last decades, European policy makers have been working out a strategic programme for territorial development for the period of 2001-2006, the European Spatial Development Perspective (ESDP). General concept of the overall strategy is to create sustainable development by treating the three fundamental aims of regional development - cohesion, sustainability and competitiveness - as a whole, rather than as separate policy objectives.

In the course of the ESDP, the European Spatial Planning Observation Network (ESPON) has been launched, a programme that runs for the same period of 2001-2006. The ESPO Network consists of national institutions responsible for spatial planning that observe and analyse tendencies of development of territorial and regional development in Europe. The Network additionally gives financial assistance to scientific research in the field of European spatial planning. The ESPON has also been playing a fundamental role in developing the European Spatial Development Perspective (ESDP). This represents a proposal by the European Commission for concrete regional policy measures for the period 2001-2006, taking into account the strong relationship among sustainable development, the natural environment, matters of health and the quality of life as well as with the maintenance of the supply of energy. Other policy fields, like the European enlargement and agricultural policies are also considered within the ESDP.

The European regional development efforts receive financial assistance from various structural funds provided by the European Community. In general, these funds support initiatives that aim to enhance coherent territorial, economical and social development. The European Regional Development Fund (ERDF) aims to reduce the disparities between the levels of development of the various regions of the European Community, the European Agricultural Guidance and Guarantee Fund (EAGGF) gives financial assistance to the agricultural sector and the Financial Instrument for Fisheries Guidance (FIFG) supports the sector of European Fisheries. The European Social Fund (ESF) represents the financial support for European social policies and the European Cohesion Fund refers to the maintenance of the natural environment and national infrastructures.

All these structural funds are in various intensity consulted by the European regional development initiatives, launched in the course of the strategic development programmes for the period 2000-2006. The initiative INTERREG III aims to stimulate interregional cooperation in the EU, the LEADER+ initiative is designed to help rural actors consider the long-term potential of their local region, the Community initiative EQUAL is devoted to the fight against discrimination and inequality in the work market and URBAN II is the initiative for sustainable social development in the troubled urban districts of the European Union.

This garnered from efforts to promote regional development in developing nations are substantially parallel to those from Western Europe. In terms of the

general environment, the key factors are education of the population and provision of adequate infrastructure. A better-educated workforce is necessary to promote employment into higher-income, nonfarm occupations. With respect to infrastructure, the summary notes that numerous studies have documented how constrained access of enterprises to power, transportation (especially roads), and telecommunications has restricted growth. With the promotion of small industry, ensuring access to credit is Key. The most successful projects are those that are locally based, lend to groups of firms, disperse small initial loans with additional lending conditional on repayment, and charge realistic interest rates. Projects aimed at strengthening small enterprises have in some cases been successful but because of the dispersal of firms in the countryside, such service delivery tends to be expensive.

A Regional Development Concept (RDC) serves as a strategic frame for the development of a region. It is an integrated concept which designs a targeted and specific strategy for implementation on the basis of regional co-operation. Hence, an RDC coordinates and prioritises the implementation of different measures and projects of public and private institutions and persons within a region. As a result of the integrated approach, activities from different sectors are harmonised and innovative solutions and ideas for regional development are created. In contrast to formal regional plans, an RDC is not legally binding and thus relies on consensus and the commitment of the participating players. Nevertheless, RDCs have a high political significance as they are also increasingly seen as an appropriate basis for the implementation of EU funded projects. The European Commission funds more and more projects under the condition that they are based on an integrated concept (see Community Initiatives URBAN, LEADER). A move from a single project funding towards programme-based funding is recognised. Integrated RDCs, as they have been developed for five pilot regions of the INCORD project, respond to this movement.

Integrated approaches to regional development and regional partnerships are gaining in importance. This is due to the increasing relevance of the regional level of economical, political, social and environmental aspects and the growing complexity and interdependency of processes. Through regional co-operation, forces within the region can be bundled, innovative ideas can be developed and available resources can be used in a more efficient way. A partnership makes results possible, which would not be achieved through conventional, administrative management. For those reasons, regions and regional initiatives are increasingly the recipients of funding from the EU and the national states. RDCs imply different advantages for the development of the region:

- The development of an Regional Development Concept (RDC) facilitates and stimulates the communication between private and public players. All activities

and projects are co-ordinated and regional forces are concentrated on key measures.

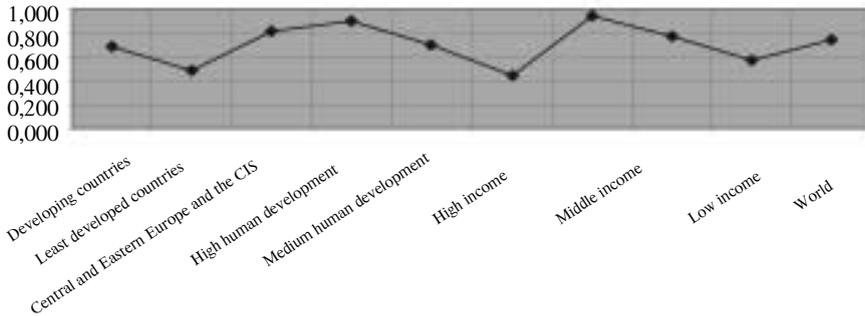
- The RDC provides orientation by formulating aims of regional development.
- Through the RDC, new innovative activities and projects are initiated or/and existing ideas are strengthened.
- The RDC shows ways for the management and the realisation of projects and the organisation of the entire regional development process.
- Projects embedded in an integrated strategy, such as an RDC, are easier to implement and are more enforceable.
- Scarce public funds can be used more efficiently as financial and personal resources are bundled by an RDC process.
- Outside the respective region, a regional framework like the RDC can:
  - sharpen the regional profile
  - promote projects of regional importance
  - serve as a basis for marketing instruments
- In addition to this, the RDC is often a basis to apply for funding.

## **2. European Regional Growth: Policy and Regional Programmes**

Economic progress in the Community will clearly depend on dealing successfully with a very wide variety of regional problems. There are regions still greatly dependent on agriculture for employment; in these regions, which are situated mainly in France, Ireland and Italy, jobs in agriculture are between 20 per cent and 40 per cent of the total. Yet in the last two decades employment in agriculture inside the Community has fallen by 50 per cent-some 10 million workers thus creating new problems for these same agricultural regions. Other regions are characterised by the decline of traditional regional industrial activities, requiring widespread industrial change and re-equipment. In many cases the decline of traditional industries is due to the exhaustion of certain resources or to competition from rival products. The most notable example has been that of the coal industry; in the last two decades its production fell by nearly one half and its level of employment by 60 per cent-more than one million-in the Community as a whole. But this decline also affects many other branches of industry, especially in present circumstances. The regions which have suffered particularly badly in this respect are mainly in the United Kingdom, but there are others in Belgium,

Holland, Germany and France. Figure 1 illustrates the Human Development Index (HDI) for Euroepan and regional-world-levels in 2005.

**Figure 1:** *Human Development Index Value (HDI), 2005.*



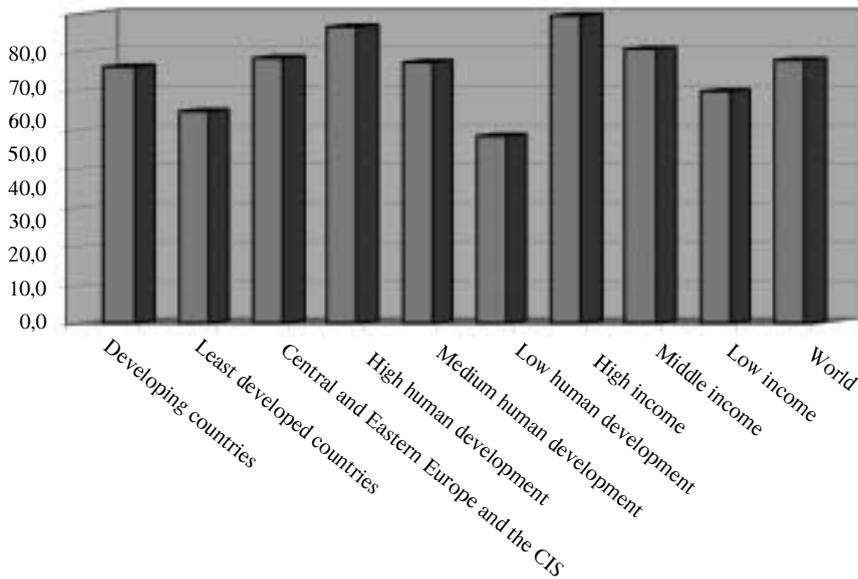
Source: U.N.

The symptoms of all these problems are similar: a high level of emigration, a high rate of unemployment or under-employment, a low level of, or rate of growth in, income. They are often accompanied by serious deficiencies in regional infrastructure. But regional problems are not only those of under-development. At the other end of the scale are the major conurbations. Sometimes these involve very large proportions indeed of the population of Member States. For example, the Greater London area comprises 18 per cent of the population of Britain; Paris comprises 20 per cent of the French population, and Copenhagen 35 per cent of the Danish population. While these concentrations of people often reflect the most sophisticated and the most rewarding activities, the congestion which they create also leads to a continuous decline in their environment and quality of life. Thus the restoration of a better regional balance within the Community is necessary to help not only the under-developed regions but also those regions in process of expansion. The problems of frontier regions lying between two or more Member States of the Community should also be noted. Some neighbouring regions are handicapped by inadequate cross-border infrastructure and

by income, currency and legal differences between states. Figure 2 illustrates the level of yer-as-life expectancy at birth for aggregate Euroepan and regional-world-levels in 2005. Two types of experience are relevant in considering the design of a national government program in Central Europe for stimulating rural, especially nonfarm, development. One is the experience of the European Community with the European Regional Development Fund. The other comes from the broader results drawn from regional and rural development programs in other parts of the world. EU Experience: The European Regional Development Fund (ERDF) has been strongly oriented to supporting infrastructure investments as a tool for

regional development. For example, for the 1975-1988 period 80 percent of committed funds went to infrastructure investments. Other elements included investment in priority industries and service sectors and, more recently, upgrading human capital in a target region.

**Figure 2:** *Life Expectancy at Birth (Years) 2005.*



Source: U.N.

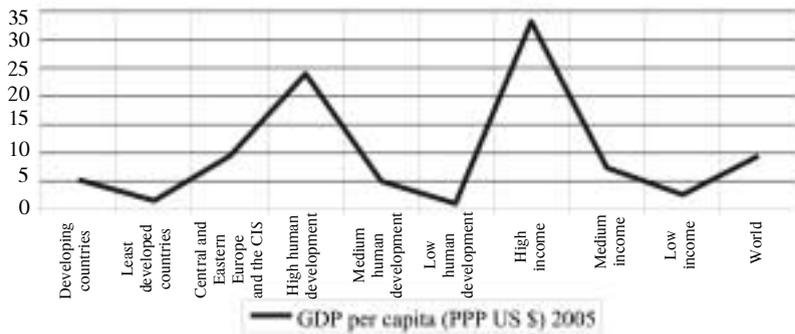
In particular, the principles for successful rural development not addressing on-farm actions are:

- The highest returns occur when expenditure is directed to the provision of infrastructure to make areas more attractive to businessmen looking for a location and more pleasant for people to live. Infrastructure programs should thus have priority for the use of additional resources.
- The government's job is to improve the general conditions in rural areas, not to target particular types of enterprise or to try and pick "winners."
- The most sustainable increases in rural employment and business activities occur in rural areas that are located close to major urban centers. These centers provide a larger client base and markets, and stronger and more stable access to labor, communications, and services.

Efforts to locate rural development around growth points have been unsustainable, while deliberate programs to relocate major governmental institutions or bodies

close to rural areas have had a sustained impact on rural development. The EU has built upon these findings in designing its pre-accession assistance program to stimulate rural development in the Central and Eastern European countries.

**Figure 3:** *GDP per capita (PPP US \$) 2005.*

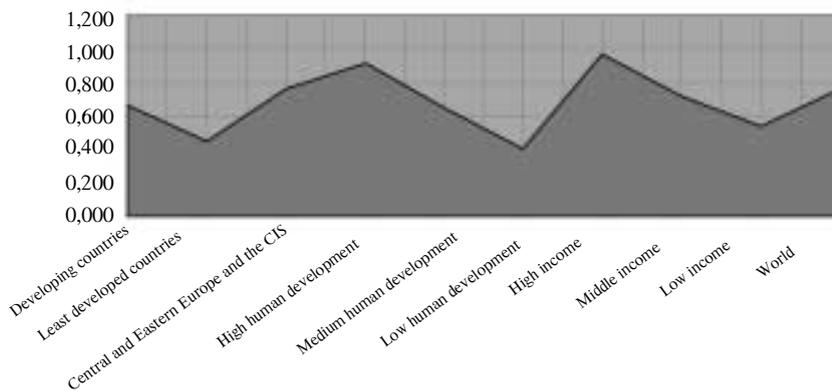


Source: U.N.

E.U. has devoted substantial effort to examining the efficiency of the use of the structural adjustment funds. A range of studies has documented a variety of absorption problems. Absorptive incapacity means that the receiving region is unable, given its administrative skills, to devote all the transfers it receives to productive investment. For a lack of management skills, a considerable part of the transfers is wasted. A recent comprehensive assessment of the EU absorption problems with the structural funds gives the following conclusion about the likely situation in the accession countries: at a low level of development administrative bottlenecks are a major impediment to transforming transfers into productive capital. The CEEC [accession countries] definitely exhibit such bottlenecks due to unfinished administrative reforms (e.g., decentralization and the reinvention of regional and municipal entities), problems with age structure (limited possibilities for recruiting young and productive staff because of job guarantees for the elderly employed and the need to reduce the number of civil servants), retraining of staff and low pay (as a result of severe budgetary restrictions). Figure 4 indicates the level for Gross Domestic Product index for European and regional-world-levels in 2005. Structural change in the European urban system as a process of economic/functional re-hierarchisation. If the restructuring of the European urban system is to be considered as a process of economic and functional hierarchisation, then analyses of the urban system which focus on density and development of the population are not very meaningful. On a European level, the most populous cities or urban regions are often not the economically powerful centres.

Structural change in the European urban system will be characterised primarily by an increased hierarchisation of cities as regards the concentration of directive and control capacity and innovative production structures. The process of European integration is leading to a more accentuated polarisation in the urban system caused by increased internationalisation in the enterprise sector and expanded control Networks between urban regions. The number of enterprise mergers and the purchase of majority shares in the industrial sector has risen in the 1980s by a yearly average of 25 % in the countries of the European community alone, with a marked increase of international mergers on a European level.

**Figure 4:** *GDP Index 2005.*



Source: U.N.

In 1982/83 there was a total of 117 mergers/ takeovers of majority shares in the EC, of these, 38 came under the category of European transactions; in 1988/89 under the category of European level: In 1988/ 89 the number of mergers/takeovers was as high as 492 with 197 in the category of European international concentrations activities. The urban system is subject to an intensified hierarchisation by growing capital concentration. The ‘globalisation’ of capital related enterprise interconnections in Europe triggered by a wave of concentration runs parallel to a partial ‘regionalisation’, an increasing significance of regionally internal interconnections of firms as regards the development of competitive urban production structures.

### 3. Strategies and the Puzzle Regional Growth

Corporate competitive strategies encompass a variety of practices and approaches, which can be summarised in terms of ‘weak’ and ‘strong’ competition. ‘Weak’

competition revolves around securing competitive advantage within a given technical-organisation paradigm of production by seeking cheaper sources of inputs to production than are available to competitors. ‘Strong’ (or Schumpeterian) competition involves seeking to gain advantage by re-defining production paradigms via product, process, and/or organisational innovations, with these often inter-linked. In addition, in both forms of competition, firms may collaborate via a variety of ‘networking’ strategies, involving sub-contracting and out-sourcing of production of components and services. Strategic alliances, acquisitions and mergers represent other longer-term options, which may be used in pursuit of either ‘weak’ or ‘strong’ competition. But the key point is that these are analytic distinctions. Firms may combine and simultaneously pursue elements of these analytically distinct approaches as part of their competitive strategies.

**Table 1:** *Basic socio-economic indices for European Union, 2005.*

	HDI value (2005)	Life Expectancy at Birth (2005)	GDP per capita (PPP US \$) 2005	Life Expectancy Index	Educational Index	GDP Index
Ireland	0.959	78.4	38,505	0.890	0.993	0.994
Sweden	0.956	80.5	32,525	0.925	0.978	0.965
Netherlands	0.953	79.2	32,684	0.904	0.988	0.966
France	0.952	80.2	30,386	0.919	0.982	0.954
Finland	0.952	78.9	32,153	0.898	0.993	0.964
Spain	0.949	80.5	27,169	0.925	0.987	0.935
Denmark	0.949	77.9	33,973	0.881	0.993	0.973
Austria	0.948	79.4	33,7	0.907	0.966	0.971
U. K.	0.946	79.0	33,238	0.900	0.970	0.969
Belgium	0.946	78.8	32,119	0.897	0.977	0.963
Luxembourg	0.944	78.4	60,228	0.891	0.942	1.000
Italy	0.941	80.3	28,529	0.922	0.958	0.944
Germany	0.935	79.1	29,461	0.902	0.953	0.949
Greece	0.926	78.9	23,381	0.898	0.970	0.910
Slovenia	0.917	77.4	22,273	0.874	0.974	0.902
Cyprus	0.903	79.0	22,699	0.900	0.904	0.905
Portugal	0.897	77.7	20,41	0.879	0.925	0.888
Czech Rep.	0.891	75.9	20,538	0.849	0.936	0.889
Malta	0.878	79.1	19,189	0.901	0.856	0.877
Hungary	0.874	72.9	17,887	0.799	0.958	0.866
Poland	0.870	75.2	13,847	0.836	0.951	0.823
Slovakia	0.863	74.2	15,871	0.821	0.921	0.846
Lithuania	0.862	72.5	14,494	0.792	0.965	0.831
Estonia	0.860	71.2	15,478	0.770	0.968	0.842
Bulgaria	0.824	72.7	9,032	0.795	0.926	0.752
Romania	0.813	71.9	9,06	0.782	0.905	0.752

*Source: Human Development Report, United Nations, 2008.*

Recognising the pervasiveness of inter-firm co-operation highlights the necessity to conceptualise production as a system organised across as well as within firm boundaries. A production system may be defined as a distinctive form of organisation of production with corresponding technical, social and spatial divisions of labour and modes of regulation. These modes of regulation, which constrain the behaviour and strategies of individual firms, each have their own geographies, emphasising the ways in which production is embedded in particular socio-spatial settings. Within these constraints, firms have different degrees of power and influence with production systems, with important implications for their geographies and the economic success of firms. Some forms of networked relationships involve relatively egalitarian 'horizontal' inter-firm relations – most notably in the arch-typical industrial districts of central and northeast Italy. More generally, however, there are complex, variable and asymmetric geometries of power and influence that link firms into production systems. While some 'lead' firms exercise considerable power and influence and have a choice of 'strong' or 'weak' competitive strategies, others in subordinate positions are typically constrained to pursue strategies of 'weak' competition. Moreover, depending upon the character of the product, the location of 'lead' firms within the structure of the production system can differ markedly. The locations of these firms, and decisions as to the location of different stages of production within and between firms (that is, the spatial distribution of the technical and social divisions of labour), has important ramifications for geographies of value production, transfer and appropriation and for the developmental possibilities and trajectories of different places. As well as companies, workers and trades unions seek to influence the location of economic activities. Although in a structurally weak position relative to capital, unions can nonetheless, in specific circumstances, influence corporate (dis)investment strategies and geographies of production. However, trades unions occupy an ambiguous position in seeking to influence economic geographies. While uniting fractions of the working class, trades unions at the same time divide that class – for example, by industry, occupation, gender and territory. Because of this, trades unions have become involved in inter-territorial competitions for employment and investment, sometimes in collaboration with companies whose interests are tied to particular place. In some circumstances other social and environmental groups constituted in civil society also seek to influence the geography of production systems, usually by developing countervailing sources of power to contest corporate decisions.

However, the strategies of companies, trades unions and other social groups are constrained by modes of supra-national and national state regulation. There are three main ways in which states become involved with regulation of the economy. Firstly, they define the rules and laws that define acceptable conduct in market

transactions. Secondly, they seek directly to influence the actions of others in markets— for example, via financial incentives that attempt to influence the location of private sector investments and decisions as to currency exchange rates. Thirdly, they may replace the private sector as a provider of goods and services and the market as the allocative mechanism (for example, by taking industries into public ownership).

State policies can be thought of as organised ‘horizontally’ by spatial scale and ‘vertically’ by substantive domain. For example, vertically, there are distinctions between policies for labour and product markets, competition, merger and acquisition, research, technology and development, and trade. Horizontally, there are important distinctions between the supra-national EU, national states and sub-national units, linked in various ways in pursuit of economic development at different scales. It is, however, important to recognise that the national retains a key role in this new multi-scalar architecture, not least in shaping the scope and extent of local and regional economic development strategies and modes of governance. The emphasis upon governance is symptomatic of the increasing involvement of a range of social actors from within civil society in formulating and implementing local and regional economic development policies. Within the EU there is ‘a discernible move towards stressing the institutional agency of territories in enhancing their own regional economic development prospects and enhancing cohesion within complex multi-level and multi-scalar systems of government and governance, as new scales and scalar architectures of governance and regulation are created and change’. However, ‘the region is [not] automatically endowed with the agency to modify network positions and play the games of ‘scale politics’’. Moreover, there are marked differences in the capacities and capabilities of regions to exercise such agency.

In summary, the changing geographies of production are a result of the interaction of corporate, trades union and state policies, linked within complex webs of power relations. While structurally loaded in the favour of capital (especially multinationals) and states (especially powerful national states), it by no means follows that the determinants of a given decision as to the how, what and where of production within Europe (or indeed beyond it) simply follow from this as these are contested processes. The ways in which the causal powers of structural relations unfold is a contingent matter. European policies in their entirety, however, take account of the slow process of integration of cultural aspects into development efforts in the international debate. The construction of European Structural Funds and of European integration measures clearly reflects this international emphasis on environmental protection and social development.

#### 4. Policy Implications and Conclusions

From the different legal positions given to European regional and cultural policies on level of Community law it seems easy to derive that European cultural policy objectives are aligned to European regional policy objectives. Thus, even though both policy domains dispose of objectives specifically focused on the specific policy field, they are in general terms going into the same direction, because they are aligned to common overall aims of the European Community spelt out by the strategic documents Agenda 2000 and the Lisbon Strategy. Of these two strategic documents, the one giving more precise policy orientation to European regional development is the Agenda 2000. The Agenda 2000 is the one of the Commission's documents giving the European Community a direction in which to go in the future and which aims at strengthening growth, competitiveness and employment, for modernising key policies and for extending the Union's borders through enlargement.

European regional development efforts specifically refer to the policy priorities spelt out in the Agenda 2000, such as maintaining economic and social cohesion through more effective Structural Funds and through a further reform of the Common Agricultural Policy (CAP). Apart from that the European Commission wishes to develop internal policies for growth, employment and quality of life. These aspects of regional development clearly have a cultural dimension, considering the influence culture can have on the policy priorities mentioned: The creation of the conditions for sustainable development and employment, as well as the development of knowledge policies and the modernisation of employment systems. The "Strategy of Lisbon" of 2000, also gives reference and orientation to European regional development efforts, yet in a more indirect manner than the Agenda 2000 and more clearly incorporating a cultural dimension. It is the document which contains propositions of the Commission to face the upcoming challenges of the European enlargement, hereby focusing on employment, economic reform and social cohesion. The overall aim "to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion", should, among other things, be reached by investing in people and building an active welfare state. This, the strategy spells out, should include efforts to promote social inclusion and create more and better jobs for Europe, aspects that fall into the responsibilities of cultural policies .

Thus, in the course of promoting economic, social and human development, the European Structural Funds allocate parts of their expenditure to regional development projects that frequently have a cultural dimension and receive

funding from the ERDF, the ESF and the EAGGF. Such projects might involve restoring and developing architectural and cultural heritage, building cultural facilities, setting up cultural and tourist services or providing training in the arts or in the management of cultural activities.

Another proportion of the Funds are earmarked for the Community initiatives that promote cooperation between regions and that incorporate a cultural dimension. The initiative INTERREG III, for example, includes transnational and interregional cultural cooperation projects and the initiative LEADER+ encourages the establishment of networks between rural cultural organisations. Moreover, European cultural policy makers, among other things, focus on the contribution culture can make to employment and social cohesion within regional development efforts. This focus is based on a Communication by the Commission, published in 1996, on “Cohesion policy and Culture”, pointing out that culture not only represents a major source of jobs, but can also raise the economic attractiveness of regions and can promote “social stimulation and integration and in this respect helps to achieve social cohesion within the Union”. Thus, within the framework of the European Social Fund and its objective 3 projects aiming to expand the job market and make it easier for the unemployed to find a job, training projects for young people are included, some of which relate to activities such as arts and crafts.

The enlargement process has provided a strong impetus for conflict prevention, good governance and sustainable development, and has thus contributed to the goal of poverty reduction. As the world’s leading working example of a regional union, the EU has a special role to play in supporting regional peace and development. In summary, the countries of Europe require a breakthrough in their approach to the spatial and regional problems of their development. Strong arguments exist for assuming the following principles as part of the foundation for regional policies:

- Regional policies should be subordinated to the strategic objectives of the country as a whole. These objectives reflect the necessity of “catching up” with other countries more advanced in socio-economic development, through deep structural reform and the promotion of high rates of economic growth.
- As the pattern of polarised regional development must be acknowledged as a real and inevitable phenomenon in national development, regional policy should be oriented towards efficiency. This principle allows for accelerated growth and increasing new capital formation, which is necessary for changing obsolete economic structures. Therefore, regional policy should not have as a main priority the equalisation of regional differences – at least not during the first 10–15 years.

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# SOCIAL CAPITAL, SMALL BUSINESS AND ENTREPRENEURSHIP IN MESSINIA. AN EMPIRICAL STUDY

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## Abstract

This paper, which has been elaborated within the context of “Archimedes” project, deals with the examination of relationship between social capital and entrepreneurship in Messinia. To this end, viewpoints and attitudes of local entrepreneurs have been investigated with respect to the human capital of their company, as well as to problems confronting them. Based on data processing, a theoretical model has been constructed in order to facilitate analysis of dimensions of entrepreneurship in the prefecture. There was found that relative economic lag of Messinia may be attributed, among others, to the formation, structure, and function of social capital in the area. In a number of cases there was found that business decisions are rather conservative, whilst entrepreneurship may be selected out of necessity, due to absence of alternative vocational options.

*JEL classification: M13, O15, O18, R11.*

*Keywords: Greece, Messinia, social capital, entrepreneurship, small business.*

## 1. Introduction

In this paper<sup>1</sup> we attempted to shed light on the role of social capital on the development of entrepreneurship in Messinia. The social capital approach deemed necessary in order to obtain credible answers to questions such as “why regions bearing the same economic and social features differ so much in terms of economic development and people mentality?”, or specifically, “why Messinia lags behind other prefectures, e.g. those of Thessaly, albeit having similar economic structure

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and assets?” The answer may lie in the mode of formation, structure, and function of social capital.

Apparently the concept of social capital is not a new one; it had been first applied by Ferdinand Tonnies (1887) and Piotr Kropotkin (1903), was established as a scientific issue by Pierre Bourdieu (1986) and James Coleman (1990), and was broadly known through the works of Robert Putnam (1993; 2000), and Francis Fukuyama (1995). Social capital simply refers to the creation of resources emanating from one’s social bonds. Therefore social capital is fungible, meaning that it can be utilized in various ways. Social ties may be helpful in order to pursue a career, to alleviate family obligations by relying on relatives and neighbors, to strike a business deal, to meet interesting people etc. Economic aspects of social capital will be analyzed in the following.

In our research we applied principles of “grounded theory” (Glaser and Strauss, 1974), whereby theory is constructed through facts. Following this trend, after processing data of our sample, we proceeded further to elaborate a conceptual model for analyzing dimensions of entrepreneurship in Messinia. A reason for that was that superficial optimism of a portion of respondents was not convincing, therefore incorporation of additional qualitative data was necessitated. Findings showed that development of entrepreneurship in Messinia is contingent upon the social capital, as well as on institutional factors, that may be tackled through local policy.

## **2. Theoretical framework**

The issue of social capital has witnessed an immense popularity in the recent years. It is widely acknowledged that an economic system is shaped by and large through social interactions. Underlying social dimensions of economic life have come under scrutiny in order to assess their role in socio-economic development. Therefore, social capital has also to be explored besides other more common forms of capital, such as environmental capital (ecosystem, climate, soil, landscape), physical capital (infrastructure, equipment), cultural capital (crafts, arts, collective memories), and human capital (knowledge, skills, health) (Halpern, 2005: 3-9; Euracademy, 2005: 1-2).

Lin (2003: 55-56) stated that human capital consists of resources possessed by individuals who can use and dispose them according to their discretion. On the other hand, social capital comprises resources embedded within one’s association or network. It is not necessary for one to own resources; social capital lies in the capability of exploiting goods accessible through one’s personal network. A

common motto in social capital bibliography is: “it’s not just what you know but who you know” (Lin (2003: 41; Woolcock and Narayan, 2000: 225). Therefore, an important dimension of social capital entails assumed obligation for reciprocity or compensation (Lin, 2003: 56). As early as 1916, Hanifan (1916: 130), quoted by Putnam (2000: 19), circumscribed the notion of social capital as:

*“those tangible substances (that) count for most in the daily lives of people: namely good will, fellowship, sympathy, and social intercourse among the individuals and families who make up a social unit... The individual is helpless socially if left to himself... If he comes into contact with his neighbor, and they with other neighbors, there will be an accumulation of social capital, which may immediately satisfy his social needs and which may bear a social potentiality sufficient to the substantial improvement of living condition in the whole community. The community as a whole will benefit from the cooperation of all its parts...”*

Following this trend, Putnam (2000: 20) pointed out that social capital can “be simultaneously perceived as “a ‘private good’ and a ‘public good’. Some of the benefit from an investment in social capital goes to bystanders, while some of the benefit redounds to the immediate interest of the person making the investment.” Lin (2003: 19) produced a concise definition of social capital as “an investment in social relations with expected returns in the marketplace”, otherwise as “resources accessible through social connections” (Lin, 2003: 43).

Another key concept in our argumentation concerns “community”. According to Arensberg and Kimball (1965: 3-4), community is understood as “a master system encompassing social forms and cultural behavior in interdependent subsidiary systems (institutions) ... Community is understood as systems comprising interactional regularities and cultural behavior in an environmental contract.” An important contribution was made by Halseth (1998: 43-44), who pointed out that the notion of community may be approached by means of place or interest. Place – based communities are defined by “the imposition of boundaries (jurisdictional, administrative, or otherwise) designed to enclose some part of a local area”. Interest – based communities are conceptualized as “the social and spatial framework within which individuals experience and conduct most of their day-to-day activities ... bound together by a shared sense of belonging.” Nowadays physical location does not restrict the concept of community anymore; virtual communities have been established through the development of modern communication technologies and the internet.

Vital concepts to community viability are “reciprocity” and “trust”. “Specific reciprocity” involves a simultaneous exchange of items of equal value, as happens in buy and sell transactions. On the other hand, “diffuse reciprocity” entails an

exchange relationship that may not be met at a predetermined time, but ultimately is settled and balanced on a long-term basis. Longtime mutual obligations emanating from “diffuse reciprocity” relations are likely to cultivate the ground for confidence, companionship, and friendship (Putnam, 2000: 20-21).

Fukuyama (1995: 26) conceptualized trust as the “social glue” binding together people in a social context, and proceeded to define it as “the expectation that arises within a community of regular, honest and cooperative behaviour, based on commonly shared norms”. Prosperity of societies is considered to be dependent on trust. In this respect, Fukuyama (1995: 26) proposed a trust-based approach to social capital, as “a capability that arises from the prevalence of trust in a society or in certain parts of it”. High-trust societies are distinguished from low-trust ones by means of members’ willingness to institute voluntary, non-profit associations, outside the family surroundings and distinct from relevant state initiatives. By contrast, in low-trust social contexts, people have to address the family or the clan in order to satisfy elementary needs (job, protection etc).

Social capital in a community is developed through horizontal ties (bonding) and vertical ties (bridging) (Putnam, 2000). Bonding refers to the fact that strong intra-community ties are likely to generate the development of a sense of identity, solidarity, and commitment (Astone *et al*, 1999). This phenomenon has been evoked in order to account for the unforeseen economic success of certain low-profile social clusters (family business, ethnic entrepreneurship). Social capital that is formed through low paid, overtime work of kins or clan members constitutes an inimitable competitive advantage (Craig and Lindsay, 2002; Bachkaniwala *et al*, 2001; Wong, 1988). Relatives constitute an inexhaustible source of social capital for family business. They may pool their funds in order to generate sufficient financial capital, thus allowing the entrepreneur to undertake short-term risks (Mattessich and Hill, 1976). Moreover, kins may prove capital mentors and they may provide access to business channels and markets (Lansberg, 1999). On the other hand, family members may be motivated to enter the firm due to low opportunity costs in the external labour market, or because they may covet a possible inheritance of business (Wong, 1988).

Bridging describes density of relations of community members with outsiders or with other social groups or communities. Capabilities of community members to establish connections with externals allow them to broaden their horizons and to facilitate access to resources outside the community. Inter-community relations, designated by Grannovetter (1973) as “weak ties”, are important for one’s career development. Attempts to strengthen weak ties include activities such as lobbying, politicking, and strategic marriages. Stewart (1990: 149) commented that strategic marriages are helpful because they provide points of entry to important networks through establishing “strong ties with well-connected people (who) are needed to

set in motion particular indirect effects”. Different combinations of bonding and bridging at the community level are demonstrated in Table 1 (Woolcock and Narayan, 2000: 231).

**Table 1.** *Dimensions of Social Capital at the Community Level.*

Extra-community networks (bridging)	Intra-community ties (bonding)	
	LOW	HIGH
LOW	Outcasts	Poor villagers
HIGH	Recent rural-to-urban migrants	Successful members of microfinance programs

Low bonding capacity indicates that ties with the community are fragile, therefore less privileged members either will become socially excluded, or will have to abandon the community. A successful migration attempt presupposes that those involved have already developed extra-community links. High bonding coupled by low bridging capacity is likely to condemn locals to physical isolation. On the other hand, high bonding and bridging capacity provides an ideal background for native entrepreneurs.

Grannovetter (1995) mentioned that exactly the same means that had proved beneficial during an entrepreneurial startup may hinder business growth at a later phase; businessmen eventually have to thin down contacts with their initial circle and to search for a more promising network.

As mentioned in the previous, strong bonding may prove most beneficial to community members, because they may enjoy for free a variety of valued social services including baby sitting, house minding, and emergency cash (Woolcock and Narayan, 2000: 231). Nevertheless, it bears negative effects, designated by some authors as “the dark side of the social capital” (Putzel, 1997; Print and Coleman, 2003; Barr and Russel, 2006). Members may be so tightly attached to a specific way of life, that they resist any kind of innovation and renewal, ultimately being entrapped in a backward social context. Peer pressure may inhibit individual efforts to improve quality of life. Members are discouraged from seeking career opportunities outside the community. On the other hand, strong identification with the group may lead to acute antagonism with other communities, families, clans, or social groups; a pointed example is offered by Banfield (1958) in his treatise on social relations in Southern Italy. He named “family amoralism” the phenomenon by which family loyalty is set above elementary ethics of social conduct, even above the state laws. For social capital to be beneficial, social ties have to develop proportionately within and outside community (bonding and bridging). Too much capital on either dimension might hamper economic development (Woolcock, 2001).

### 3. Economic outlook of the Messinia prefecture

According to research conducted in 2003 by the Employment Observatory – Research & Informatics Ltd (PAEP), the Messinia prefecture contained approximately 9,762 enterprises (Harari and Kaminioti, 2005). Annual revenues of their vast majority (87.6 percent) were estimated less than €150,000, but 44.2 percent of these pertained to self-employment. Most populous sectors were found to be commerce & vehicle repairing (totaling 34.8 percent of firms), hotels & restaurants (18.3 percent), manufacturing (17.1 percent), construction (9.6 percent), leasing & property management (7.2 percent), and transport (3.9 percent). Concentration of SMES (those having annual turnover less than €150,000) per sector is classified as follows: commerce & vehicle repairing (32.1 percent), hotels & restaurants (21.4 percent), and manufacturing (17.9 percent).

By examining components of the Prosperity Index, it is found that the prefecture is included amongst the least productive in Greece, occupying the 44<sup>th</sup> position with respect to Gross Product per capita. On the other hand, the prefecture is placed at the 19<sup>th</sup> position regarding savings per capita (Selection, 2007).

According to data of the Direction of National Accounts of the General Secretariat of the National Statistical Service of Greece (GSNSSG), although contribution of the primary sector to the Gross Product of Messinia suffered a severe decline, dropping from 43.3 percent in 1971 to 11.0 percent in 2004, it still remains among the highest in the Greek periphery, taking into account that in these years GNP was 18.2 percent and 4.0 percent respectively. However, Messinia came first in 2003 and 3<sup>rd</sup> in 2005 regarding production of olive oil among Greek prefectures. Conflagration of August 2007 inflicted an irreparable damage to agricultural production of the area, since it is estimated that about 17.1 percent of the Gross Agricultural Product of Messinia has been lost (Isotimia, weekly, 1.9.2007).

Contribution of the secondary sector to Gross Product of the Messinia prefecture has taken the form of a  $\cap$  curve, since figures in 1971, 1981, 1994, and 2004 were 18.8 percent, 22.6 percent, 18.4 percent, and 15.4 percent respectively. A peak had been formed in the 80s, due to a temporal industrialization of the area and a subsequent decline for reasons reported in the following. The respective national figures revealed a more or less steady decline (31.9 percent, 31.1 percent, 25.0 percent, and 19.4 percent respectively), according to data of the Direction of National Accounts of GSNSSG.

By contrast, gross product of the tertiary sector has witnessed a continuous growth in the prefecture, rising from 37.8 percent in 1971 to 73.6 percent in 2004. The respective GNP figures were 49.9 percent and 72.3 percent. Data pertaining

to the development of gross product is shown in Table 2.

**Table 2.** *Participation of Economic Sectors to the Gross Product per Geographic Area (Expressed as percentage).*

		1971	1981	1991*	2001
PRIMARY SECTOR	Prefecture of Messinia	43.3	40.8	30.8	16.4
	Region of Peloponnese	37.5	32.7	27.7	11.5
	Greece	18.2	17.7	14.6	5.6
SECONDARY SECTOR	Prefecture of Messinia	18.8	22.6	23.2	13.8
	Region of Peloponnese	24.1	29.4	30.4	34.5
	Greece	31.9	31.1	28.0	22.1
TERTIARY SECTOR	Prefecture of Messinia	37.8	36.6	48.2	69.7
	Region of Peloponnese	38.4	38.0	42.0	54.0
	Greece	49.9	51.1	57.4	72.3

*Source: Direction of National Accounts of the General Secretariat of the National Statistical Service of Greece, Regional Accounts.*

*\* Figures prior to and after 1991 were gathered through different methodologies by GSNSG, therefore data is not comparable.*

Agricultural production is largely based upon olive oil, a fact discouraging from restructure of cultivation. First, restructure of long-term cultivations presupposes destruction of hard-gained vegetable capital and age-long awaiting for some income remuneration. Second, a substantial portion of agricultural property belongs to persons whose primary vocation is other than farming, therefore they are unlikely to become engaged in long-term novelties. And third, ongoing balkanization of land along generations, due to division of property among heirs, inhibits exploitation of land according to entrepreneurial principles. Promising pathways to upgrade agricultural product include the designation of the Messinian olive oil as “product bearing the name of location of production” (POP), as well as the spreading production of organic olive oil. Similar positive developments are expected from other products of the area, including wine, dried figs, and raisin.

The Messinia prefecture had had experienced a temporal industrialization in the 80s, due to incentives offered to manufacturing companies within the context of decentralization. Industries installed in the area concerned mostly textiles and food processing. Nevertheless, intensification of international competition, combined with the abrupt abolishment of all kinds of tariffs in 1992, proved fatal to local industries. Harmonization of the Greek legal system to EC directives could be characterized rather as a “one-off” step, without providing for a gradual adaptation of the existing infrastructure (Kazakos, 2001). Mass closure of manufacturing firms in the 80s and 90s, coupled with the drastic curtailment of further industrial investments, had had brought about a sharp rise of unemployment in the area. Perspectives for local industry appear rather grim, as the remaining firms still stick to traditional sectors, such as food processing, and manufacturing of wooden and metal products.

Growth of the tertiary sector is due primarily to transport, banking & finance, and tourism. The latter in particular appears most promising, as the natural capital of the prefecture has not been yet adequately exploited.

#### **4. Employment outlook of the Messinia Prefecture**

Employment fluctuations in the Messinia prefecture generally seem to follow the respective trends in population. According to the national census of 2001, local workforce has decreased by one third since 1981. Messinia has suffered the greatest population shrinkage among all Greek prefectures in the period 1998-2005 (Selection, 2007).

Employment per economic sector ranged over 36.0 percent, 16.3 percent, and 47.7 percent respectively for the primary, the secondary, and the tertiary one. Respective nationwide figures were 15.0 percent, 23.2 percent, and 61.8 percent. Despite the drastic decline of the rural population (taken into account that by 1961 approximately 73.6 percent of the workforce had been employed in agriculture, according to GSNSSG data), it still remains more than double the national average.

According to data of 2001, approximately 52.0 percent of working people over 50 were employed in agriculture. Those designated as “self-employed” constituted approximately 30.0 percent of the workforce in the area, their percentage steadily decreasing (46.0 percent in 1981; 42.9 percent in 1991); about 67.7 percent of the self-employed were occupied in agriculture.

The group of “salaried persons” has witnessed a remarkable increase, having started from 27.5 percent in 1981, 38.8 percent in 1991, and 51.0 percent in 2001. The tertiary sector employs more than two thirds of salaried people, while the rest

are occupied in the secondary sector. Rate of “employers” has also risen (1.5 percent in 1981; 5.4 percent in 1991; 11.2 percent in 2001). More than half employers dealt with commerce, hotels & restaurants.

According to the national census of 2001, the most populous sector was agriculture (36.0 percent; national figure: 15.0 percent), followed by commerce & vehicle repairing (11.7 percent; national figure: 15.6 percent). Construction, including buildings and public works amounted to 8.7 percent (national figure: 9.0 percent), having increased remarkably till 1981. Public employment followed by 7.5 percent (national figure: 8.2 percent), manufacturing (6.4 percent; national figure: 12.7 percent), education (5.6 percent; national figure: 6.4 percent), transport (5.0 percent; national figure: 6.9 percent), hotels & restaurants (4.8 percent; national figure: 6.0 percent), and health services (3.5 percent; national figure: 4.6 percent). According to the PAEP study (Harari and Kaminioti, 2005), a remarkable employment growth was witnessed in the sectors of commerce & vehicle repairing, hotels & restaurants, and construction.

**Table 3.** *Development of Employment per Economic Sector (Expressed as percentage)*

		1971	1981	1991	2001
PRIMARY SECTOR	Prefecture of Messinia	66.7	59.3	38.7	36.0
	Region of Peloponnese	66.5	55.0	40.1	38.3
	Greece	40.1	28.6	19.8	15.0
SECONDARY SECTOR	Prefecture of Messinia	11.8	16.2	19.1	16.3
	Region of Peloponnese	13.6	18.4	18.9	19.3
	Greece	24.5	29.8	24.9	23.2
TERTIARY SECTOR	Prefecture of Messinia	21.5	24.4	41.9	47.7
	Region of Peloponnese	19.8	26.6	41.5	42.4
	Greece	33.3	41.5	54.7	61.8

*Source: Direction of National Accounts of the General Secretariat of the National Statistical Service of Greece.*

According to GSNSSG data, in the recent years (2004-2006) unemployment in

the Messinia prefecture varied from 7.9 percent to 9.0 percent; in 1981 and 1991 the respective rates had been 4.4 percent and 7.4 percent. Rise of unemployment in the 80s has been attributed to the dismantling of industry, combined with the ongoing exit of workforce from the primary sector. Nevertheless, relatively low unemployment in Messinia ought to be connected with the phenomenon of underemployment, by which a considerable number of persons classified either as self-employed, or as assisting family members, in fact have stuck to low-paid temporary or seasonal jobs (Williams, 2005). According to the national census of 2001, unemployment rates of young people surpassed 75.0 percent, exceeding by far the national average (67.6 percent). Women also were found to suffer from unemployment more than men (64.0 percent and 36.0 respectively), although their participation in the workforce approximated only 35.2 percent.

## **5. Research, Methodology and Profile of companies**

Our research was conducted in the Messinia prefecture during 2005-2006. An attempt was made for our sample to be representative, by means of including 47 firms of small and medium size belonging to various sectors, the majority dealing with tourism, food, and olive oil processing. Half companies were relatively new, been established in the 90s. About 15 percent had installed branches in other parts of Greece, while 12 percent were exporters. Data was gathered through written questionnaires, but experienced interviewers encouraged informal discussions so that inner motives of respondents are revealed.

According to statements of their officials, in the last five years the majority of firms (72.3 percent) had witnessed growth, 17.0 percent had remained relatively stable, while 10.6 percent had suffered a decline. Coming to the issue of growth forecast, there was reported that 63.8 percent of enterprises had reckoned that they would expand, 23.4 percent had predicted a rather stable situation, and 12.8 percent had expected shrinkage of business activity. Turning now to profitability, 63.8 percent of the respondents considered their situation as prospering, 25.5 percent as stable, whereas 10.6 percent as weakening. It is reminded that companies of our sample were rather new, a factor that enhances optimism; Schott and Bager (2004) pointed that growth expectations tend to be high at the outset and decline as time goes by.

In the five years prior to 2006, approximately 68.1 of companies had had proceeded to further business investments, 21.3 percent had had remained inactive, while 10.6 percent had had experienced a divestment. With regard to employment, 53.2 percent of firms had had increased their number of employees, 27.7 percent

had had remained more or less the same, and 19.1 percent had had proceeded to layoffs. According to PAEP research in Messinia (Harari and Kaminioti, 2005), only 7.0 percent of the sample had had expected increase of their personnel, 90.0 percent had had estimated relative stability, while only 3.0 percent had had forecasted dismissals.

## **6. Empirical Findings**

### **6.1 Human Resource Management Practices**

Company staffing constitutes an important problem in the periphery due to scarcity of qualified personnel (Green and Hardill, 2003). Enterprises of our sample had the propensity to fill vacant positions primarily through the social network (friends & relatives of existing personnel, as reported by 63.8 percent). This fact has been corroborated by previous research in Messinia undertaken by the Research Center of Economic Policy of the Panteion University (RCEP, 1992). Researchers remarked that this practice aimed at strengthening commitment of employees to the company; nevertheless, a negative consequence concerned low qualifications of employees, resulting in resistance to innovation and organizational change.

In our research, next was ranked search through publishing classified advertisement in the press (reported by 53.2 percent). Search through the Hellenic Manpower Organization (OAED), reported by 27.7 percent, appeared also a promising pathway. Last was publishing classified advertisement in specialized internet sites; the latter was reported by only 4.3 percent. Spread of internet remains at low levels in Greece (Tsatsou, 2005), while in the periphery, where communication technologies are urgently required in order to promote networking, the problem is even more acute.

Regarding factors that influence personnel hiring, professional skills were reported first by 42.2 percent of respondents. Employers did not have any scruples to report that apparently discriminating criteria, such as gender of job applicants (reported by 35.5 percent), as well as their age (reported by one third of the sample), were highly rated. Indeed, research within the context of the Archimedes project (Stavroulakis *et al*, 2006) focused on difficulties of unemployed women to enter the labour market. On the other hand, as mentioned in the previous, also unemployment rate of youths in Messinia exceeds by far the respective at the national level. It has proved particularly difficult for EU policies addressing equal employment opportunities to penetrate into the Greek periphery. Next was ranked formal education (reported by 20.0 percent), previous experience (reported by 15.5 percent), and applicant's personality (reported by 11.1 percent).

Lower percentages (6.6 percent) referred to diligence & honesty, co-operative spirit, character, and personal appearance.

Even though companies mostly preferred experienced, tailor-made employees, scarcity of skilled personnel in the periphery often obliged them to resort to training. Previous research in Messinia (RCEP, 1992) had identified resistance of employees to training; nevertheless, according to research undertaken by the Technical Educational Institute of Kalamata (TEI-K, 1999), about 60 percent of Messinian enterprises used to train employees after hiring. This trend was also corroborated by our research. Approximately 81.0 percent of firms comprising our sample have provided some sort of personnel training, the most common form being on-the-job training (reported by 78.7 percent). About 21.3 percent have funded off-the-job training programmes for their employees, while 15.0 percent have addressed the subsidized training programmes of the General Secretariat of Popular Training (LAEK). Only a small percentage (4.3 percent) has utilized training programmes issued by OAED.

## **6.2 Viewpoints & Attitudes Of Local Entrepreneurs**

An important topic concerned participation of local enterprises in funded programs pertaining to the development of entrepreneurship. These programs are issued mostly by the Ministry of Agriculture and the Ministry of Development and concern enhancement of marketing activities, such as networking and participation in international exhibitions. It seems that the majority of firms did not even know their existence; approximately only 8.5 percent of the companies had had participated in similar programs. Concerning the reasons why firms refrained from funded business programs, company officials reported mostly lack of relevant information, and bureaucratic procedures. On the other hand, about one third of the companies had been participating in the Stage program (funded by OAED), by which companies are subsidized for hiring temporarily young graduates lacking professional experience. Co-operative EU projects constitute an important source of social capital because they promote networking by bringing together diverse social actors (enterprises, associations, public agencies etc).

Proposals of company officials for the facilitation and development of entrepreneurial activity in the Messinia prefecture concerned legal provisions for financial and taxation measures (reported by one third of respondents), support of and co-operation with public services and local authorities (reported by 23.3 percent), further development of tourism in the area (reported by 20.0 percent), taming of bureaucracy (reported by 13.3 percent), while 6.8 percent mentioned quality improvement of products and services, personnel training, and co-operation of local enterprises with the Technical Educational Institute of Kalamata.

It is worth noticing that 36.2 percent of companies alleged that they did not face any obstacle at all with regard to business activity. As for the rest, on the other hand, the following factors were reported as most prohibitive to entrepreneurial activity: bureaucracy of public services (reported by 43.3 percent of the respondents), lack of long-term, coordinated planning and inadequate public infrastructure (reported by 23.3 percent), transport problems due to the deficient road network (reported by 16.7 percent), high prices and poor economic condition of households (reported by 16.7 percent), economic uncertainty (reported by 16.7 percent), de-industrialization of the locality (reported by 13.3 percent), intensification of competition due to the operation of chain stores (reported by 6.6 percent), while a small percentage (3.3 percent) mentioned lack of personnel training, absence of funded programs for business development, appearance of cheap products of low quality, and lack of promotion of the locality assets.

Most promising sectors for entrepreneurs were considered tourism (mentioned by 62.8 percent of respondents), food (mentioned by 23.3 percent), while 7.0 percent reported agricultural products, computers & high technology, restaurants, and education. Globally, tourism is estimated to be the fastest growing sector, while for peripheral areas it may constitute the sole pathway to growth. The Maastricht Treaty of EU recognized that tourism might constitute an important tool for mitigating regional disparities (Wanhill, 1997). There should be taken in mind, however, that the sector is highly dependent on geopolitical developments, mass psychology, and rumors; for example, the Kos Island had been badly affected because the misinformed had associated it with Kosovo (Cavlek, 2002). Popularity of tourism in Messinia is demonstrated by the fact that in the period 1985-2000 it had come second all over Greece with respect to increase of hospitality outlets at the rate of 47.3 percent. Companies of the sector usually do not employ skilled personnel, while advice of technical experts often is not appreciated by employers (McAdam *et al*, 2004).

More than half companies (51.1 percent) had in mind to expand activities in the forthcoming years; about 42.5 percent did not intend to proceed to any expansion at all, while 6.4 percent planned to diversify by investing in tourism. Nevertheless, approximately 42.5 percent of the respondents declared that they had better being out of business at present; this finding is of particular importance, inasmuch as it contradicts the auspicious impression that has been created so far, and will be further explored in the following. As for the rest firms, they either would select the same sector again (77.8 percent), or they would deal with tourism (7.4 percent), or they would relocate (7.4 percent).

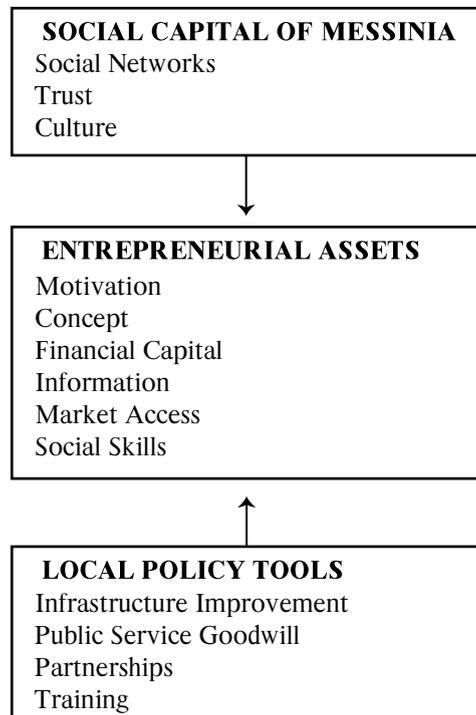
Approximately 23.4 percent of companies stated that they did not face any business problem at all. The rest classified their problems as follows: lack of qualified personnel (25.0 percent), illicit competition (16.7 percent), decrease of sales (16.7 percent), high operational costs (13.9 percent), inability to get paid off

by debtors (11.1 percent), unco-operative public authorities (5.5 percent), and unstable economic climate (5.5 percent).

## 7. Discussion of findings

The model for studying dimensions of entrepreneurship in Messinia (Fig. 1) was constructed according to the “grounded theory” (Glaser and Strauss, 1974), by analyzing data which were at most revealed throughout this research. Application of the grounded theory deemed also necessary in order to incorporate contradictory findings and statements of respondents into a unifying conceptual model. According to Glaser and Strauss (1974: 6), “generating a theory from data means that most hypotheses and concepts not only come from data, but are systematically worked out in relation to the data during the course of research”. Dimensions of our model are analyzed in the following.

**Figure 1.** *A conceptual model conditioning dimensions of entrepreneurship in Messinia.*



## 7.1 Social Capital of Messinia

Cultural factors have played a capital role in shaping business context. In studying the interaction between national and organization value systems, Hofstede (1991) identified the value dimensions of Power Distance, Uncertainty Avoidance, Individualism (versus Collectivism), and Masculinity (versus Femininity). Greece scored highest above all countries worldwide in the dimension of “Uncertainty Avoidance”. Uncertainty Avoidance indicates the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity, which leads them to support beliefs promising certainty and to maintain institutions protecting conformity. Organizations in uncertainty avoidance cultures are designated by a strong need for rules and regulations, by employee preference for unambiguous instruction from management, and by intolerance toward deviant ideas and behavior (Joiner, 2000: 233). This fact implies that in Greece attitudes toward entrepreneurship are rather conservative.

Rural areas are described to contain all territory lying outside urban areas, including small towns, villages, and less populated areas. A broad definition which is of interest to the case of Messinia is offered by Euracademy (2005: 9):

*“A rural area or region may well include one or more small towns or even a larger urban unit. The economy of such an area is not related only to farming, forestry or similar activities of the primary sector: it also includes activities based in the towns, such as manufacture and services. The towns provide services and cultural activities which are crucial to the rural communities around them... The relationship, and mutual support, between such towns and their rural hinterland is a vital aspect of the networks that comprise social capital in these regions.”*

Demographic features of rural areas bear manifest similarities. Aged population is a common feature. Youths and highly skilled human capital tend to migrate to urban centers. Social connections are more immediate (face-to-face), more intense, and more complete, as they are based on knowledge of personal biographies instead of formal roles (Morgan and Atkin, 2006). Personal networks play a more important role in finding a job. Only a limited range of job opportunities is available, while self-employment and small business are quite widespread. Most advanced, knowledge-intensive sectors are under-represented in the periphery. This fact, combined with the leak of the most qualified human capital to cities, indicates that “low-skill equilibrium” is likely to be formed (Green and Hardill, 2003). Unemployment rates tend to be lower than in urban centers, but other forms are prevalent, such as part-time and seasonal employment, as

happens in agriculture and tourism. Traditionally these sectors are associated with low-skilled, cheap labour. Rural-oriented cultural patterns are designated as traditional, slow to change, conforming, and intolerant to outsiders (Morgan and Atkin, 2006).

Prefecture of Messinia suffers from relative isolation, owed to the mountainous countryside and the insufficient road network. An economic and cultural inequality also prevails between the metropolitan center (Kalamata city) and the rural periphery. In small localities, problems such as special needs and mental health are likely to be regarded as shameful. On the other hand, in essence, women have started entering the labor market only since the era of industrialization in the 70s; till then, according to the predominant traditional way of thinking, they should stay at home. Presence of a large minority of gypsies, who are by and large unemployed, tends to accentuate social gap in the area. Lack of equal opportunities in the labour market pesters in particular vulnerable social groups including minorities, women, youths, and persons with disabilities. The disproportionate rate of persons employed to agriculture implies that, as elsewhere (Deakins and Freel, 2003), rural business is more a way of life than entrepreneurial endeavor. Interesting aspects of social relations, competition and rural entrepreneurship at the micro-level in Messinia are presented by Zontanos and Anderson (2004).

Previous research identified serious deficiencies in human capital in Messinia (Harari and Kaminioti, 2005). There was revealed that positions which had remained vacant longer than six months had concerned mostly high-level executives and heads of economic departments. Even among persons comprising the company elite, serious inadequacies had been identified, including ignorance of computers and foreign languages, as well as absence of a university degree. Authors had appeared rather pessimistic with regard to growth perspectives of the prefecture, taking into account absence of vitality of professions, lack of demand for innovative skills, and adherence to an obsolete model of economic development.

Networks constitute the essence of social capital, notwithstanding their nature and purpose (e.g. exchange of information, selling, mutual aid, sports, environmental protection, rites & ceremonies etc). Social capital presupposes likelihood for multiple memberships, as well as the establishment of links between networks. Notably, mere existence of a variety of associations in a community does not guarantee development of social capital; interaction between associations and members as well is necessitated in order to spur socio-economic progress. In Messinia there exists a variety of active welfare, cultural, and developmental organizations, such as the Developmental Corporation of Messinia, the Developmental Municipal Enterprise of Kalamata, (ADEK), the Municipal

Enterprise for the Cultural Development of Kalamata (DEPAK), and the Organization of Civilization and Culture of Northeast Messinia (OPANAM), but these are at most activated in the city of Kalamata; small villages receive only a temporal attention in summer.

## **7.2 Local Policy Tools**

It seems that the impact of local policies in Messinia has been rather unsound so far. Local authorities may have an important part in employment policy, but otherwise play a limited role in scheduling and implementing developmental strategies, due to weak vertical links with the state authorities. Improvement of infrastructure (it might be excessive to call it developmental strategy) has shown only a moderate progress. The Kalamata harbor has not been fully utilized yet. Construction of the national highway drags on for more than a decade. It is worthy to mention that when part of the road at the city entrance was to be constructed, the plan had been severely opposed by petty property interests. During informal discussions, certain entrepreneurs who participated in this research had appeared skeptic concerning facilitation of transports; they had adopted a defensive attitude, worrying about losing customers owed to the easy access to other markets. Proposals for private investments in the area are in general viewed with suspicion; an endless dispute may unfold between factions of the local government, whether the investment is actually beneficial to the locality. Chronic tergiversation and delays apparently discourage potential investors.

Greece has been consistently classified in the lowest positions with regard to encouragement of entrepreneurship, due to bureaucratic procedures in starting a business, inflexibility of the labor market, lack of protection for investments, and weakness in safeguarding patents (Global Entrepreneurship Monitor and IOBE, 2003). Public bureaucracy has developed its own rationale, tending to reproduce conditions that favor its perpetuation. Fukuyama (1995: 99) remarked that (in a low-trust society) “people will fear and distrust the government, while simultaneously believing in the need of a strong state to control their fellow citizens”. Triandis *et al* (1968) have shown that Greeks tend to demonstrate devotion and co-operation to those considered as “in-group” (relatives and close friends), whereas the rest (out-group) are confronted with hostility and antagonism. The state authorities apparently belong to the “out-group”. Recent EU-imposed institutions, such as the Citizen’s Advocate, appear only too weak to combat longtime embedded attitudes and perceptions within the chaotic public sector. Public service indolence apparently is not restricted to Messinia; moreover, it is questionable whether taming of bureaucracy is feasible at the local level, without being incorporated within an integrated

national plan.

Aim of partnerships is to enable small entrepreneurs to participate in international projects, largely funded by the EU, in order to access market and to improve business methods. The EQUAL initiative, aiming at promoting organic products in Messinia, is incorporated in this context. Despite the presence of a substantial number of state and local agencies for the diffusion of these initiatives, our research demonstrated that local entrepreneurs had remained ignorant. Partnerships also involve active participation of small entrepreneurs in networks, associations, and collective social activities in the community, so that they gain access to social capital. Nevertheless, the aforementioned networks are scarce and rather powerless in Messinia, therefore entrepreneurs have to rely entirely on their personal means.

A widespread shift to vocational training has been witnessed in Messinia in the recent years, largely due to the influx of ample funds from the EU. The bulk of training endeavour, however, has an apparent defensive character, inasmuch as it is oriented to low-qualified or unemployed persons (Stavroulakis *et al*, 2006). Even then, training is mostly conducted through convenient, ready-made educational packages, not necessarily addressing specific trainees' needs. Training evaluation remains at most on paper, as corrective action is rarely undertaken. Developmental dimension of training, aiming at the emergence of highly qualified human capital in the area, is neglected by the state and local agencies, but a few private enterprises have taken steps to this end.

### 7.3 Entrepreneurial Assets

Entrepreneurial assets can be classified as affective, informational, and material (Kanter, 1985). As implied in the previous, entrepreneurship is primarily a networking activity requiring social skills since, according to Grannovetter (1973), economic functions are embedded in networks of personal relationships rather than performed by independent actors. An innovative concept may constitute the spark for entrepreneurship, but it is by no means enough to guarantee business success. Actually, an enterprise may prosper without being backed by an innovative idea.

Kristiansen (1999) singled out innovational business from ordinary business set-up based on copying. The latter is designated as sharing an existing technology or market by a great number of imitators; copying may lead to increased employment at best, and to shared poverty in the worst case. By the same token, Reynolds *et al* (2003) distinguished between "opportunity entrepreneurship", taking place when a start-up is based on the perception of a business opportunity, and "necessity entrepreneurship", when a business is formed out of absence of

alternative economic options of founders. Therefore, entrepreneurship is a double-edged concept; entrepreneurs may either be attracted, or “pulled” by an innovative concept, or may be “pushed” to business by necessity, even though they might select a different career path, had the circumstances been more favorable.

A considerable part of entrepreneurs interviewed in our research seemed to have been drawn to their “imitative business” out of necessity. Statements of a number of small company proprietors about high growth expectations are in fact contradicted by their practices. A substantial portion of them seems to have adopted the so-called “lifestyle entrepreneurship” (Burns, 2001), whereby small businessmen are not growth-motivated; instead they adapt business activities to their personal interests and pursuits, and give priority to private over business goals (Bolton and Thompson, 2003). During our informal discussions, certain businessmen admitted that they could have already expanded, but they had had stalled for time “to think it over”. Transition to a more advanced form of business (partnership, introduction of professional management) seemed particularly alarming to them. In this respect, high bonding ties played a negative role to the advancement of entrepreneurship, inasmuch as advice on whether to expand or not received by friends and relatives invariably had converged to the beaten track of risk avoidance.

## **8. Concluding remarks**

In this research we attempted to focus on dimensions of entrepreneurship in Messinia by exploring attitudes, perceptions, and beliefs of small businessmen. Quite often a business start-up does not aim at exploiting a market opportunity or an innovative idea, but is selected out of absence of alternative economic options. For example, young lawyers or engineers who initiate a private business might well prefer to be hired in the public sector.

With regard to the issue of development, Messinia seems to be entangled in a “chicken and egg” situation, quite common in peripheral areas. The question is, whether population moves where the jobs are located, or jobs move around to meet workforce (Freeman, 2001). A necessary precondition in order to institute an endeavor for a knowledge-driven society is to educate and attract highly qualified human capital. Nevertheless, highly-skilled persons are not going to stay in a region in case that they do not manage to secure a promising career, commensurate to their qualifications. Specialized jobs are located in big cities, therefore building qualified human capital in an area lacking relevant innovative infrastructure might lead to its future desertion.

Unlike unprofitable business, uncompetitive regions do not close down, simply become deserted. As reported in the previous, Messinia has suffered unprecedented population shrinkage in the recent years. Transformation of Messinia into a knowledge-intensive region is not an easy task. Indiscriminate funding of projects, sectors, or regions, ends up to a waste of resources if not incorporated within a sound strategic plan. A “soft infrastructure” (social capital, networks, high-level services, knowledge infrastructure) has to be meticulously built and nurtured. However, policies for local development ought not to be reduced to a matter of incentives and costs. Instead, the social dimension of economic growth has to be tackled. Local policies would be considered most effective if focusing on facilitation of social networks and on the development of extra-community bridging ties for the non-privileged small entrepreneurs.

In this paper our target was to elaborate a concise research template in order to facilitate responses of a rather large sample for the Messinian context. Our model might be tested by future research that will focus in depth on a limited number of case studies, possibly at the sectoral level, so that the “grassroots” of entrepreneurship are grasped.

## NOTES

1. This research is part of a broader study titled “Investigation of women employment in the Messinia prefecture: Design of a model for the incorporation of women in the labor market”, which is conducted by the Technological Educational Institute of Kalamata within the context of the “Archimedes” project, and is funded by EPEAEK.

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# CARBON EMISSIONS ALLOWANCES MARKET AND ITS MECHANISM IN THE CARBON MARKET ECONOMY

C. DERIZIOTIS\*

## Abstract

Emission Allowances market as well as the intangible good negotiations are developed in the framework of a political decision. The aim of its development is the beginning of an effort to control and reduce the effects of the greenhouse phenomenon. Its development is based on a philosophy of establishing deterioration goals to reduce greenhouse gas emissions, which, most of the UN countries exceed, contrary to the ambition of achieving reduction in greenhouse gases emissions expressed in the USA and Australia by voluntary activities and technological evolution. The American and Australian arguments lose their force after the failure of voluntary programs in the USA, while the method of exchangeable and transferable emission allowances markets and deteriorating goals gain ground for the period after 2012. Hard negotiations are conducted on the political level so as to persuade the USA and Australia to accept this philosophy and to validate the Kyoto Protocol so that all countries and not only the OECD ones establish a deterioration goal.

Emissions market is mainly based on the three flexible mechanisms foreseen by the Kyoto Protocol, Emission Allowances trading, Clean Development Mechanism (CDM) and Joint Implementation (JI). The European Emissions trading System (EU ETS) is a dominant system in the framework of Emissions Trading mechanism in the carbon market.

*JEL classification: Q2, K32.*

*Keywords: Carbon Market, Carbon transactions, Tradable emissions, Allowances prices and emission permits.*

## 1. Introduction

The official implementation of the European Emissions Trading System (EU ETS) began in January 2005 and so did the Carbon Dioxide Emission Allowances trading (one allowance equals to one tone of CO<sub>2</sub>) at the big stock exchange market of the European Union. Carbon market has all the characteristics of the commodities market.

So far, there are two ways for a bound company (or any physical or legal entity)

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to participate in the carbon market. The first and relatively simpler method refers to Over the Counter (OTC) transactions which concerns to direct negotiations and transactions among buyers and sellers. The second method involves transactions through an allowances stock exchange (Exchange Trading), based on auctions, which are conducted according to rules established and followed by each of the existing emission stock exchanges in Europe.

During the first months of its operation, Carbon market was characterized by low volumes and great uncertainty, so as to proceed later to a maturity phase, with an increase in volumes and prices of European Union Allowances (EUA). In the maturity phase, after the summer of 2005, the market corresponds to the theoretic models of markets technical analysis.

In May 2006, the gradual publication of verified emissions of EU member – states, after the finding that they moved to lower levels than expected, led to the reduction in EUA prices and to great uncertainty in the market. In less than a month period the market was normalized, while trust of the participants regarding the use of the emissions reduction mechanism has been re-established from the contango situation, which dominated in 2006, and especially as far as future contracts of 2008 are concerned.

## **2. Market design and criteria for the Emissions trading and allowances market**

The most fundamental design principles of the carbon market for the establishment of tradable emissions and allowances of carbon dioxide are:

- a) the total number of allowances which will be set as goal
- b) the number of participants from each sector – goal.
- c) The allowance allocation mechanisms in the specific energy production units.

The total number of allowances determines the prices of allowances and hence, the marginal emissions cost. Therefore, to select the total allocation of permits in the trading system, one should take into consideration that opportunities for emissions reduction will vary among the different sectors. It is clearly more beneficial to set goals of total reduction for the sector, which can be expanded to a community level.

Calculations based on the initial model foresee that approximately 260 million tons of carbon dioxide emission reductions must take place in the energy and gas production stations in order to minimize the cost of reduction. This corresponds to a reduction in the emissions level of 2010 at about 22% compared to the 1990 level.

If the EU emission allowances trading system is the only flexible mechanism available in the participants' market, the allowance price in EU will be equal to the marginal cost of carbon dioxide emissions reduction in the EU as a total.

The criteria that must be satisfied so that the emissions trading system operates effectively as a carbon market, are: a) the first refers to the fact that the number of allowances must be limited and well determined, so that a value that can be evaluated with accuracy must be attributed to the allowance. b) the second refers to the free trading of allowances and permits with a small number of restrictions in trading terms. c) the third refers to the ability to store these, so that their usability is maintained in transaction periods. d) the fourth refers to the least expensive trading, buying or selling of allowances and permits so that economic efficiency can be achieved. e) in the fifth, it is attributed that penalties must have higher prices than that of allowances so as to provide incentives to enterprises to act according to the market rules and the last one refers to the fact that companies must reinvest the profits derived from the trading of their allowances.

The requirements for a proper market of tradable carbon dioxide emissions and permits refer to the accurately determined property allowances. From a financial point of view, environmental problems occur because of the lack of accurately determined property allowances. A fundamental and proper government role to support the market economy is to determine and support the property allowances. As soon as the legal rights are determined, markets can exploit them by exchanging them, in case they possess a supplement, as a way to improve their financial efficiency. For the market system to operate effectively, the market should be competitive and the cost of transactions should be low.

The establishment of property allowances is the first step to achieve advantage from the market efficiency. Without proper determination of ownership, transactions may be difficult and property allowances will have a low value, if governments do not support them.

### **3. The institutionalization of market: from trading and exchange to market economy.**

The procedure of "Exchangeable or Tradable or Transferable Emission Allowances" is mainly known today with the scientific term "Tradable Emission Permits". The term Tradable Emission Permits refers to the commercial method of confronting environmental problems, the operation of which is based on the allocation of allowances – which correspond to a specific quantity of pollutants – among polluting units. Governments adopt more and more rigorous restrictions

for pollutants emissions reduction and develop allowances and permits market mechanisms with the creation of institutionalized pollution allowances, which are based on a system of issuing permits that allow the emission of a specific quantity of pollutants while, at the same time, they exploit market and competition mechanisms. These permits have financial value and are exchangeable (they follow the in force legislation regarding the legal terms of allowances exchange, meaning selling with or without exchange in money or in goods), they are transferable (meaning that they follow the in force legislation regarding the legal terms of transfer and selling with financial return) and tradable (therefore, they follow the in force trade regulation, which may be considered as commercial transactions in the market or stock exchange). This method provides the possibility to units confronting high costs of emissions control, not to exceed emission levels, by purchasing allowances from other units that emit at levels lower than those determined by national legislation or possess a surplus of allowances due to activity (L.3017/30-05-2002 – OFFICIAL JOURNAL OF THE HELLENIC REPUBLIC 117 issue A' Kyoto Protocol Validation – CMD 54409/2632/04 Greenhouse gas emissions trading scheme), harmonized with the EU Directive (2003/87/EU of the council of the 13/10/2003, amended by the EU Directive 2004/101/EU of the 29/1/2004 which is in force today and has been established and fully harmonized with the Kyoto Protocol – convention). The above comprise today very effective tools for the “internalization”, meaning the integration of environmental services costs, damages and their remedies in the price of goods, services and activities that cause them, the participation in the Polluter Pays Principle (PPP) and the integration of economic and environmental policy.

#### **4. The Carbon Market Operation Mechanism**

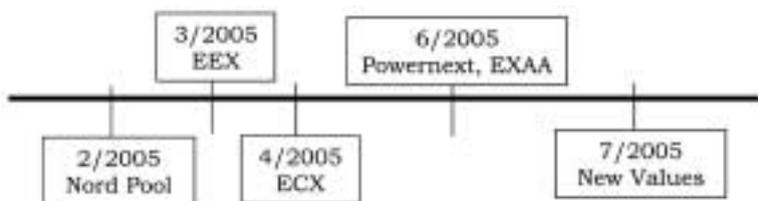
Carbon dioxide emissions market, in the framework of the EU Emission Trading System, was developed according to a political decision of the EU member – states for the valorization of flexible Kyoto Protocol mechanisms. It is, therefore, obvious that political decisions and political facts related to emissions trading determine, to a great extent, the operation and evolution of the market, which will be examined under this context. Necessary requirements for the creation and the operation of a market are the existence of a relevant good, the exchange of specific amounts of this good and the attribution of a value to this good, each specific moment. In this case, the good under negotiation and exchange in the market is the European Union Allowance (EUA).

### 1. In emissions allowances trading

- The term “tradable emission permit” practically equals to a polluting unit capable to be purchased or resold. It is an economic and environmental tool, which aims in the creation of new markets. It increases the ability of industry to achieve more reductions in the emissions or to achieve those more shortly. To achieve greater economic or environmental efficiency, the system should assure that every unit’s emissions are equal or fewer than the corresponding permits. A dominant factor is the development of new technologies. Market mechanisms are used to ensure that emissions reductions are achieved at the least possible cost. Emissions trading constitutes a program, according to which, greenhouse gases emission permits are allocated to companies (units) so that they can subsequently trade with each other.
- Applicable in different levels
  - Between states (Kyoto)
  - Companies in a state/market (EU-ETS)
  - Within a company (Shell BP)
- and products
  - CO<sub>2</sub> SO<sub>2</sub> GHG NO<sub>x</sub>

The market began to operate in January 2005, when EU ETS was introduced. Initially, negotiations were carried out only in broker houses, until February 2005, when the energy stock exchange Nord Pool offered services related to EUAs transactions. In March 2005, the German energy stock exchange EEX entered the CO<sub>2</sub> market. In the ECX stock exchange, the first EUAs transaction contract was realised on 22 April 2005, and since then ECX dominates the market. Powernext and EXAA energy stock exchanges began their operation in the EUAs sector on the 24<sup>th</sup> and 28<sup>th</sup> of June 2005, respectively. Finally, the Dutch energy stock exchange New Values began to operate in July 2005.

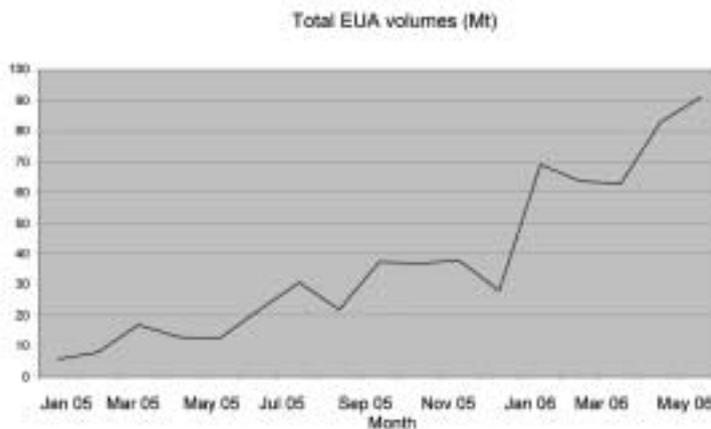
**Diagram 1.** Time series of the beginning of EUA stock exchanges operation.



During the first months of 2005, when the market was still at the beginning, the volumes and the prices of EUAs in the individual stock exchanges remained at low

levels. In the summer of 2005 a substantial increase in EUA volumes and prices was observed, as a consequence of market maturation. The total EUA volumes transactions in Over the Counter (OTC) stock exchanges are presented in diagram 2. January 2005 presents a low level of volumes. There is an increase in March due to the beginning of EEX and ECX operation. Volumes continue to increase in the summer of 2005 and this fact is related to the beginning of Powernext and EXAA operation as well as to the market maturation. After a small decrease in the fall of 2005, the ascending trend continued in 2006, and in May 2006 reach very high levels.

**Diagram 2.** *EUA volumes per month.*



## 5. OTC transactions

OTC transactions comprise roughly the 50% of the total of transactions in the European Market. This percentage declines continuously, as the European stock exchanges are better organized and the Stock Exchange brokers prompt more and more customers to them. However, OTC transactions offer a series of advantages and it is expected that they will continue to take place in the future and comprise an important proportion of the market.

An OTC transaction takes place between a buyer and a seller, via a broker. The special terms and conditions of transaction are either arranged by the interested parties or –most of the times - follow one of the internationally accepted models (OTC trade agreements) that have been developed for this aim. At this time, three models, developed by international organisations, are used:

- ISDA (International Swaps and Derivatives Association): The ISDA has published a “transaction confirmation” model that can be used between two negotiating parties, especially for the transaction emissions allowances. The model follows the general rules that are applicable to ISDA for the transactions of merchandizes and financier products and, consequently, can be also used for derivative products of emissions allowances. The models of ISDA are preferred mainly by banking institutions, as they allow them to act simultaneously as financier institutions and market-makers.
- EFET (European Federation of Energy Traders): The EFET has developed a model contract on electric energy and natural gas transactions. This contract consists of a basic document (master document), which determines the terms of transactions and is signed first by the two parties and of a confirmation document for each transaction (transaction confirmation). This method allows the liquidation of multiple transactions between a buyer and a seller and, consequently, decreases the credit danger. The model of EFET is preferred in the transactions between energy enterprises.
- IETA (International Emissions Trading Association): IETA is a non-profit international organisation in which a substantial number of bound enterprises and Stock Exchange agencies participate. IETA attempts the development of an internationally acceptable and functional system for the transactions of emissions allowances. In this framework, it has developed and published the “IETA Emissions Trading Master Agreement” which in its simple form is called “Single Trade Agreement”. These documents constitute model contracts that determine the terms of transactions between two interested parties. These specific contracts do not allow the liquidation of multiple transactions (netting). The model of IETA is preferred in the transactions of smaller enterprises.

**Diagram 3.** *EUA price and important facts.*

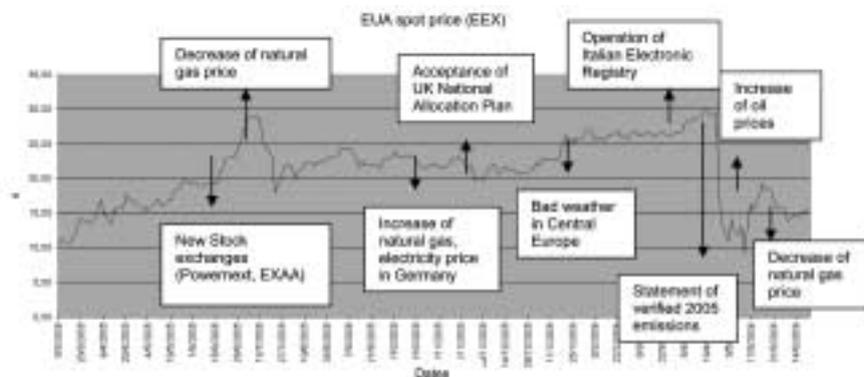
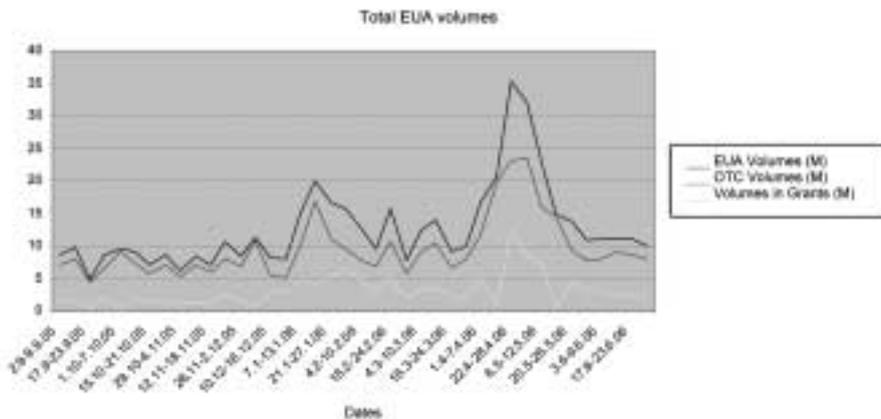


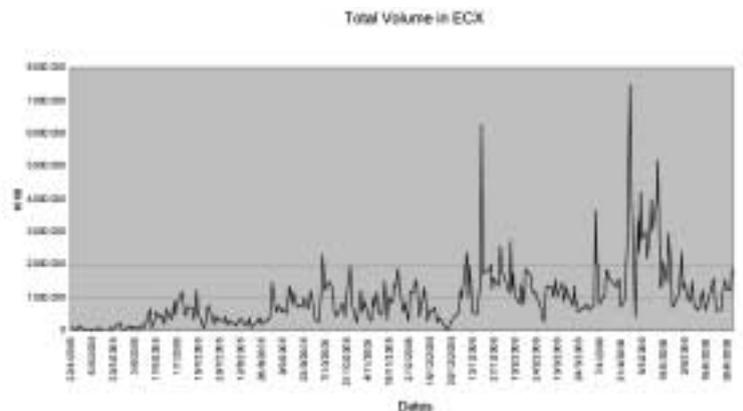
Diagram 4 presents the total EUA volumes transactions from September 2005 to June 2006, as well as which proportions of transactions have been conducted in stock exchanges (spot and time contracts) and OTC. The majority is OTC transactions, while the percentage of transactions in the stock exchanges increases in 2006, a fact that reflects the maturation of market.

**Diagram 4.** *EUA volumes in Stock exchanges and OTC.*

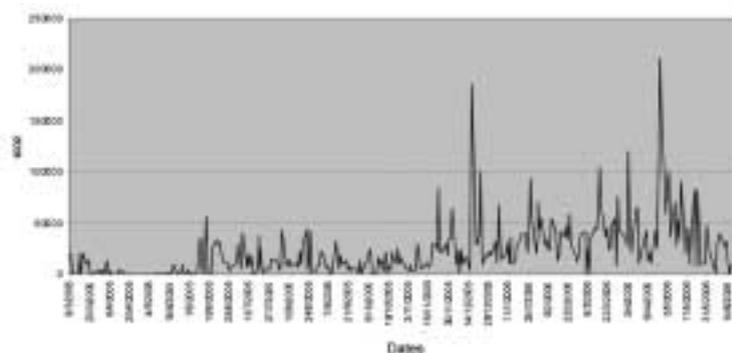


Emissions allowances are negotiated in the European stock exchanges of energy products. The energy stock exchanges were a result of the release of electric energy in the European Union at the beginning of the decade. Their basic operation is the negotiation of electric energy and natural gas. The negotiation concerns both direct transactions (spot) and transactions of derivatives (derivatives). Since the beginning of 2005, most energy stock exchanges have also undertaken the transactions of emissions allowances. Until the end of March 2006 eight stock exchanges of this kind existed:

- **European Climate Exchange (ECX):** ECX resides in Amsterdam and is the largest allowances stock exchange in Europe, in terms of volumes of transactions and turnover. It is an affiliated company of Chicago Climate Exchange (CCX) and has been specialized in the market of emissions allowances and their derivatives. In the year 2005 a total volume of 81.725.000 allowances has been transacted. The ECX offers spot transactions, futures (via company ICE) and EFP service for the reduction of OTC actions risk, via their connection with derivative products. ECX web address is: [www.europeanclimateexchange.com](http://www.europeanclimateexchange.com). In the web pages of ECX the indicator ECX/CFI is published on a daily basis, with prices of future contracts with time of delivery the 12/2006 and the 12/2007.

**Diagram 5.** Total volumes in ECX.

- European Energy Exchange (EEX): EEX is the energy stock exchange of Germany. It has operated since 2000 in Leipzig offering the possibility to negotiate energy products and their derivatives. The negotiation of emissions allowances began in February 2005. The volume of transactions for 2005 was roughly 3.180.000 allowances. EEX undertakes spot transactions and future contracts. The web page of EEX ([www.eex.de](http://www.eex.de)) presents daily prices of closure and volumes of transactions.

**Diagram 6.** Daily volumes in EEX.

- Nordpool: Nordpool is the energy stock exchange of Scandinavian countries (Norway, Sweden, Finland, Denmark), which resides in Norway. It began to operate in the early 1990s with the negotiation of electric energy. At the beginning of 2005 it was the second biggest stock exchange of allowances in terms of volumes of transactions (a total of 28.177.000 allowances). Its web address is [www.nordpool.no](http://www.nordpool.no). In its web pages the daily prices of closure of futures of spot and derivatives allowances are published.

- **Powernext:** Powernext is the energy stock exchange of France. It has operated since the end of 2001, offering the possibility to negotiate energy products. Since June 2005 it began its operation in the market of emissions allowances. The volume of transactions for the 2005 was 4.372.000 allowances. At this time, it undertakes only spot transactions. Its web address is: [www.powernext.com](http://www.powernext.com). In its web pages the prices of closure, the volume of transactions and historical statistical elements are presented.

There are also other operating stock exchanges such as: Energy Exchange Austria (EEXA) with low volumes of transactions, and especially spot transactions. The Climate Exchange Alliance (Climex) is an electronic platform of allowances transactions in which mainly Dutch, United Kingdom and German companies participate. So far, the volumes of transactions are very low. Gestove Merkato Electrico (GME), the energy stock exchange of Italy, has also expressed its intention to operate. And the stock exchange of Poland has expressed its intention to begin in the near future.

In diagram 6 the trend of EUA prices in spot transactions in the EEX stock exchange is presented. Price increases regularly until June 2005, when an abrupt rise is observed. In July an abrupt fall is observed, but the price is stabilized at a level higher than the one before rise. Small increases are also observed in January and at the beginning of April 2006, while at the end of April an abrupt fall is observed, which is owed to the statement of the total emissions of EU countries - members that were lower than the expected and lower than the distributed quantities of allowances. This fact created great uncertainty to the market, which became obvious with the great mobility of distributed volumes and with an abrupt fall of the EUA price. However, at the end of May 2006 a small increase was observed and at the beginning of June a small fall and a stabilization at a level higher than that of the beginning of May 2006. Diagram 7 presents the trend of the average EUA price per month from March 2005 to June 2006.

**Diagram 7.** *EUA prices in EEX.*



## 6. Carbon funds

Carbon funds were developed in accordance with the corresponding financier products (eg mutual funds) and constitute an alternative solution for the allowances market offering prices lower than the current Stock Exchange ones. Carbon funds ensure carbon credits from their participation in JI (Joint Implementation) and CDM (Clean development Mechanism) projects and, potentially, from Stock Exchange transactions of emissions allowances that are conducted centrally by the administrator of each fund.

Until March 2006 more than 50 carbon funds had been developed. It should be noted that each enterprise that wants to participate in a carbon fund must first check two very important factors:

- The expected cost per equivalent ton of carbon: even if in the international market, prices that oscillate between 7-20 €/ton of carbon dioxide are reported, they are still theoretical, as they are based on budgets of CDM and JI projects, which have not yet been completed and, therefore, it is not possible to know the exact final cost.
- Many of the carbon funds participate (or express the intention to participate) in CDM and JI projects, which have not yet been certified by the corresponding national authorities or even by the UN. Therefore, we are not able to know to what extent they will be implemented and how many carbon units they will provide.

The most important active carbon funds are([carbonfinance.org](http://carbonfinance.org)):

- Prototype Carbon Fund (PCF): It is developed and administered by the World Bank and six governments and seventeen companies participate. According to the administrator of PCF today, roughly 30.000.000 carbon funds are ensured from the participation in 25 CDM and JI projects.
- Community Development Carbon Fund (CDCF): It is developed by the IETA and nine governments and sixteen companies participate. According to the administrator of CDCF, roughly 800.000 carbon funds have been ensured from four CDM projects so far, while another fourteen CDM and JI projects are promoted, which are expected to further ensure roughly 5.000.000 carbon funds. The CDCF promotes mainly small CDM projects with less bureaucracy and smaller time of completion.
- The Netherlands EBRD carbon fund: It was developed by the European Bank for Reconstruction and Development and the government of Holland. It mainly invests in JI projects in Eastern Europe.

## 7. Allowances prices – Trends of Carbon Markets

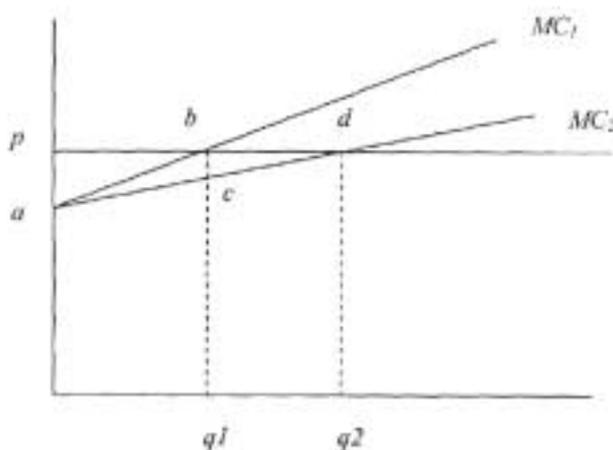
Carbon Market has been particularly fluctuating. The prices vary to a great extent from 0,10-30 €/ton. It is characterized by relatively low liquidity and few participants, while European companies and mainly energy producers have a dominant role. New derivative carbon products constantly appear in the market. The factors which influence a product's price and especially the price of allowances are:

- National Allocation Plans: The potentiality to achieve quantitative engagements of the Kyoto Protocol, the inclusion of activities that are not so far included in the emissions trading scheme (eg road transportation), the possibility to expand the scheme to air transportation and the possibility to transfer a percentage of allowances to certain countries through auctions are factors that contribute to the formulation of prices of allowances transactions.
- Flexible Kyoto mechanisms - CDM and JI mechanisms produce allowances, which are transferred to allowances markets and influence the total offer. - The most important parameter in this area is the certification of these programs by the special secretariat of UN (during certification, the quantitative reduction in emissions achieved by each project is determined and consequently the quantity of the equivalent of carbon dioxide of coal that enters the market for negotiation is determined, too). - A second parameter of increasing importance is the transfers announced by the “mutual carbon funds” that invest in CDM and JI projects, with the aim to produce tradable allowances.
- Market: the general market situation influences the negotiation of allowances price, in the same way it affects the negotiation price of most products (allowances are considered as intangible products). - It is obvious that periods of economic growth encourage the increase in production and consequently the increase in greenhouse gases emissions as well as the increase in the price of allowances. - The price of fuels appears to be the most important factor for the determination of the price of allowances. – To be more precise, the spread of the Stock Exchange prices of coal and natural gas determines the fuel that European companies of energy will use for the production of electricity. While the use of coal lead to considerably bigger CO<sub>2</sub> emissions, the reduction in its price, concerning natural gas, lead to the increase in its use and, consequently, to the increase in prices of allowances. – On the contrary, the reduction of price of natural gas, in relation to coal, leads to reduction of price of rights.

- Demand of electric energy in the household sector. - Therefore, weather conditions that increase the demand (very low or high temperatures) lead to bigger production of electric energy and consequently to bigger emissions of carbon dioxide, increasing the negotiation price of allowances.

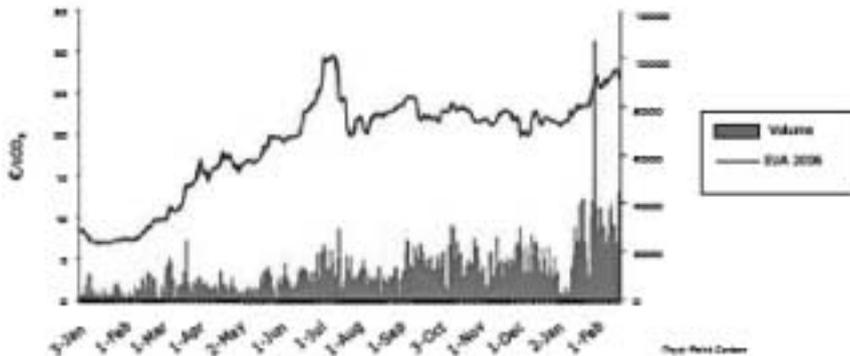
An important advantage of exchangeable allowances is that they comprise a strong incentive to enterprises to reduce their emissions in the long term in relation to the optimal pollution values with investments in “clean” technologies. This has been argued by Millman and Prince (1989) and Downing and White (1986) and is presented in the following diagram:

**Diagram 8.** Innovation in emission permits market by Millman and Prince.



$MC_1$  is the MAC line in the case of old technology and  $MC_2$  is MAC in the case of “clean” technology. If the enterprise has an optimal pollution value equal to  $q_1$ , by adopting a new, “clean” technology, the enterprise can economize the region (abc). According to the system of transferable emission permits, where the price of permit is  $p$ , the enterprise selects to emit according to the old technology  $q_1$  while with the use of new technologies, it decreases its emissions to  $q_2$ . Thus, it has a further control cost ( $q_1cdq_2$ ) but sells permits at a value ( $q_1bdq_2$ ). This means that, finally the enterprise gains a lot more by using the system of transferable emission permits in relation to optimal emission values and is more likely to invest in “clean” technology. Many authors, reported in bibliography, investigate the ambiguity of the potentiality of the command and control system to provide an incentive to enterprises to invest in innovative technologies.

**Diagram 9.** *EUA allowances prices (€/ton CO<sub>2</sub> eq).*



## 8. Carbon transactions in the carbon market

Transactions of tradable emission allowances and trading of permits have been known with the term “carbon transactions”. This term refers to trading contracts, in which the buyer pays the seller a return for a specific quantity of greenhouse gases emissions, either with the form of “permits” or with the form of “credits” (or exchanges), that the buyer can use to achieve the goal of compliance in relation to the deterioration of climatic change and greenhouse gases emissions. The payment for the reduction in emissions can be conducted in one or more of the following ways: money deposit, owners’ funds, convertible loan or contributions in kind, such as the provision of technologies for the reduction of greenhouse gases emissions.

Carbon transactions can be grouped in two categories:

- Transactions based on permits (Allowance-based transactions), according to which the purchaser buys emissions permits that have been created and shared (or auctioned) by the regulators of limit - and - trade, such as AAUs (Assigned Amount Units - ascribed quantitative unit of the Kyoto protocol) or EUAs (European Union Allowances – Tradable Emission Allowances of the European Union). These frameworks combine environmental effectiveness (as it is fixed by the real level of limits that have been determined) and flexibility, via the trading activity, so that the contracting parts achieve the compliance objectives at the minimum cost.

- Transactions based on credits CER (Certified Emissions Reductions - Certified emissions reductions of the CDM {Clean Development Mechanism}), according to which a purchaser buys emissions credits from a project that is able to verify the reductions in greenhouse gases emissions, in relation to what would have happened differently. Known examples are the framework of Joint Implementation and the Clean Development of the Kyoto Protocol that create ERUs (Emission Reduction Unit) of the JI (Joint Implementation) mechanism and CERs contract, respectively. These specific mechanisms have high environmental reliability, as they are developed with the use of approved methodologies. Limits and Trade programs, applicable for the period 2008 - 2012 allow, to their biggest proportion, the import of credits for compliance reasons. For example, ERUs and CERs published and transferred in an account of a registry can be used to satisfy obligations that concern the Kyoto Protocol. As soon as credits are published and transferred to the place and time period necessary for achieving compliance, they can be considered as permits. Contrary to permits, they comprise financial assets through a project procedure and can be characterised by a substantially higher transaction cost. For example, a CER contract bears the following risks:
  - Legally it does not exist until the corresponding volume is published, it depends from the volume's output and the real quantity issued, and, finally, its transfer to the purchaser's compliance register requires that the International Transaction Log (ITL) is operating.
  - It is not valid for compliance (despite its high commercial value), until it is transferred to the purchaser's account in the CDM register, and loses its transferability beyond borders before 2008.

In general, projects should be designed, funded and implemented according to a plan and they should operate in the way they were initially designed so that credits of emissions reduction can be transferred wherever and whenever it is required. The regulators must publish permits in the countries of purchasers and sellers.

Moreover, the concern for delays in the application of ITL limits the self-confidence of market regarding the availability of credits for compliance. While the first credits have already been published, some observed that, in certain projects, there was an over-estimate of the volume to be created. Moreover, from January 2005, CER contracts are generally traded in prices lower than EUAs, a fact that reflects some of these risks.

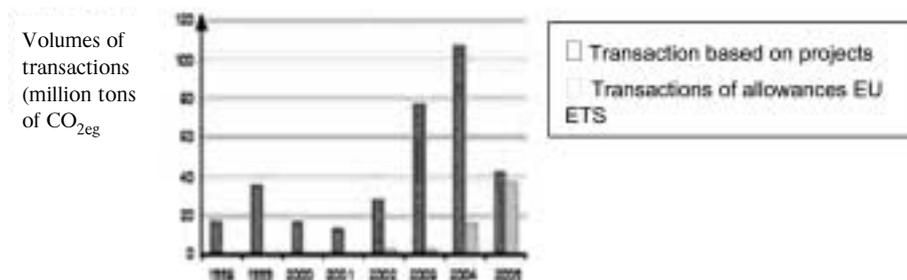
Historically in EU, the progress of transactions indicates that before the period 2008-2012, member - states did not have any quantitative goals, but, on the contrary, according to article 3, paragraph 2 of the Kyoto protocol, they need to realise tangible progress by 2005 as far as quantitative goals for 2008 -2012 are concerned.

Different estimates exist for the demand of total allowances in EU. The approval of NAP (National Allocation Plans) resulted to the decrease in political uncertainty. However, economic factors and climatic changes can be unpredictable factors. The weather has an impact on the energy industry as potential harsh winters in Europe could instigate the demand for energy and lead more producers to allowances deficits. Indicatively, it is reported that according to estimates, if the increase in emissions inside the EU is 0,5% per year higher than expected, then this will be translated as a surplus of demand of 40 millions tons of CO<sub>2</sub> per year.

Irrespectively of the total offer and demand, there will be companies with a surplus (ie. sellers) and others with a deficit (ie. buyers) of allowances. Despite the fact that allowances allocation based on National Allocation Plans can be characterised as rather “generous”, some companies, and especially energy producers have reached their maximum limits, which will result to a deficit of allowances.

The following diagram presents transactions based on plans and corresponding allowances in the market fluctuation by 2005.

**Diagram 10.** *Transactions in the Carbon Economy.*



## 9. Conclusions

The observation of the carbon market and the investigation of its progress highlight the following:

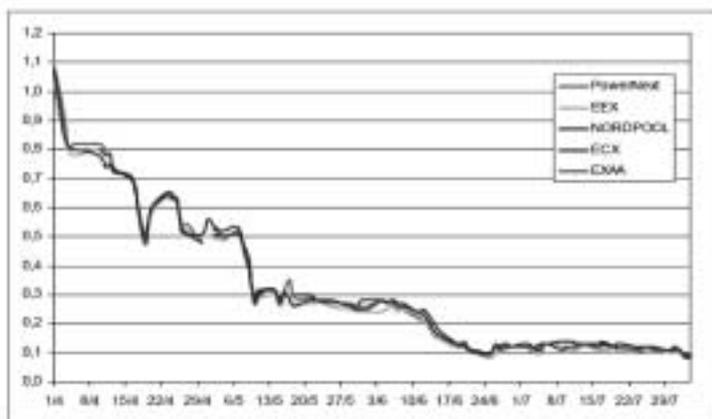
At the end of April 2006 carbon dioxide allowances reached the price of 0,50€/t CO<sub>2</sub> in spots Stock Exchange, following an intense descending trend after the midst of 2006. In the second four-month period of the year the descending trend continued. At the beginning of May the price reached 0,30€/t CO<sub>2</sub>, and was stabilised for approximately one month. However, in June, devaluation continued

and at the end of the month the price reached 0,10€/t CO<sub>2</sub>, and since then it remained at the same levels. The progress of price indicates the devaluation of allowances, and, taking into consideration the administrative cost of transactions, there is no reason to proceed to transactions since sellers addressing to Stock exchanges do not gain any profits. As an indication, we mention that the portal of PointCarbon does not publish spot prices by the mid of June. On the contrary, the future contracts market for dates after 2007 presents a substantial growth and, in essence, the four biggest European Stock exchanges undertake only these transactions. The following diagram presents the progress of the allowances stock exchange spot price for the period April - August 2007.

The two main sectors of the carbon market comprise transactions based on credits of project mechanisms and transactions of allowances (EU ETS, AAU, Kyoto).

The overwhelming majority of the transactions volume concerns transactions based on credits with the aim to comply with the Kyoto protocol. However, transactions based on allowances rapidly increased with the introduction of ETS in the EU in 2005 and continue to increase with the stabilisation of market.

**Diagram 11:** Progress of the allowances spot price of closure in European Emissions Stock exchanges for the period April – August 2007.



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# THE IMPACT OF ENTERPRISE RESOURCE PLANNING SYSTEMS ON ACCOUNTING PROCESSES AND ACCOUNTANTS' ROLE: A GREEK EXPERIENCE

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## Abstract

In the recent years, firms worldwide have made substantial investments in implementing Enterprise Resource Planning systems (ERPs). Software vendors mention that ERPs can integrate more than 12 different modules or processes within an organization. Although, accounting module is characterized as the heart of ERPs, researchers have largely ignored their impact on accounting. Thus, the purpose of this study is to indicate how, and to what extent has the implementation of ERPs influenced the accounting processes and the role of accountants. The current study has adopted a qualitative and descriptive research method. Specifically, case studies in three Greek small-sized firms were conducted for research purposes. The findings of this study indicate that properly selected and appropriately implemented ERPs significantly benefit accounting processes, and upgrade accountants' role. On the basis of the findings, this study highlights the need for a right ERP adoption towards achieving the benefits expected from the investment.

*JEL classification: M15, M41, O33.*

*Keywords: ERPs, Accounting Processes, Accountants' Role, Small-Sized Firms, Greece, Case Studies.*

## 1. Introduction

In the recent years, firms worldwide have made substantial investments in implementing ERPs (Botta-Genoulaz and Millet, 2006; Hendricks et al., 2007; Holsapple and Sena, 2005; Mabert et al., 2001; Yen and Sheu, 2004). 'ERPs are software packages that enable the integration of transactions oriented data and business processes throughout an organisation' (Boonstra, 2006, p.38). These systems have successively renamed from Manufacturing Resource Planning (MRPII) to ERPs during the 1990s on the occasion of their functional and technological expansion (Olhager and Selldin, 2003). More than 30,000 companies over the world have implemented ERPs since the mid-1990s (Bendoly et al., 2004).

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The firm size appears to play no role in the decision to adopt these systems, as according to O'Leary (2002) and Sun et al. (2005), ERPs have been adopted not only by large, but also by medium and small-sized firms. Approximately 39% of large companies and 60% of smaller companies have implemented ERPs (Yen et al., 2002). Hewlett Packard, Monsanto, Nestle, Microsoft, and IBM are some typical examples of firms, which have adopted ERPs over the past few years (Parush et al., 2007). There are major business drivers behind ERPs implementation, such as increased demand for real-time information, facilitation of e-business, improved productivity, improved quality, satisfaction of customers demands, and, in general, enhanced competitiveness.

SAP R/3, PeopleSoft, Oracle Applications, J.D. Edwards, and Baan are the most famous ERPs. Known as the "Big-Five" of ERP software, they control approximately the 70% of the ERP market share (Mabert et al., 2001). Software vendors mention that ERPs can integrate more than 12 different modules or processes within an organization (Berchet and Habchi, 2005). The main processes are: accounting, finance, sales and distribution, marketing, production planning, manufacturing, materials management, human resources, purchasing, and quality management. ERPs support all these functions by using a single database, which promotes the integration (Liao et al., 2007) by collecting and storing data within the organization in real time (Abdinnour-Helm et al., 2003). The selection of the modules for implementation is made under the needs of the organization and the required balance between flexibility and standardization (Parush et al., 2007).

It is important to note that ERPs are complex information systems (Aloini et al. 2007; Bueno and Salmeron, 2008; Chand et al., 2005; Mabert et al., 2001; Somers and Nelson, 2004; Umble et al., 2003). As a consequence, their implementation usually requires one to five years (Mabert et al., 2003), and costs tens of millions of dollars for medium-sized firms and hundreds of million of dollars for large firms (Mabert et al., 2001). Thus, implementation of ERPs requires considerable investment in time and money. Despite this fact, the outcome is uncertain. Implementation of ERPs often ends up to failure (Bradford and Florin, 2003; Gattiker and Goodhue, 2004). For instance, Donovan (2000) presents that over 90% of the companies, which have adopted ERPs, failed to properly implement them on their first attempt. Poor management of the implementation process is the main failure factor (Donovan, 1999; Yusuf et al., 2004). 'Software vendors try to sell their ERPs with "industry best practices", which are generic business processes that may differ substantially from the way any particular organization operates' (Amrani et al., 2006, p.80). The implementation of ERPs should involve a process of customizing the generic package, and strategically aligning it to the specific goals of the organization (Soffer et al., 2003).

Despite the belief among chief executive officers that almost the two-third of ERPs are said to be failures, reality shows that corporate world is increasingly adopting ERPs (Sarkis and Sundarraj, 2003). This possibly results from the significant benefits that the successful implementation of ERPs promises. For example, some general perceived benefits from ERPs implementation are: seamless integration of processes across departmental and geographical borders with improved work flow and shorter response to customer demands, automation of various business applications, up-to-date operational data, improved order management, financial management and knowledge management, and reduced costs.

As indicated in the following subsection, accounting is one of the areas most that has been influenced by the implementation of ERPs. 'Accounting is the process of identifying, measuring and communicating economic information to permit informed judgements and decisions by users of the information' (American Accounting Association, 1996, p.1). Accounting is distinguished in two main branches: management accounting and financial accounting. 'Management accounting is that branch of accounting concerned with the provision of information intended to be useful to management within the business' (Alexander and Nobes, 2007, p.5). 'Financial accounting is the branch of accounting concerned with classifying, measuring and recording the economic transactions of an entity' (Collis and Hussey, 2007, p.7). Thus, as Drury (2004) suggests, management accounting and financial accounting could be in other words called internal accounting and external accounting, respectively. Spathis and Constantinides (2004) characterize accounting module as the heart of ERPs.

## **1.1. Background of the research**

Empirical evidence reveals a number of changes in the accounting processes arisen from the implementation of ERPs. However, the impact of ERPs appears to be different across the two main branches of accounting. Previous research provides evidence that ERPs benefit financial accounting more, and management accounting less. It is important to note that regarding the effects of ERPs on management accounting, previous studies do not provide similar results. On one hand, a number of studies (see Dechow and Mouritsen, 2005; Granlund and Malmi, 2002; Rom and Rohde, 2006; Scapens and Jazayeri 2003) suggest that ERPs slightly influence management accounting. On the other hand, other studies (see Jackling and Spraakman, 2006; Spraakman, 2005) indicate that ERPs have a strong impact on management accounting. Regarding the effects of ERPs on the other main branch of accounting, prior research (see Dechow and Mouritsen, 2005; Spathis, 2006; Spathis and Ananiadis, 2005; Spathis and Constantinides, 2004; Sutton, 2006; Velcu, 2007) confirms that financial accounting derives significant benefits from

ERPs implementation. The changes that ERPs appear to bring to accounting practices led researchers to examine whether ERPs have changed the role of accountants. Previous research (see Caglio, 2003; Granlund and Malmi, 2002; Newman and Westrup, 2005; Sayed, 2006; Scapens and Jazayeri, 2003) provides evidence that ERPs expand and upgrade accountants' role. Thus, emerging from the relevant literature, it can be said that ERPs influence accounting processes, and, in turn, change the role of accountants.

## **1.2. Rationale for the research**

Due to the fact that ERPs radically change information processing orientation, Sutton (2006) logically infers that ERPs fundamentally influence accounting area. However, as he notes, researchers have largely ignored this phenomenon. Hence, this study focuses on the implications for the accounting processes and the role of accountants, due to the operation of the former in ERP environment. Most of the existent relevant studies have been concentrated on the impact of ERPs on management accounting. However, the literature review (see Section 2) reveals that the effects of ERPs on management accounting are not yet clear, and reflects the need for further research on this issue. As to financial accounting changes involved in ERPs adoption, although the existent literature suggests that ERPs considerably benefit financial accounting, it appears (see Section 2) that this topic has not been adequately examined. In addition, most studies have focused on the benefits for the accounting processes involved in adopting ERPs, while others, which have also examined potential problems, they have been limited to the general problems that ERPs create to enterprises. Thus, it can be inferred that the potential problems that ERPs have brought to the accounting processes, is an area that has been disregarded. Further, a small number of studies have examined the changes in the role of accountants due to the implementation of ERPs, and provide evidence that ERPs change accountants' expertise, and upgrade their role.

Sutton (2006) points out that there is a great need for more generalized research on ERPs interrelates with accounting, as the general effects are not yet clear. Similarly, Granlund (2007), based on review of published studies in this particular area and on some empirical evidence, he concludes that that there is a limited understanding of the effects of ERPs on accounting. Therefore, it can be argued that the research area of ERPs and accounting necessitates a study, which will examine together all these main topics that have been examined in isolation by other studies to date. Thus, this paper presents such a study, which examines the benefits and the potential problems for the accounting processes, and the changes in the role of accountants that involved in ERPs adoption, gathering evidence from the experiences of three Greek small-sized firms, which have recently implemented

ERPs. The selection of small-sized firms in terms of this study was not coincident. Previous research within the area of ERPs and accounting has gathered evidence from large and medium-sized firms. However, as noted in the beginning of this section, ERPs have been also adopted by small-sized firms. Hence, the present study is intended to provide, in combination with previous research, a more complete picture of the impact of ERPs on accounting processes and accountants' role.

### **1.3. Purpose and objectives of the research**

The purpose of this study is to indicate how, and to what extent has the implementation of ERPs influenced the accounting processes and the role of accountants. It is worthwhile to note that this is the first study within the area of ERPs and accounting with such combination of research purposes. In an effort to achieve the stated aims, this study is intended to attain the following objectives: 1) to carry out a comprehensive literature review towards clearly understanding the relevant research area, and, properly, identifying the research questions; 2) to conduct the research and analyze data, using appropriate methods; 3) emerged from the research findings, to proceed to implications for practitioners and researchers, and make suggestions for future research. It is expected that this study will contribute to the body of knowledge by suggesting that properly selected and appropriately implemented ERPs significantly benefit both management and financial accounting, and upgrade accountants' role.

### **1.4. Structure of the study**

The remainder of this paper is organized as follows: Section 2 provides a review of the major research studies on ERPs interrelate with accounting, and ends up outlining the research questions. Next, Section 3 discusses the methodology followed in this study, firstly describing how the relevant literature was searched, furthermore, analyzing the research approach and explaining the techniques and procedures applied to collect and analyze data. Section 4 presents the case studies, and discusses the research findings. Finally, Section 5 summarizes the main research findings and presents the research contribution, before proceeding to implications for practitioners and researchers, and suggesting possible areas for future research.

## **2. Literature review**

A modest amount of literature in the area of ERPs and accounting has been written to date. Arnold (2006, p.15) indicates that 'the research on enterprise

systems, particularly as it interrelates with accounting, is currently at a relatively foundational stage'. This section gives a critical overview of the major research studies in this area by comparing their findings, and presenting their methodological approaches. This process is intended to help towards identifying the research questions. Research on ERPs interrelates with accounting is reviewed below organized according to research purposes. This structure aims at presenting the findings of similar studies along with their methodological approaches towards assisting the reader in drawing proper conclusions.

### **2.1. ERPs, management accounting and management accountants**

One of the first studies, which investigated the effects of ERPs on management accounting practices and the role of management accountants, was conducted by Granlund and Malmi (2002) in ten large companies in Finland. Data was collected through long interviews with accounting personnel, project managers, and IT managers. The findings of this study suggest that ERPs slightly influence the management accounting processes. The authors argue that ERPs mainly release management accountants from routine jobs, hence enabling them to save time, and, in the long run, to focus on more essential tasks, such as data analysis. A case study was conducted by Scapens and Jazayeri (2003) to examine the changes in management accounting practices of BM-Europe, a European division of a large US multinational company, due to the implementation of the SAP ERP system. In-depth interviews were conducted with accounting and non-accounting personnel for the collection of data. The findings of this study are in line with the study of Granlund and Malmi (2002), and firstly indicate that SAP had a limited impact on management accounting processes. The authors describe that due to some distinct characteristics, such as its integration, SAP mainly influenced the role of management accountants. In particular, SAP reduced the routine tasks of management accountants, created line managers with accounting knowledge, provided more forward-looking information and, in general, expanded the role of management accountants. Similarly, Drury (2004) argues that ERPs decrease the routine tasks of management accountants by enabling them to receive directly the necessary information, due to the fact that these systems integrate different business applications. For this reason, Granlund and Malmi (2002, p.314) infer that 'accountants have more time for performing value-adding activities related to managerial control and decision-making'.

Another study in this area was conducted by Rom and Rohde (2006) to examine to what extent, integrated information systems, such as ERPs influence management accounting. Data was gathered through a survey in 349 companies in Denmark, and the respondents were mainly accountants. The findings of this study

are consistent with the studies of Granlund and Malmi (2002) and Scapens and Jazayeri (2003), and demonstrate that ERPs have an insignificant impact on management accounting. In particular, the authors suggest that ERPs faintly influence processes, such as reporting and analysis, budgeting, non-financial, external and ad-hoc management accounting, and allocation of costs. In contrast to the studies reviewed above, the findings of research carried out by Spraakman (2005) indicate that ERPs considerably influence management accounting. In this study, data was collected through a survey in 71 companies in Canada. A limitation of this study may arise from the fact that in some of these companies the interviews were conducted by telephone, and, as the author states, this process was often affected by other pressing priorities of the respondents. This study provides evidence that ERPs make budgeting, operating statements, forecasting, performance measurement and costing, more detailed and more accurate, and also decrease the time for the preparation of these reports. The same results were reported by Jackling and Spraakman (2006), exploring the impact of ERPs on management accounting through a survey in 90 Australian companies, which have adopted ERPs in the past ten years. The survey contained open-ended questions and was responded by 90 chief financial officers.

Research with some new results in comparison with the studies reviewed above, was conducted by Newman and Westrup (2005), and examined the interrelation between management accountants and ERPs. Based on work of Scarbrough and Corbett, they conducted a survey of Chartered Institute of Management Accountants (CIMA) members, and a series of interviews in a number of companies. A questionnaire was responded by 122 members of CIMA, and 34 interviews were totally conducted in seven UK and two Italian firms. A variety of personnel participated in the interview process (e.g. directors of finance, IT staff, and management accountants). The results of the survey show that ERPs benefit management accounting practices, and change management accountants' role by releasing them from the role of bookkeeper, and simultaneously enabling them to adopt the role of financial analyst. The findings of the case studies establish that ERPs promote a more effective communication between management accountants and other significant parties within the organization. In general, management accountants said that ERPs make their work easier. However, the authors found that in some organizations, other parties, such as IT managers, wrest control from management accountants, and make ERPs work for them.

## **2.2. ERPs, management accounting and financial accounting**

Spathis and Constantinides (2004) explored the changes in the accounting processes of 26 Greek and foreign companies, which function in Greece, due to

their transition from conventional information systems to ERPs. The authors firstly conducted interviews with two ERP providers and two of the 26 companies in order to gain valuable knowledge towards structuring the questionnaire, which was used for the collection of data. This study suggests that ERPs have a moderate impact on accounting processes. In particular, the authors found that ERPs increase the integration of the accounting applications, improve the quality of financial reports, introduce an internal audit function, improve the profitability analysis per business activity and product, and decrease the time required for the preparation of the reports. Further, research carried out by Spathis (2006) examined the benefits for the accounting processes involved in ERPs adoption in 73 Greek and foreign enterprises, which function in Greece. The methodology and the findings of this study are in keeping with the study of Spathis and Constantinides (2004). The author also presents some general problems, which arise from the implementation of ERPs, such as technical and financial problems, employee resistance to change, and changes in the organizational structure.

Research by Dechow and Mouritsen (2005) analyzed how two large Danish firms tried to integrate management and control through the implementation of ERPs. Before conducting the research, the authors participated in six weeks of configuration training at SAP Denmark towards acquiring valuable knowledge on ERPs. In order to collect data, they conducted 34 interviews in two phases. This study, on one hand, indicates that ERPs improve financial accounting by enabling accountants to produce complete balance sheets and income statements more precisely and at time. On the other hand, in one of the two companies they found that most of the management accounting data was routed via complementary reports produced by the add-on information queries. As the authors describe, the ERP system was not able to reflect management accountants' interest in divisional performances. Sutton (2006) examined the role of ERPs in accounting. The author argues that ERPs significantly influence financial accounting by automating the generation of the financial reports and the closure of the annual accounts, and by making them more timely available to decision makers.

However, 'even if ERPs may make financial accounting stronger, they do not automatically make management accounting stronger' (Dechow and Mouritsen, 2005, p.730). For this reason, Sutton (2006) proposes that there is a great need for more generalized research on this area, as the general effects are not yet clear. One phenomenon that is clear, as he states, is that ERPs automate the cost reports generation, and, in the long run, turn management accountants to concentrate on issues regarding the efficiency and the strategic goals of their organization. Similarly, Rom and Rohde (2006) explain that ERPs automate the information generation, and improve the organizing quality of management accounting. For example, in the scope of their investigation in Geneva Steel, a medium-sized firm

operating in the USA, Dillard and Yuthas (2006) present that the company expected staff to be reduced by more than 80%, due to the fact that the accounting functions have been streamlined and automated as a result of the ERP system implementation. Spathis (2006) shows that ERPs lead to a slight reduction of the accounting department staff.

### **2.3. ERPs and accountants expertise**

Research by Sayed (2006) explored the interrelation between accountants and ERPs in a large company in Egypt. Data was gathered through telephone and face-to-face interviews with managers, accountants, and ERP implementers. The findings of this study reveal that ERPs redefine the expertise of accountants, who feel that their knowledge and techniques are necessary for the effective operation of ERPs, and present themselves as the most expert ones to take the advantage of ERPs. Accordingly, Dechow and Mouritsen (2005) argue that due to ERPs, accountants become executives with new auditing competences, and they are also released from routine works, such as information generation. A similar approach was also taken by Drury (2004). In particular, he infers that ERPs expand the role of accountants, because they release them from routine tasks, and, in the long run, enable them to work also as internal consultants in their companies towards providing business support to managers. For instance, Spathis (2006) contends that ERPs allow managers to make improved decisions, based on timely and reliable accounting information. Caglio (2003) examined the changes in the expertise and role of accountants due to the implementation of ERPs. The author conducted long interviews with accountants, managers, IT staff, and final ERP users in an Italian medium-sized firm. This case study indicates that ERPs lead to the creation of hybrid accountants' positions. As the author states (p. 145), the ERP system 'occasioned social dynamics that led to a change in the role and expertise of accountants through a process of consolidation of the embedded modalities of structuration into new structures of signification, domination and legitimation'.

### **2.4. ERPs and accounting information**

Brazel and Dang (2005) investigated the impact of ERPs on the reliability and relevancy of accounting information. They used 204 companies for accounting information reliability analysis, and 202 companies for accounting information relevancy analysis. Using COMPUSTAT they accessed data for the firms three years before and after the implementation of ERPs. Conducting regression analysis on data, they found that after the implementation of ERPs, firms provide external users with less reliable accounting information, while at the same time they are able to reduce the reporting lag (e.g. earlier earnings release date). In other words, the

findings of this study indicate that ERPs, on one hand, decrease accounting information reliability, and, on the other hand, increase accounting information relevancy. Spathis (2006) and Spathis and Constantinides (2004) confirm that ERPs allow accounting information to be generated at time. However, in contrast to Brazel and Dang (2005), who suggest that ERPs make accounting information less reliable, Spathis (2006) asserts that ERPs allow managers to make improved decisions, based on more reliable accounting information.

## **2.5. Concluding comments**

Emerging from the relevant literature, it seems that ERPs have a significant impact on the work of management accountants. ERPs appear to release management accountants from routine jobs, hence enabling them to occupy with more important and essential tasks, such as data analysis. It may be argued that due to ERPs, management accountants leave the role of bookkeeper, and acquire this of financial analyst. Concerning the impact of ERPs on management accounting practices, previous studies do not provide similar results. On one hand, some studies suggest that ERPs slightly influence management accounting processes, such as reporting and analysis, budgeting, and allocation of costs. On the other hand, other studies indicate that ERPs have a strong impact on management accounting practices, as they make budgeting, operating statements, forecasting, performance measurement, and costing, more detailed and more accurate, and decrease the time required for the preparation of these reports. Regarding the impact of ERPs on financial accounting, previous research provides evidence that financial accounting derives major benefits from ERPs implementation, such as higher quality financial reports (e.g. more complete and more precise balance sheets and income statements), decreased time for preparation of these reports, and decreased time for closure of annual accounts.

As also arises from the literature, it seems that ERPs change accountants' expertise, expand their role, and increase their professional prestige. Due to these systems, accountants appear to acquire auditing and consultancy competences. Finally, a small number of studies have examined the impact of ERPs on the accounting information, and confirm that due to these systems, accounting information is generated at time. However, these studies provide different results on the contribution of ERPs to the reliability of the accounting information.

## **2.6. Research questions**

The literature review has raised some issues of concern that have not been adequately examined or touched, and need to be examined further. As mentioned in the beginning of this paper, the purpose of this study is to indicate how, and to

what extent has the implementation of ERPs influenced the accounting processes and the role of accountants. Specifically, this study intends to provide answers to the following research questions, gathering evidence from the experiences of three Greek small-sized firms, which have implemented ERPs over the past few years.

- What benefits and what problems for the accounting processes are involved in adopting ERPs?
- What changes has the adoption of ERPs brought in the role of accountants?
- How, and to what extent has the implementation of ERPs influenced the accounting processes and the role of accountants?

### **3. Methodology**

#### **3.1. Method of literature review**

In order to search widely the relevant literature, the researcher, influenced by Rom and Rohde (2007), followed the next steps: 1) keyword search using major databases; 2) review of relevant journals; 3) review of references of publications identified in steps 1 and 2; 4) identification of publications citing the key publications.

#### **3.2. Research approach**

Emerging from the literature review, it can be estimated that there are two main methodological approaches within the area of ERPs and accounting: surveys and case studies. The case study method is appropriate, when there are “how” or “why” considerations (Yin, 2003). Thus, three case studies were selected for research purposes. According to Yin (2003), there are three different types of case study method: exploratory, explanatory, and descriptive. This paper has presented a descriptive theory, which defined the context for the researcher to follow throughout the study. Hence, the present study has adopted a qualitative and descriptive research method (Berg, 2007). Indeed, a descriptive study aims to learn the “what” and “how” of a topic (Cooper and Schindler, 1998), which determine the type of the research questions of this study.

The case study method does not impose any specific technique, but rather gives a perspective (Bell, 1993). However, it is important to note that as observed in the literature, interview is the technique, which is most frequently used in this method. In terms of this study, the researcher used a structure questionnaire, a technique

that has been applied by academics within the IS research community (see, for example, Lin et al. 2006; Spathis and Ananiadis 2005).

### **3.3. Selection of case studies**

It was decided to conduct the research in three small-sized companies that have recently adopted ERPs. The first company (C1) deals in the field of ventilation, the second company (C2) is involved in providing integrated IT services and automation systems, and the last company (C3) does business in cleaning products. The companies function in Northern Greece, in the wider area of Thessaloniki. This area was selected, because the researcher has access to a number of enterprises. C1 and C2 were satisfied from the investment, while C3 was disappointed. The case studies had also to meet four criteria: 1) operation of the accounting processes in an ERP environment; 2) existence of previous experience of operating the accounting processes in conventional information systems; 3) the ERP implementation involved the integration of a significant number of applications; 4) at least two years interaction experience with the ERP system.

### **3.4. Method of data collection**

In an effort to provide accurate information regarding the impact of ERPs on accounting processes and accountants' role, data was collected through a structured questionnaire. The questionnaire form is divided in three main parts. The first part includes some questions around the ERPs and their implementation. Such questions raise interest, and should be placed at the beginning, when the researcher relies on the respondent to fill the questionnaire (Burgess, 2001). The second part contains four questions on a seven-point Likert scale towards eliciting respondents' attitudes on the extent of the impact of ERPs on accounting processes and accountants' role. A list of factors to consider in terms of this part, were generated from the relevant literature. The questionnaires of Jackling and Spraakman (2006) and Spathis and Constantinides (2004) that were used in order to examine the impact of ERPs on accounting processes were also regarded. Lastly, the third part includes typical questions about the companies and the respondents. These are easy to answer questions and were left until the end, 'when the respondents have committed themselves to answering and they are less likely to object to giving such data' (Burgess, 2001, p.7).

Logically assuming that in a complex and changing environment, people appreciate reality on an individual basis, based on their own experiences, backgrounds or level of education, five questionnaire forms were sent to each of the three small-sized companies. From the totally 15 questionnaire forms that were distributed, 13 of them were returned completed. The questionnaire forms were filled by a variety of personnel, such as financial directors, accountants, and IT managers.

### **3.5. Method of data analysis**

After receiving back the questionnaires, the analysis of data was started. The researcher used a simple and valid technique, which is very often applied by researchers (see, for example, Lin et al., 2006), who use Likert scale questionnaires. This technique is the mean score, which in terms of this study, was calculated from respondents' feedback on the seven scale questions included in the second main part of the questionnaire. Thus, the researcher used the Excel software instead of SPSS which is appropriate for more complex calculations, and calculated the mean score through the function "average".

## **4. Findings analysis**

### **4.1. Background of case studies**

The three Greek small-sized companies adopted three different ERPs from two different software vendors. The first company, which adopted an ERP solution, was C3 in 2003, next, C1 in 2004, and, lastly, C2 in 2006. A background of the case studies is provided in the following.

*Case 1:* C1 adopted a suitable ERP system, as it is specifically designed for small-sized enterprises. Its implementation required one year and was accompanied by a series of supporting services provided by the specialized staff of the ERP provider. It is important to note that these services involved the strategic alignment of the enterprise requirements with the ERP system capabilities. C1 is highly satisfied from the selected ERP system, as it daily derives the benefits expected from the investment.

*Case 2:* Although C2 is a small-sized business, it adopted an ERP system, which is suitable for medium-sized firms. C2 is increasingly growing, and this is possibly the reason that pushed the company in adopting this system. Its implementation lasted only two months. C2 is involved in providing integrated IT services, and, therefore, it is reasonably expected that its staff in collaboration with this of the ERP provider had the know-how was required for the implementation of the ERP system. However, instead of the extensive know-how in implementing ERPs, the fact that selected ERP system is suitable for medium-sized firms does not possibly allow it to be in complete strategic alignment with C2 specific goals.

*Case 3:* C3 failed to adopt a suitable ERP system. The selected ERP system is specifically designed for medium-sized enterprises with increasing growth. However, C3 is a small-sized business with slow and constant growth. Apart from

the ERP selection, the company was also disappointed from the implementation team was employed by the ERP provider. As the financial director of C3 notes, 'the cost of the implementation was very high, and at the same time, the lack of know-how in implementing ERPs was obvious'. However, it can be reasonably concluded that the ineffective implementation was mainly a consequence of a mistaken ERP selection.

## 4.2. Presentation of findings

### 4.2.1. ERPs and benefits for accounting processes

The ERPs have brought positive changes in the accounting processes of the three Greek companies. It is obvious from Table 1 that C2 and, especially, C1, are the companies, which have derived the most significant benefits. As to C3, after the implementation of the ERP system, there was only a slight improvement in both management and financial accounting practices.

**Table 1.** Benefits for the accounting processes of C1, C2, and C3 due to ERPs implementation.

	Mean score		
	Case 1	Case 2	Case 3
<i>Management accounting</i>			
Improved internal control	5	4.6	3
Improved profitability analysis	5	3.8	2.5
Improved forecasting	4.5	3.2	2.25
Improved operating statements	4.5	4.2	2.5
Improved budgeting	4.75	3.4	2.75
Improved costing	5.25	3.2	3
Improved performance measurement	5	3	2.75
Decreased time for preparation of reports	5	4.2	3
Improved quality of reports	5	4.2	2.5
<i>Financial accounting</i>			
Decreased time for closure of monthly accounts	5.5	4.8	3
Decreased time for closure of annual accounts	5.5	4.6	3
Decreased time for transaction processing	6	4.4	2.75
Increased use of financial ratio analysis	4.5	4.2	2.25
Decreased time for preparation of reports	5	4.2	3
Improved quality of reports	5	5	2.5
Decreased time for preparation of payroll	5.75	5.2	2.5

Scale: 0 = Not at all, 1 = Very low degree, 2 = Low degree, 3 = Average, 4 = High degree, 5 = Very high degree, 6 = Perfect

**4.2.2. ERPs and problems for accounting processes**

The ERPs have not created any important problems in the accounting processes of C1 and C2. In contrast, as shown in Table 2, the ERP system was selected by C3 created numerous problems in its accounting processes.

**Table 2.** *Problems for the accounting processes of C1, C2, and C3 due to ERPs implementation.*

	Mean score		
	Case 1	Case 2	Case 3
Decreased reliability of accounting information	1.5	1.2	3.75
Difficulties in compatibility with existing accounting applications	0	1.6	3.5
Difficulties in the operation of the ERP system by the accountants	0	1	3.25
Difficulties in the training of the accountants to the ERP system	0	1	3.25
Negative reactions of the accountants	0.5	1	3
Reorganization of the accounting processes	1	2	3.5
Increased number of errors	0	1	2.25

Scale: 0 = Not at all, 1 = Very low degree, 2 = Low degree, 3 = Average, 4 = High degree, 5 = Very high degree, 6 = Perfect

**4.2.3. ERPs and changes in accountants' role**

As depicted in Table 3, the accountants of C1 and C2 appear to have a more creative, and, therefore, a more crucial role after the implementation of the ERPs. As expected, the ERP system was selected by C3 has not brought any essential changes in the role of its accountants.

**Table 3.** *Changes in the role of the accountants of C1, C2, and C3 due to ERPs implementation.*

	Mean score		
	Case 1	Case 2	Case 3
Release from routine works	6	3.8	2
Possibility of focusing on more essential tasks	6	4.4	2
Familiarity with technology	6	4.2	2
Increased abilities	5	4.2	2.5
Acquisition of new auditing competences	5.5	4	2.75
Acquisition of an internal consultancy role	5	3.2	2.25
Increasing participation in the decision making process	3.25	2.6	1.5
In general, expansion and upgrade of their role	5.25	3.4	2

Scale: 0 = Not at all, 1 = Very low degree, 2 = Low degree, 3 = Average, 4 = High degree, 5 = Very high degree, 6 = Perfect

### **4.3. Findings toward expectations**

In the beginning of this paper, it was stated that this study is expected to contribute to the body of knowledge by suggesting that properly selected and appropriately implemented ERPs significantly benefit both management and financial accounting, and upgrade accountants' role. Thus, from a valuation point of view, it can be said that the findings are as expected. What is surprising is that Case 3 provides evidence that an ineffective ERP adoption may bring a number of small benefits to the accounting processes and minimal positive changes in accountants' role. Hence, it can be argued that this fact adds support to the expectation of this study that rightly adopted ERPs considerably benefit accounting processes and change accountants' role. In the following subsection, this paper attempts to explain why such systems appear to bring a number of major benefits and few reasonable problems to the accounting processes, and also to upgrade the role of accountants.

### **4.4. Explanation of findings**

#### **4.4.1. ERPs and benefits for accounting processes**

This study provides evidence that ERPs significantly benefit both management and financial accounting with their impact to be stronger on the latter. The reason for this is that the implementation of an ERP system entails radical changes in the way that information is recorded, derived and distributed. The automation that ERPs bring in information generation explains the findings that ERPs decrease the time required for closure of monthly and annual accounts, and preparation of financial reports.

Due to ERPs, the generation procedures of the accounting reports are performed in a determined and automated manner. This is a possible explanation for the result that ERPs improve the quality of financial and management reports. Similar to financial accounting, ERPs also automate the generation of the accounting information required by the companies' management. This factor may explain the results that ERPs improve processes such as costing, budgeting, profitability analysis, forecasting, operating statements, and performance measurement. Finally, the finding that ERPs promote a more effective internal control is due to the ability of ERPs to integrate the various business processes within an organization.

#### **4.4.2. ERPs and problems for accounting processes**

ERPs are complex information systems with significant abilities. In comparison with older information systems, ERPs are functionally and technologically

expanded. For this reason, the compatibility of these systems with existing applications within an organization, including those of accounting, is often difficult. Compatibility problems and the need for a more integrated function of the companies lead to reorganization of various business processes, such as those of accounting. Further, the complexity of ERPs combined with the fact that accountants often lack of special IT skills create difficulties in the interaction between ERPs and accountants. This often entails negative reactions of the latter.

This study also indicates that ERPs appear to provide less reliable accounting information. It is difficult to explain it, and for this reason, in the last section of this paper, this study proposes this area for future research. A possible explanation for this finding might be that due to the automation that ERPs bring to a number of accounting processes, some elements are not regarded, and, in the long run, the generated accounting information is incomplete (therefore less reliable).

#### **4.4.3. ERPs and changes in accountants' role**

It has been observed in the corporate world that a variety of personnel including accountants often lack of IT skills. In contrast, corporate world is increasingly adopting ERPs, and accounting is one of the main modules operating in an ERP environment. Hence, accountants are obliged to work in new conditions, which demand the existence of IT skills. Spathis (2006) indicates that accountants require good IT skills towards coping with the IT-led work environment. For this reason, most companies give special training to their employees in ERPs before and after their implementation. Thus, accountants become familiar with technology, and, next, through their daily interaction with these systems, they enhance their abilities.

ERPs integrate the business processes throughout an organization, and, therefore, radically change information processing orientation. Hence, as Drury (2004) describes, through ERPs managers can directly derive the necessary accounting information without asking accountants for information. Accordingly, accountants can receive the information they require directly by PC. Thus, instead of accountants, are the ERPs, which are responsible for accounting information generation. This is a possible explanation for the finding that ERPs release accountants from routine works. Released from routine works, accountants save valuable time. In addition, the fact that there is automation in a number of accounting processes enables accountants to accomplish their daily duties quickly at time, and, in the long run, to save additional time. As a consequence, accountants are able to focus on more essential tasks, such as data analysis, and, in general, value-adding activities related to managerial control and decision making.

Further, the finding that ERPs enable accountants to acquire new auditing competences may be explained by the fact that ERPs appear to introduce a more

effective internal audit function. As it is widely known in the corporate world, sometimes, accountants, especially, in small and medium-sized firms, also adopt the role of the internal auditor. Dechow and Mouritsen (2005) provide evidence that ERPs reinforce this tendency. The ability of ERPs to integrate the business processes throughout an organization allows accountants to perform their audit in a more efficient manner. Moreover, it can be argued that the roles of financial analyst and internal auditor, that accountants appear to acquire due to ERPs implementation, are a possible explanation for the finding that ERPs enable accountants to acquire also an internal consultancy role. Through ERPs accountants appear to know better the companies in which they work, and, in essence, to have a more crucial role.

#### **4.5. Comparison of findings with previous studies**

To begin with the impact of ERPs on management accounting, the findings of this study, in contrast to those of Granlund and Malmi (2002), Rom and Rohde (2006), and Scapens and Jazayeri (2003), indicate that ERPs influence management accounting in a high degree, and, therefore, are consistent with those of Jackling and Spraakman (2006) and Spraakman (2005). The results of the present study are also in line with evidence provided by Spathis (2006) and Spathis and Constantinides (2004) that ERPs promote a more effective internal control. Regarding the impact of ERPs on financial accounting, there are numerous similarities (e.g. higher quality reports, decreased time for preparation of reports, decreased time for closure of annual accounts etc.) between the results of this study and those of Dechow and Mouritsen (2005), Spathis (2006), Spathis and Ananiadis (2005), Spathis and Constantinides (2004), Sutton (2006), and Velcu (2007). The current study also addresses evidence presented by Brazel and Dang (2005) that ERPs decrease accounting information reliability. Finally, the findings of this study add support to the conclusions of earlier studies, such as Caglio (2003), Granlund and Malmi (2002), Newman and Westrup (2005), Sayed (2006), and Scapens and Jazayeri (2003), which provide evidence that ERPs change accountants' expertise, and upgrade their role.

## **5. Conclusion**

### **5.1. Summary of main research findings**

In short, the following conclusions can be drawn from the present study. Properly selected and appropriately implemented ERPs appear to significantly

benefit both management and financial accounting with their impact to be stronger on the latter. Such systems also seem to create some insignificant problems to the accounting processes, which are reasonable, because ERPs are complex information systems. Finally, rightly adopted ERPs also appear to change accountants' expertise and upgrade their role.

## **5.2. Research contribution**

This is the first study within the area of ERPs and accounting with such combination of research purposes. It examined together all these main topics that have been separately examined by other studies to date, hence enhancing our understanding of the effects of ERPs on accounting. By examining the benefits and the potential problems for the accounting processes, and the changes in the role of accountants, it can be said that the present study provides an adequate picture of the impact of ERPs on accounting. Another characteristic that makes this study to differ from previous research on ERPs interrelates with accounting is that it emphasizes on the importance of a proper selection and an appropriate implementation of these systems towards achieving the desired outcome. Thus, the findings of this study add to a growing body of literature on the impact of ERPs on accounting. Finally, as appears below, this study could also serve as a basis for future practice and research.

## **5.3. Recommendations**

IS literature demonstrates that IT should be properly designed and appropriately implemented towards achieving the benefits expected from the investment. The findings of this study provide such evidence from the research area of ERPs and accounting. Emerging from the case studies, the author briefly describes below the main stages that define the context of a right ERP adoption, and should be followed by candidates ERP adopters.

- *Selection of a suitable ERP system and a cooperative vendor.* ERP selection models have been developed by many academics (see, for example, Bueno and Salmeron, 2007; Karsak and Ozogul, 2007; Liao et al., 2007; Umble et al., 2003; Verville and Halington, 2003; Verville et al. 2007; Wei et al., 2005). An analysis of the success factors in the vendor selection process has been undertaken by Hurbean (2006).
- *Performance of pre-implementation activities.* Actions that should be taken before ERP implementation have been suggested by a number of academics (see, for example, Abdinnour-Helm et al. 2003; Mandal and Gunasekaran, 2003; Soffer et al. 2003, 2005; Wang et al. 2007).

- *Effective management of the implementation process.* Several researchers have proposed ERP implementation strategies (see, for example, Ehie and Madsen, 2005; Mandal and Gunasekaran, 2003; Umble et al., 2003, Wang et al., 2005).
- *Performance of post-implementation activities.* Actions that should be taken after ERP implementation have been suggested by numerous academics (see, for example, Mandal and Gunasekaran, 2003; Nicolaou, 2004; Nicolaou and Bhattacharya, 2006).

#### **5.4. Research limitations**

The current study has several limitations. However, its findings are consistent with those of most of the previous studies within the area of ERPs and accounting. The first limitation lies in the fact that the research was conducted in small-sized companies, and this may not allow this study to proceed to generalizations. Moreover, the present study was unable to make comparisons between different size companies because of the use of same size companies for research purposes. In addition, the fact that the selected companies operate in similar sectors does not allow this study to examine if the field of activity plays a role in the benefits achieved from ERPs adoption. Lastly, this study could also include interviews after the receipt of the questionnaires, as triangulation of research methods appears to increase reliability of research findings.

#### **5.5. Suggestions for future research**

The present study has thrown up certain questions in need of future investigation. In particular, further work needs to be done to establish whether the firm size affects the benefits expected from an ERP investment. It is recommended that such a study should conduct three case studies in three different size companies (small, medium and large firms) of the same sector. What is also needed is a study, which will examine whether the field of activity plays a role in the outcome of an ERP system. Such a study could conduct more than three case studies in same size firms, which will operate in different sectors. Prerequisite for these studies should be a right ERP adoption and the existence of key similarities between the enterprises (e.g. same implemented modules and years of ERP operation). Further investigation is also needed to identify the reasons that ERPs reduce reliability of accounting information. Finally, more broadly, a cross-national research could determine the percentage of the enterprises, which have adopted inappropriate ERPs in relation to their size. Such a study would show to what extent software vendors try to sell ERP solutions without regarding the particular requirements of their customers.

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# ECONOMETRIC MODELLING OF AGRICULTURAL POLICY INSTRUMENTS

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## Abstract

The paper reviews the econometric models used in the past 15 years to analyze the most widely used agricultural policy instruments.

The main aim of the paper is to provide the reader with an overview of these models, analyzing the technical solutions adopted, the type of results than can be obtained.

The discussion starts from the basic modeling assumptions, the data and parameters employed, by looking first at the common aspects of the models, and then at the unique characteristics of each model fro simulating the effects of the CAP. Then the effectiveness of the modeling of four specific CAP tools is discussed; these are – direct price support, trade measures, supply management tools and partially “decoupled” payments.

The conclusion reached is that the contribution of econometric models to the analysis of the CAP has been significant, especially from the point of view of modeling the main policy instruments according to their theoretical impact on farmers’ behavior.

However, many problems have still to overcome. For this reason, in the concluding section, the paper tries to identify a number of priorities for further research.

*JEL classification: Q0, Q1, Q18, Q19, Q21, Q28.*

*Keywords: Common Agricultural Policy tools, Ecometric Models, Direct price support, Trade policies, Supply management tools, Partially decoupled payments.*

## 1. Introduction

Among the “mew” tools introduced in the CAP over the 1990’s, those most frequently included in PE (partial equilibrium) models are mandatory set-aside, compensation payments tied to land livestock, and the reduction of intervention prices. Other important policy measures are absent despite their direct influence on markets; this is the case with the provisions of Regulation n. 2078/92, that, not referring to a specific product, are difficult to represent in the kind of models analysed

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in this paper. Among the multilateral obligations undertaken in the 1994 GATT Agreement, the commitments on the reduction of export subsidies are the policy measures. Tariff Rate Quotas, i.e. an important group of provisions of the 1994 Agreement, and domestic support provisions, on the other hand, tend to be ignored.

The changes brought about by the AGENDA 2000 reform are primarily those in direct payments for arable crops, the reduction of intervention prices in this sector, the setting of the obligatory set-aside at an indicative rate of 10%, the change in direct payments in the meat sector, and the growth of some of the national milk quotas. Concerning EU enlargement, ESIM (European Simulation Model) has been run mainly to simulate the extension of direct price support, production quota systems, and direct payments to candidate countries.

The analysis developed in this working paper is concentrated on that segment of the agricultural economics literature that uses econometric techniques to analyse, either directly or indirectly, the impact of agricultural policy instruments in a realistic fashion. Econometric analyses on agricultural policy instruments have always constituted one of the most important fields of inquiry for agricultural economists. In the light of this general objective, we enter into the details of the solutions proposed for the econometric modeling of different agricultural policy instruments, focusing on the ones which have made an important contribution.

In view of the fact that the literature under consideration refers to the 1990's, it comes as no surprise that the agricultural policy experiments undertaken by the various models focus, on one hand, on the reforms introduced over the last ten years – the MacSharry Reform of 1992 and Agenda 2000 of 1999 – and, on the other, on the constraints resulting from developments in the area of trade relations – the Uruguay Round Agricultural Agreement (URAA) as well as EU enlargement prospects. The following review will consist of four parts each corresponding to the four categories of agricultural policy instruments of particular importance under the CAP:

- DIRECT PRICE SUPPORT
- TRADE POLICIES
- SUPPLY MANAGEMENT TOOLS
- PARTIALLY DECOUPLED PAYMENTS

## 2. Direct price support

The CAP has provided **direct price support** in a number of sectors, especially arable crops, dairy and beef products. The common market organization of these products has been marked by intervention purchases at a minimum price, by the

presence of de facto variable levies on imports, and by exports refunds. Both the 1992 and the Agenda 2000 reforms have placed limitations on the application of these measures, particularly by setting a ceiling to the difference between the intervention and the “threshold” price (relevant for imports).

**Price support** is often modeled as a percentage price wedge; the price transmission equations set the EU domestic price at a higher level than the world market price. In general, the use of price wedges to represent direct price support policies suffers from the problem of aggregation.

The wedges include all those measures influencing output and input prices, including domestic and trade policies: it is impossible, therefore, to have a separate assessment of the effects of a change in individual measures. In other words, a 10% tariff reduction and a 10% reduction in the intervention price in the domestic market are both implemented in the model as a 10% reduction in the price wedge, although it is generally recognised that the effects of the two changes can be significantly different.

As far as the CAP is concerned, one of the most important agricultural policy instruments is the **minimum guaranteed price**, the so-called “**intervention price**”, which has been in force for all the most important products. The standard model of profit maximization is, however, a static model, based on effective market prices, and accordingly takes account of the support of mechanisms for these prices, such as government purchases at guaranteed minimum prices, which clearly have a very significant effect on price expectations.

These aspects of price formation, while universally known, have often been neglected in econometric applications, where the model of profit maximization is estimated in its static version, on the basis of the prices observed, without providing any particular justification for this choice. Several studies have introduced important changes in an attempt to overcome this by explicitly introducing a hypothesis on price expectation formation, following either the adaptive expectation or the rational expectation approach (see for example Moschini - 1988, Oude Lansink and Peerlings - 1996 and 1997, and Oude Lansink - 1999b).

However, these modifications of the standard model deal with only one of the aspects involved – the formation of **price expectations**, leaving untouched the second aspect, that one of the impact of a guaranteed minimum price.

An attempt in this direction has been proposed in the MEISA model (Caiumi, 1997, Cagliesi and Rosati, 1989 and Rossi, 1988): in the first version (Caiumi, 1997), the mechanism of price formation for the main aggregates of agricultural products is estimated through the relationship:

$$\log p_i = a_1 \log t_i + a_2 \log m_i + a_3 \log c_i \quad a_1 + a_2 + a_3 = 1 \quad (1)$$

Where  $t_i$  is the EU target price of the product in question, that represents the proxy of the minimum guaranteed price,  $m_i$  is the import price and  $c_i$  is a measurement of production costs. The relationship in (1) is estimated using an “error correction model”, that makes it possible to test whether there is a long-term equilibrium between institutional prices and internal prices, or whether, on the contrary, the dynamics of import prices and of production costs generates a situation of disequilibrium in the long run (Davidson and MacKinnon -1993). The econometric estimation of the relationship in (1), appropriately modified, makes it possible to use the estimated values as an input for the model of profit maximization, thus incorporating institutional prices explicitly as a variable influencing production choices.

As regards the policies, we examine all the policies which have a direct impact on prices that farmers receive for the sale of products as well as the purchase of production factors. Despite the fact that **guaranteed minimum price** policies have become increasingly less important over the 90's, the ability to represent this type of intervention is still an important component of models that seek to undertake an assessment of the CAP.

It is well known that, **guaranteed prices minimum price policies** may be pursued either through **deficiency payments or market price support**. This latter mechanism is one that poses modeling problems, since the actual policy does not stipulate the price that producers must receive, but only a minimum threshold below which the market price should not drop.

As a matter of fact, if we consider price trends in an important area such as the grain sector, we realize that the EU market fluctuates between the two extreme institutional prices (intervention and threshold), and tends to coincide with one or the other depending on the market situation. The problem that arises, therefore, is how the linkage between institutional prices (i.e. the “intervention price” and the “threshold price”) and the market price should be modeled. This is generally solved by assuming that the market price eventually coincides with the guaranteed price and, consequently, that any change in the latter will be fully passed on to the market price.

In fact, the market price tends to coincide with the intervention price only under particular market conditions (for example, when domestic supply largely exceeds domestic demand). Consequently, by making the assumption that a unitary elasticity of transmission always exists between the market price and the intervention price and the intervention price, most of the studies referred to here overestimate the impact of price cuts resulting from the reforms introduced in 1992 and 1999.

In this respect, two recent studies which have followed a less restrictive assumption deserve to be mentioned. For instance, in order to allow for the determination of a market price (P) which is higher than the intervention price (PI), Gohin et al. (1999b) incorporate a pair of constraints of the following model:

$$\begin{aligned} P &\geq PI \\ S(P - PI) &= 0 \end{aligned} \quad (2)$$

where S represents the amount of exports subsidies. In this case, a domestic price that is higher than the intervention price may be observed if exports do not need to be subsidised. This mechanism, is some what “rigid”, on account of the fact that only a small export subsidy will make the market and intervention prices coincide. More promising seems to be the approach followed by van Meijl and van Tongeren – 2000, which modifies the standard GTAP model along the lines of Surry – 1992 and Von Lampe – 1999, by assuming that the market price (P) represents a weighed average between the intervention price (PI) and the threshold price (PS):

$$P = \alpha PI + (1 - \alpha)PS \quad (3)$$

The introduction of a parameter  $\alpha$ , determined according to a logistic function which represents oversupply in the market, makes P vary *endogenously* and coincides with the two extremes only in the event of serious imbalances on the demand or supply side<sup>1</sup>.

In many cases, the only way to prevent the market price from falling below a certain level is through customs policies (variable levies and export restitutions). This is considerable over – simplification, since, in point of fact, European policy – makers have another instrument at their disposal: public stocks. It is worth recalling, an effective way of modeling guaranteed minimum prices endogenously derives the demand for public (intervention) stocks. The stock level depends on the output price observed in the domestic market, on world price, on domestic supply, and on a term representing the need to maintain a minimum amount of stocks whatever market conditions. The equation takes the following form

$$S_t = c\mathbf{S}POL_t + b Q_0 + \alpha \max [ 0, (1 - pUE/pint) ] \quad (4)$$

where:

- $S_t$  = amount of stock;
- $\mathbf{S}POL_t$  = exogenous minimum stocks;
- $Q_0$  = supply in the EU;
- $pUE$  = market price in the EU;
- $pint$  = intervention price;
- $\alpha, b, c$  = calibrated coefficients

The idea is that  $pUE > pint$  (the domestic price is above the intervention level) the demand for stocks depends only on the minimum level decided by policy makers, and on supply. If, however, a point is reached in which  $pUE < pint$  then stocks will rapidly increase, until  $pUE$  increases again above  $pint$ .

In the model, as in the real world, the market price does not fall below the intervention level because output is bought by a public agency, and the speed of an increase in stocks at the intervention price level is represented through the calibration of the coefficient  $\alpha$ , which assumes a high value (FAPRI – 2000).

It should be pointed out that, in general, although there are clearly a number of theoretical problems involved in their modelling, the absence of a behavioural relationship for public stock is an important limitation in models aimed at evaluating direct price support within the CAP. The reason is that stocks have had a significant influence both on European markets and, in more than one case, also on the policy decisions themselves, not to speak of the costs involved in holding stocks, that are even more frequently ignored by the models.

### 3. Trade policies

The structure of the foreign trade components in the models is a crucial element that significantly restricts the type of policies that can be modelled and simulated. In particular, the lack of indications about bilateral trade flows excludes a whole realm of discriminatory policies, such as preferential treatment to specific countries, and all bilateral policies, such as quantitative restrictions. At the same time, the absence of intra – industry trade flows from the models, means that certain measures that have been crucial over the last few years, such as the minimum access provision introduced by the GATT Agreement, cannot be accounted for. These measures have played a major role in shaping flows among the major agricultural trading partners. This weakness is one of the main reasons why more one of the models considered in this chapter has introduced the “Armington” assumption, which is one of the simplest means to introduce bilateral trade flows.

However, also trade policies are frequently represented through price wedges among regions. Here as well, as seen for direct price support, the aggregation of different measures prevents an explicit modelling, and, in turn a separate assessment of the effects of each policy. Percentage price wedges, in terms of trade policies modelling, correspond to ad valorem tariff equivalents; most price transmission equations linking domestic prices to world prices, include the wedge as an independent (exogenous) variable, together with i) a term aimed at taking

into account special tariffs, and ii) another aimed at taking into account transport costs and quality differences between countries, according to:

$$p_{UE} = t_s + (1 + b) p_w + \delta \quad (5)$$

where:

$p_{UE}$  = EU internal price;

$p_w$  = international price;

$t_s$  = specific tariff;

$b$  = ad valorem tariff equivalent;

$\delta$  = qualitative differences and transport cost

This approach can be found, in slightly different forms, in all the surveyed models<sup>2</sup>. Information on tariff equivalents can be derived from different sources. Some models, notably FAO-WFM (World Food Model), SWOPSIM (Static World Policy Simulation Model) and WATSIM (World Agricultural Trade Simulation Model), employ the price component of the PSE (Producer Subsidy Equivalents) and CSE (Consumer Subsidy Equivalents) indicators, while others employ nominal protection rates. Tariff reductions implemented after the 1994 GATT Agreement are in some cases taken from the Prospects of bound tariffs notified to the WTO: this is the case of FAO-WFM, and FAPRI-CARD. The choice of this source of information carries a strong risk of overestimating the starting point which tariff reduction was implemented, since bound rates are often higher than those effectively applied, a phenomenon known as “dirty tariffication”. Thus implementing a reduction in the bound rates in a model leads to an overestimation of the degree of liberalisation brought about by the 1994 GATT Agreement.

Moreover, the use of price wedges for modelling trade policies can create significant difficulties when trade is influenced by non-tariff measures. These are sufficiently frequent in agricultural trade – e.g. all kinds of qualitative constraints and tariff quotas – to lead to a significant equivalence problem that is common to most types of model. It is sufficient to note here that a major limitation of price wedges arises when the tariff barrier takes the specific form of variable import levy, or of a variable export subsidy that complements domestic intervention at a minimum price in controlling trade flows, as is still the case of many products covered by the CAP. If domestic direct price support is modelled through the same wedge, it will be impossible to distinguish a change in the trade regime from a change in domestic support; on the contrary, in those models where the price support mechanism is modelled explicitly, the variable import levy and export subsidy system will be explicit: the price wedge between the import or export prices and world price will be determined by the model run, i.e. the term  $b$  in equation (5) will be endogenous.

Furthermore, as is the case for direct price support, this is a better proxy for the real world mechanism than the exogenous wedge, especially if the

aim of the analysis is not a complete liberalisation scenario, or one of full removal domestic measures, but rather a change in the way support is provided, or a reduction in the amount of support, as was the case with the CAP reforms over the 1990's.

#### 4. Supply management tools

The two most important instruments for CAP in the area of supply control are those applied in output markets or **output quotas** such as milk and sugar quotas, and those applied the input market, such as mandatory land **set – aside**.

Of all the agricultural policy instruments, production quotas are the ones that have received most attention in the empirical literature; the applications on the CAP refer generally to milk quotas. As far as the first aspect is concerned, the extension of the standard model of profit maximisation to the case in which one or more products are subject to quotas is due to Moschini – 1988 and 1989, and Fulginiti and Perrin – 1993, who base their works on the definition of the restricted profit function proposed by McFadden – 1978. In this case, the vector  $y^0$  and those not constrained  $y^1$ ; by modifying the price vector in a similar way, the maximum profit obtainable may be rewritten as

$$\pi \equiv p^0 y^0 + G(p^1, w, y^0, z) \quad (6)$$

where  $G(\cdot)$  is a restricted profit function defined as:

$$G(p^1, w, y^0, z) \equiv \max_{y^1, x} \{p^1 y^1 - wx \mid (x, y, z) \in T\} \quad (7)$$

Function  $G(\cdot)$  maintains most of the standard properties of the profit function (not decreasing in  $\mathbf{p}$ , not increasing in  $w$ , homogeneous of degree one and convex in  $(\mathbf{p}, \mathbf{w})$ , even if it does not satisfy the property of non-negativity. In addition, it is important to underline that the production of constrained outputs is always considered to coincide with the respective quota, since it is assumed that market conditions are such as to make the constraint on production always binding.

By differentiating function  $G(\cdot)$  we obtain a system of equations of output supply and input demand functions where the arguments also include the vector of production quotas:

$$y_i(p^1, w, y^0, z) = \partial G(p^1, w, y^0, z) / \partial p_i \quad i = 1, \dots, n^1 \quad (8)$$

$$X_j(p^1, w, y^0, z) = - \partial G(p^1, w, y^0, z) / \partial w_j \quad j = 1, \dots, m_i$$

It should immediately be noted that, in this version of the model, the vector of quotas has similar effects to that of the vector of fixed inputs; this means that it is possible to define a vector of “shadow prices” of the products subject to quotas, that play an important role in this context:

$$v_k^0(p^1, w, y^0, z) = \partial G(p^1, w, y^0, z) / \partial y_k^0 \quad k = 1, \dots, n^0 \quad (9)$$

It is impossible to demonstrate that the vector of shadow prices  $v^0$  coincides with the marginal cost vector of the products subject to quota, and accordingly the rent associated with the quotas may be defined as the difference between the price of the products and the corresponding shadow prices:

$$r_k^0 = p_k^0 - v_k^0 \quad k = 1, \dots, n^0 \quad (10)$$

From the econometric perspective, if the data refers to a period when the system of quotas has always been operative, the estimation of the system in (8) presents no particular problems and, depending on the functional form chosen, may be achieved by means of the variants of the SUR method (linear or non-linear). If, on the other hand, the data also refers to the period before the introduction of quotas, the system may still be estimated in the previous form.

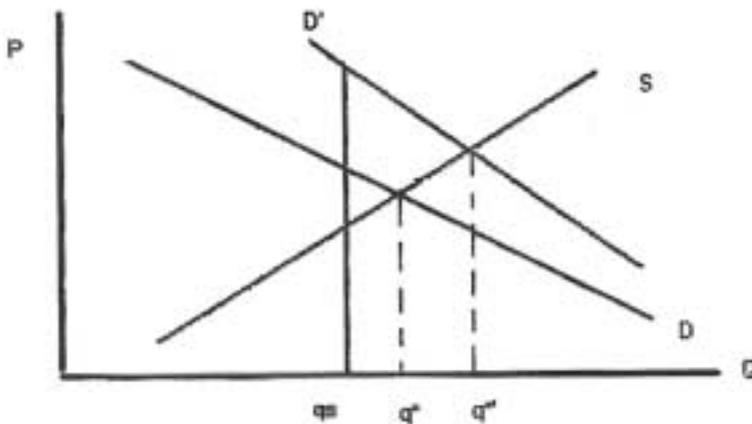
However, the method of estimation should allow for the fact that, in the first period, the production of the products subject to quota is determined endogenously, so that one needs to resort to variants of the method of instrumental variables, such as 3SLS (Helming et al. – 1993).

Turning now to the mandatory **set – aside**, the importance assigned to this tool stems from the importance it has assumed in the CAP since the 1992 reform. In the system originally set out in the MacSharry reform, set aside was mandatory only for “large” producers, and for “small” ones participation in the general direct support regime. The Agenda 2000 reform indicated mandatory land set – aside to be set at the indicative rate of 10%, and that the distinctions between the “general” and the “forfeit” aid regime would gradually disappear.

The ECAM/CAPMAT model provides the most accurate representation. Not only does it explicitly include the constraint on the quantity of land used, but it also takes account of the effects of such practices on yield (known as the “slippage” effect). A graphic representation is provided in Figure 1, where the compulsory set – aside ( $q_s$ ) is calculated as a percentage of the new quantity of equilibrium ( $q^{*'}$ )

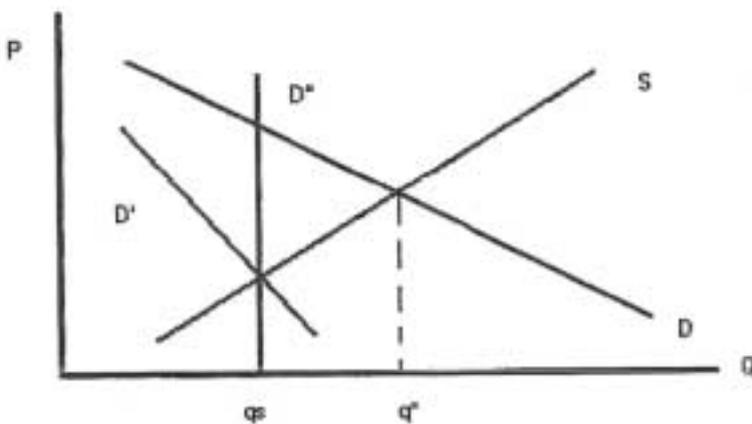
attained by shifting the demand curve of the land factor from  $D$  to  $D'$ . Therefore, when the demand curve comes close to the compulsory set – aside, it becomes completely rigid, although this effect is calculated on a higher curve than the original one since productivity rises as a result of “slippage”.

**Figure 1.** *The modelling of the set aside in the ECAM/CAPMAT model.*



Other applications such as those in the GTAP (Frandsen et al. – 1997) and Weyerbrock (1998a and 1998b), have also chosen to model compulsory set aside as a constraint on demand (Figure 2.).

**Figure 2.** *The modelling of set aside based on demand shifts.*



There is a substantial difference, however, between the two approaches. While the Weyerbrock model assumes that land utilization is equal to  $q_s$ , and hence that demand is perfectly rigid at that level ( $D'$ ); Frandsen et al. (1997) model the same compulsory set aside by reducing land productivity by exactly the same percentage as the compulsory set aside. In Figure 2., this corresponds to a rotation of the demand curve from  $D$  to  $D'$ . However, the “slippage” effect is not taken in either case.

Lastly, it should be stressed that the percentage of area to be set aside does not match the percentage actually set aside, since the latter fluctuates as a result of exemptions granted to small producers. Although no model has the ability to distinguish between small and large producers, the ECAM/CAPMAT model is the only one which considers this element by introducing an exogenous assessment of the percentage of land actually set aside in individual EU countries.

## 5. PARTIALLY DECOUPLED PAYMENTS

This type of intervention has played an important role in the CAP as a result of the introduction of compensatory payments in 1992 with the MacSharry reform of the CAP. At that time, such payments were meant to be “compensatory” for the concurrent reduction in intervention prices. These measures are deemed to have only partly influenced production decisions, because they are defined on a quantity (per tonne) basis, but with a fixed reference yield per hectare or per livestock, that is relatively homogenous for different products.

As is known, these are the CAP per tonne subsidies based on the historical yields, defined for single areas within the EU, in fact, tied to hectares of land and heads of cattle, that are partially “decoupled”, i.e. partially independent of output decisions. For arable crops, these payments are introduced in the equation that determines the unit profitability of crops, together with revenues from sales. The equation has the following form:

$$R_{i,t} = P_{i,t} \pi_{i,t} + PD_i \quad (11)$$

Where:

$R_{i,t}$  = unit profitability of the  $i$ -eth activity;

$P_{i,t}$  = output price of the  $i$ -eth product;

$\pi_{i,t}$  = yield of the  $i$ -eth product;

$PD_i$  = direct payment for the  $i$ -eth activity.

This modeling is aimed at approximating the partially de-coupled nature of the payments. In the model these are independent from the market price of the product; they affect land allocation, but they do not affect yield because they are not included in the relative equation. Despite the fact in the real world payments also affect yields, this can still be considered a fairly acceptable proxy to be adopted in a deterministic large-size model.

For beef, the model was modified recently, with the very objective of improving the modeling of direct payments, and the limitations imposed to by the Agenda 2000 reform. Previously the model could only calculate average payments, with the payment per head tied to weight. At present the ceilings that are imposed on the overall expenditure for the payments are taken into account, together with those imposed in terms of maximum number of cattle load per hectare. The model includes four different types of payments:

- ✓ Those for the slaughtering of adult cattle;
- ✓ Those for the slaughtering of calves;
- ✓ The special payments for bulls and steers;
- ✓ Special payments for nursing cows.

Three variables are employed to define each type of premium;

- The total (maximum) expenditure;
- The ceiling and
- An application rate, i.e. the ratio of the number of heads in production to the ceiling.

When the application rate is higher than one, i.e. when ceilings are exceeded., payments no longer affect marginal profitability, and hence output and the number of heads only reflect the market price behaviour. In other words, direct payments determine a shift in supply only until the ceiling is reached (OECD - 2000).

## 6. FINAL REMARKS

In the light of the analysis developed, it is possible to make some concluding remarks on the use of the econometric models in agricultural policy analyses identify what appears to be the main priorities, on the agenda for future research.

In general, given the breadth of the models analysed from the point of view of products and markets included – and this was one of the key elements of selection – there is more than one issue in which accuracy ultimately gives way to the limitations arising from the lack of available information, and from the need to

condense the complexity of the exercises. Having said that, the effectiveness that a number of the models have demonstrated in representing some of the current agricultural policy tools, and particularly those of the CAP, can be considered as their main strength. The other main element in the selection grid, is that there are probably several cases in which the “pragmatic advantage” of partial models does not lead to a significant decrease in information when other “costs” in terms of data and complication are considered.

Considering now the issues related to the capacity of modeling agricultural policy instruments, it may be claimed that this area constitutes the most important strong point of econometric approaches. The models considered in the previous sections are, capable of incorporating instruments which have a very complex impact on farmers’ production decisions in a way that is coherent with economic theory. Thus, the literature provides the researcher with extremely sophisticated instruments, capable of meeting at least potentially, all of the most important acquisitions of the theories.

A second very important strength lies in the possibility of estimating parameters that, because of their coherence with economic theory, make it possible to simulate scenarios of radical change in agricultural policy. This is the case, for example, with the estimation of the implicit elasticity of output supply subject to quotas, through which we can simulate scenarios of increase and/or removal of the production quotas, or that the implicit elasticity of output supply with respect to direct subsidies, which makes it possible to simulate the introduction/modification of partially decoupled direct subsidies. These are the scenarios that, in other models, often oblige the researcher to resort to oversimplifications, so the contribution of econometric models becomes particularly promising.

Coming to the characteristics which most directly influence the modeling of CAP tools, firstly it should be pointed out that usually the level of detail in terms of products and measures is generally sufficient to identify the main domain of the CAP; the partial equilibrium assumption does not seem to prevent accuracy from this point of view, with the notable exception, however, of quota rents, a measure affecting both farm incomes and public expenditure. The quality of CAP modeling appears rather to depend on other characteristics of the models. Three major elements can be identified here. Firstly the separate determination of yields and land allocation in the supply component, that significantly affects the modeling of direct payments and set aside provisions. Secondly, the *endogeneity/exogeneity of EU market prices*, that influences the modeling of intervention price reduction and of the limitation of export subsidies.

Thirdly, *the structure of the foreign trade component* that determines both, the kind and the quality, of the modeling of trade policy.

One important effect of direct price support policies is to generate an increase (or prevent a decrease) in the amount of production factors used, thereby distorting the allocation of resources and reducing the overall efficiency of the economic system. Although a general equilibrium approach is, in the theory, the most satisfactory instrument to assess the impact of policies on the allocation of resources, no assessment can do without an accurate modeling of intervention mechanisms. The agricultural policy instruments adopted within the CAP, in fact, are so complex that they can hardly be represented by models unable to distinguish which products and factors are subject to intervention.

With respect to the modeling of trade policies and the constraints deriving from multilateral agreements, the models are an essential instrument for appropriate representation of liberalization processes. Modeling of direct price support is at its most unsatisfactory where it based on an exogenous price wedge; thus those models that include the effect of intervention buying on market price explicitly have a clear advantage. The same cannot be said for any of the models analysed concerning trade measures; actually this appears as one of their greatest weakness in terms of policy representation, primarily due to the homogeneous and non-spatial structure of the trade components that prevent modeling bilateral measures and intra-industry trade. The first of these two issues is of great relevance for ESIM, a model constructed with the intention of simulating the effects of EU enlargement. However, in the area of trade measures, the endogenous determination of EU market prices also positively affects the modeling of export subsidies.

Again from the methodological point of view, the points of strength of econometric models also include the relative simplicity of the techniques required for estimating them. The models considered are capable of incorporating instruments which have a very complex impact on farmers' production decisions in a way that is coherent with economic theory. Just think, for example, that, by means of the ad hoc extensions of the model of profit maximization, it is possible to evaluate, in terms of the elasticity of the output supply and/or input demand functions, the impact of instruments such as production quotas. These key parameters may also be obtained in a model that takes into account output price uncertainty and the risk reducing impact of guaranteed minimum prices.

Thus, the literature provides the researcher with extremely sophisticated instruments, capable of meeting at least potentially, all of the most important acquisitions of theory. In general, however, set-aside representation seems to be more accurate than output quotas: even if the most recent efforts, which focus particularly on the CAP, a (simple) exogenous supply is a frequent solution, though not an entirely satisfactory one.

As regards (more or less) partially decoupled policies and new interventions of a structural nature designed to promote rural development, a general equilibrium approach will appear to be the most suitable from, at least, two points of view. On one hand, a support partially decoupled from production decisions diminishes the “substitution effects” within the sector, while continuing to produce a whole series of “income effects” which cannot be adequately captured by partial models. On the other hand, structural rural development policies focus on a specific region rather than a specific sector: in this case too, it is important that models provide a representation of the economic system as a whole.

Unfortunately, the results currently provided by models are not entirely satisfactory in terms of the representation of partially decoupled payments and are entirely wanting when it comes to structural policies. Any explicit modeling of partially decoupled payments, should not fail to give detailed representation of production decisions.

However, multisectoral models which focus on a certain sector or a specific region can indeed provide valuable results to those seeking solution to market problems, in a production chain, for example, or issues of rural development in specific areas. It is possible to state that the contribution of econometric models to quantitative agricultural policy analyses has been important. Moreover, if until the end of the 1980s the studies of highest quality were to be found essentially in the North America literature, in the 1990s European researchers produced extremely useful combinations, both in terms of modeling solutions of the agricultural policy instruments of the CAP in particular, and in terms of making possible use of the information available.

Nevertheless, it is equally true that, precisely on the basis of the results obtained in the last few years, new demands for research have emerged that, if met, could lead to considerable improvements in the quality of this class of models, in terms of their capacity to represent the reality of agricultural policies, of the quality of scope of the results obtained and their statistical reliability.

## NOTES

1. For example, a coinciding of market prices and guaranteed minimum prices ( $\alpha = 1 \Rightarrow P = PI$ ) quite commonly found in the literature examined, would only occur in the event of major surpluses.

2. Different specifications include, the absence of ad hoc terms to account for transport costs and qualitative differences; the later term is often only a residual resulting from calibration procedures. Contrary to other models, WATSIM pays particular attention to non-price elements affecting price transmission; these are included in a sinusoidal form terms that takes into account transaction costs associated with a switch in the net trading position of a country. The idea is that transmission costs account for a high quota (the maximum one) when a country imports all its consumption, that this quota is zero when all consumption is produced domestically and that this quota reaches a minimum when exports are equal to domestic consumption (von Lampe – 1999).

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# HISTORICAL DEVELOPMENT OF CORPORATE GOVERNANCE MECHANISMS

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## Abstract

It has been argued that the managers of modern firms, due to the separation between management and ownership, are more inclined to promote their goals even at the expense of shareholders interests. This constitutes the agency problem that pertains in large modern corporations. The findings of empirical research seem to support this hypothesis. Various corporate governance mechanisms have been introduced in many firms in order to deal with the agency problem that exists in these firms. The purpose of this paper is to provide a review of the historical development of corporate governance mechanisms.

*JEL classification: G30, O16.*

*Keywords: Corporate governance mechanisms, agency theory, agency problem.*

## 1. Introduction

Modern corporations are characterized by the separation of ownership from management. The conflict that exists between the interests of shareholders and managers constitutes the crux of the agency problem that characterizes modern corporations (Jensen & Meckling, 1976). The agency problem is more severe in larger firms, where management can take value-reducing actions, at the expense of the owners' interests (Williamson, 1981). In order to deal with the agency problem, corporate governance mechanisms have been introduced in firms. Corporate governance mechanisms aim to ensure that the management of a firm aims towards the maximization of the value of a firm and as a consequence to the maximization of owners' wealth.

The present study aims to present the historical development of corporate governance mechanisms. The first part of the paper presents the main factors that led to the separation of firms' management from ownership and the consequence of that separation on firms' operations. Furthermore, the first part attempts to deal with the

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issues that resulted from that separation. The second part of the paper presents the most recent corporate governance mechanisms alleviate the agency problem.

## **2. Separation of ownership from management**

The current state of corporations is a result of a continuous process of development of organizational structures that commenced in 1790's. The technological progress that characterized that period, along with the social needs that arise during the era of industrial revolution created the need for new corporate structures. As enterprises grew in size, they needed to raise new capital in order to achieve economies of scale. When the funds required for the financing of an investment is contributed by an increasing number of smaller investors the cost of capital of this investment is lower (Alchian and Demsetz, 1972). Therefore, the enterprises founders had an incentive to seek for providers of funds that would finance their investment programs. However, those financiers gradually acquired an ownership interest in the enterprises that they financed, i.e. they become shareholders in the corporations.

The founders of a corporation do not exclusively possess the decision taking authority in a corporation. Instead, they have to share this authority with other shareholders. Within this framework, it is not unlikely that there will be conflicts between larger and smaller shareholders. Similarly, frictions can arise between shareholders and creditors. These frictions generate significant negotiating costs, which rise as the number of shareholders of an enterprise increases. The magnitude of the negotiating costs can be so significant that they negate the operational benefits that have resulted from the economies of scale (Demsetz, 1967; Berle and Means, 1932). In order to tackle this problem the owners collectively decide to delegate the decision-taking authority to professionals, who do not necessarily own a proportion of the common stock of the corporation. These professionals constitute the management of the corporation.

In the modern corporations, there are no owners, in the legal sense of the term, but instead there are shareholders whose ownership interests refer exclusively to the possession of shares (Berle and Means, 1932; Demsetz, 1967). Given the dispersion of the share capital ownership among a large numbers of shareholders, no shareholder can be identified as the "owner" of the company and the person who has the sole responsibility for the conduct of its affairs. The individual shareholder can liquidate his participation in the particular company with out having to take the approval of the other shareholders of the firm in cases that he disagrees with the policies pursued by the firm's management.

Those developments in the form and the structure of organizations are alleged to have created a number of problems in the operations of corporations, which are mainly related with the allocation of responsibilities among employees, the specialization of tasks, the coordination and the motivation of the workforce. For instance, employees can exhibit behavior, which is not consistent with institutionalized forms of conduct, or they may not be particularly enthusiastic about the job while they have a feeling of monotony. Classical organizational theory cannot provide to these problems. According to the neoclassical school of organizational theory, corporations' management is expected to seek, select and implement the optimal policies that maximize the value of a firm. However, serious reservations have been expressed regarding the applicability of this approach. The neoclassical theory does not appear to take into consideration the motives of professional managers. Firm's managers may be more concerned about the maximization of their own utility, instead of maximizing the value of the firm. Besides, there are limitations relating to the information that is available to the firm's management and the ability of the management to predict events that can affect firm's performance. These limitations imply that the managers of a firm operate under conditions of "bounded rationality" regarding the management of the resources that the shareholders have entrusted to them (Cyert and March, 1992). Simon (1957) observes that there is a limit to the ability of human brain to solve problems. This, coupled with the fact that the business problems can be particularly complicated, compels managers to pursue satisfactory, rather than optimal, solutions.

Managerial theory and behavioral theory have been developed as responses to the above-mentioned limitations of the classical and neoclassical organizational theories. The focus of the new theories is not the owner-manager who aims to maximize firm's profits but the professional manager. In particular, managerial and behavioral theories investigate the incentives that should be offered to professional managers in order to prompt them to operate towards the maximization of the shareholders' value, within the context of economic rationality<sup>1</sup> (Cyert and March, 1992). According to these approaches, the professional managers are supposed to have no ownership interest in the corporation they manage, or their interest is a very limited one. The behavioral theory proposes that in order to secure that the outcome of a procedure does not significantly differ from the expected one, there should be a continuous supervision of the various stages of completion of the particular procedure. In order to achieve its objectives a corporation should follow certain rules, while it should be pointed out that within an economic entity coexist various groups with conflicting interests and goals. The convergence between these competing groups may not be feasible, despite the continuous negotiations (Cyert and March, 1992).

A professional manager is expected to have a different hierarchy of goals, in comparison to an owner-manager. For instance, an owner-manager would aim to maximize the value of a firm and as a consequence his personal wealth. An owner-manager is supposed to be concerned not only with the financial aspects of a business decision, but with other parameters as well. These parameters can include the work force discipline, the relationships of the entrepreneur with the employees and the suppliers of the company, the social contribution of the firm (Jensen and Meckling, 1976). The objectives of the owner-manager and the new shareholders may not coincide. The new shareholders would assume part of the costs of the non-financial parameters of a business decision, without enjoying any benefit that is related with these costs. According to Grossman and Hart (1983), the shareholders that do not participate in the management of a firm are not in position to control and evaluate the decisions and actions of the managers; they simply observe and evaluate the outcome of these actions. Furthermore, outside shareholders cannot have an access to inside information regarding the progress of the company, since the information, they have access to, is provided by the management of the company and relates to the results of the decisions and actions undertaken by the firm's management. Consequently, outside shareholders may have reservations regarding the extent to which managements' decisions aim towards the maximization of shareholders' wealth.

When there is a separation between the ownership and management of the firm, the managers and the owners may not aim towards the same objectives. The shareholders are supposed to be primarily concerned about the maximization of the value of the stock they own. On the other hand, management pursues their personal goals, even at the expense of owners' interests. Professional managers do not oppose in principle to the maximization of the shareholders' wealth, yet they are more concerned about their objectives. Managers' aspirations for security, increased salaries, enhanced power and prestige, can prompt them to direct funds to operations and activities, which do not necessarily contribute to the maximization of owners' utility (Williamson, 1963; Berle and Means, 1932; McEachern, 1978). Williamson (1963) argues that managers may prefer certain types of expenditures - i.e. staff expenditures, emolument expenditures, and availability of funds for discretionary investments - that enable them to achieve the aforementioned objectives. Those expenditures, however, "... have value additional to which derives from their productivity" (Williamson, 1963, p 1034; see also Monsen and Downes, 1965).

In general, it has been maintained that, in the case of separation of management from ownership, a firm's top management is very likely to make financial and investment decisions that do not necessarily aim to maximize shareholders' value (Monsen and Downes, 1965; Scherer, 1980; Hunt, 1986).

Jensen and Meckling (1976) argue that the interests of shareholders and managers do not coincide because professional managers do not have significant ownership interests in the corporations they manage (see also, Tirole, 1988; Hart, 1995). As the proportion of managerial ownership of share capital diminishes, top managers become more interested about pursuing their personal goals and less concerned about the financial condition and results of the firm (Jensen and Meckling, 1976).

The managers may refrain from implementing policies that maximize shareholders wealth when these policies have a negative impact upon their own utility function. (Jensen and Meckling, 1976). For example top managers of large, complicated corporations may avoid taking decisions that bear substantial personal costs, increasing stress and physiological pressure in their work. Keynes (1931) and Hicks (1935) argue that the separation of ownership and management in corporations makes managers to be less interested about the maximization of shareholders wealth. Their prime consideration is to adopt and implement a relaxing style of management. According to Baumol (1967), top executives are not particularly determined to pursue policies that provide firms with competitive advantage, since these policies usually contain an element of considerable risk; a risk that they are not willing to undertake.

The conflict of interests that exist between shareholders and professional managers, to whom the former have delegated the authority to administer company's affairs, stems from the asymmetry of information that exists between the two groups. This conflict of interests constitutes the crux of the agency problem. The agency problem and the solutions that have been proposed for overcoming this problem comprise the agency theory. The agency theory has been developed after the neoclassical theory. The issues that the agency theory includes, constitute the basis for the development of the modern managerial theory (Williamson, 1990). The agency theory provides the theoretical foundation for the development of the corporate governance mechanisms that aim to secure that the management of a firm seeks to maximize shareholders wealth.

The first organized efforts for the establishment of coherent set of principles of corporate governance took place during 1980's by the "American Law Institute" in 1984 and the "Treadway Commission" in 1987. The issue in 1992 of the "Cadbury Report" introduced new regulations concerning corporate governance, while the Organization for the Economic Coordination and Development and the World Bank have made important contributions for the development of corporate governance principles (Spanos 2005).

The mechanisms that have been proposed by corporate governance theory for ensuring that the managers' decisions and actions aim toward the maximization of shareholders wealth can be classified in two categories: those that are imposed by

the external environment of a firm; and those which are developed within a corporation.

### **3. External environment mechanisms**

The competition in labor market for managerial skills can persuade managers to avoid value-reducing actions (Zimmerman, 1978; Fama, 1980; Fama and Jensen, 1983; Watts and Zimmerman, 1986). This competition can be both external and internal. The performance of a firm is criterion of the efficiency of its management. Therefore, management's salaries can be associated with the performance of the firm (Abdel-khalik, 2003). Assuming that the labor market is efficient, managers restrain from value reducing actions in order to avoid unfavorable adjustments to their compensation. When the management of a firm is involved in value-reducing actions, this information eventually becomes known and their professional reputations will be impaired. Thus, even if a manager's salary is not affected at present by firm's performance, it will most likely be affected in the future. Consequently, a manager who is not going to retire in the near future has an incentive to refrain from being involved in actions that harm shareholders' interests (Fama, 1980; Demsetz, 1983). In any case, managers are not expected to pursue policies that are in direct conflict with shareholders' interests, since they run the risk to lose their job (Friedman, 1953).

Additionally, competition within the firm may impose restrictions on managers' behavior. Senior managers have strong incentives to examine and control the efficiency of subordinate managers, since the former's executives compensation and promotion can be determined, among others, on the basis of their ability to adequately perform such a duty. Similarly, the subordinate managers are induced to monitor their superiors, since by doing so they enhance their prospects for promotion (Fama, 1980). Furthermore, the welfare of subordinate manager is affected by their superiors' value-reducing behavior, since the value of their human capital in the labor market is negatively affected by that behavior. Consequently, subordinate managers have an obvious incentive to prevent their superiors from taking value-reducing actions (Fama, 1980; Zimmerman, 1978; and Fama & Jensen, 1983). It appears, therefore, that competition in the labor market gives rise to mechanisms that limit managers' ability to undertake value-reducing actions, which harm owners' interest.

Additionally, the competition in the market for corporate control has been advanced as mechanism that can refrain top management from assuming value-reducing activities (Manne, 1965; Hindley, 1970; McEachern, 1978; Marris and

Mueller, 1980; Scherer, 1980; Demsetz, 1983; Fama and Jensen, 1983; Hunt, 1986). According to Scherer (1980), the market for corporate control can restrict management's opportunistic actions, and indeed prompt them to pursue policies that will be in shareholders' interest, since failure to maximize value:

*"... will depress company stock prices below their potential value; this will induce some outside entrepreneur to bid for a controlling interest, remove the old management, and redirect the company's energies toward increasing profits and hence stock values."* (p.37)

Thus, the labour market and the market for corporate control are assumed to exercise pressures on managers that can restrain them from undertaking value-reducing actions

## **4. Internal mechanisms**

### **4.1 Incentives to managers**

Given the issue of agency problem that pertains in modern corporations, shareholders introduce mechanisms that prompt professional managers to pursue policies that serve owners' interests (Dhaliwall *et al.*, 1982; Watts and Zimmerman, 1986). Bonus-schemes and/or compensation plans constitute such a mechanism (Demsetz, 1983; Healey, 1985; Raviv, 1985; Watts and Zimmerman, 1986). The basic rationale that underlies the usage of such incentives-schemes is that by connecting managers' compensation with the performance of the company, as this is expressed by the level of its profits, the interests of shareholders and managers will be aligned (Jensen and Zimmerman, 1985; Pavlik *et al.*, 1993).

The above discussion assumes that managers do not own any proportion of a firm's stock capital. In case they own a proportion of a firm's share capital, they have incentives to abstain from value reducing actions. Assuming rational expectations, the market anticipates any opportunistic managerial behavior, and discounts the value of the stock outstanding. Thus, managers bear the cost of a value-reducing action (Demsetz, 1983; Benston, 1985; Jensen and Zimmerman, 1985; Hunt, 1986; Pavlik *et al.*, 1993). When ownership of a firm's stock capital constitutes a substantial proportion of managers' personal wealth, managers have personal interest in ensuring that value-reducing actions will be avoided. It should be noted that, what is of importance is not so much the percentage of a firm's share capital that managers own, but the proportion of their personal wealth this percentage constitutes (see, Kelly, 1983; Demsetz, 1983; Benston, 1985). As Benston (1985) states: "... a very small percentage of a large publicly-traded company is a lot of money..." "For executives (as for other people) the

determining variable is the amount of the executives total wealth invested in the companies they manage” (p.72). Lewellen (1969) indicates that for top executives the stock-based compensation exceeds four times their after-tax compensation in cash. Demsetz (1983) provides evidence that suggests that top executives own a considerable proportion of firms’ share capital in all but largest firms (see, also Murphy, 1985). Furthermore, it should be noted that compensation plans are not exclusively based on reported earnings. Managers’ remuneration may be linked with a firm’s stock value by linking managers’ compensation with company’s share price, or by offering stock options to managers instead of directly paying them with cash bonuses (Kelly, 1983). Demsetz (1983) argues that:

*“... [managers] receive incomes that are highly correlated with stock performance. This correlation derives not only from bonuses but also, to a surprising degree, from managers’ ownership of stock. Ownership and control are not so separate as is often supposed.(p. 388)”. Therefore: “...managers’ shareholdings create a substantial linkage between the financial interests of managers and those of outside shareholders (p. 389)”.*

Empirical findings seem to support this argument (Singh and Davidson III, 2003). Lewellen *et al.* (1985) and Tehranian *et al.* (1987, a and b) found that stock-returns are positively associated with the proportion of managerial ownership. Yermack, (1996) and Gorton and Schmid (2000) arrived at similar conclusions. Walking and Long (1984) provide evidence that when managers own substantial proportion of the share capital of firm the conflict between the interests of managers and owners in the case of take-over become less intensive (see, also Pavlik *et al.*, 1993).

Furthermore, it has been argued that the positive association between stock returns and managerial ownership holds provided that the managerial ownership does not exceed a certain proportion of firms share capital. Beyond this point the value of the firm seems to decline (Hermalin and Weisbach, 1991; Morck *et al.*, 1988; Mc Connell and Sarvaes, 1990). According to Stulz (1988), when managers control a large proportion of firm’s share capital are more reluctant to undertake high-risk high-return projects; projects which are likely to contribute to the maximization of the shareholders wealth. In order to be determined the point beyond which managerial ownership has a negative impact on the market value of a firm, it should be taken into account the size (Kole, 1995), the growth prospects of a firm (Seifert *et al.*, 2004) and also the prevailing corporate governance framework of each country (Demsetz and Lehn, 1985).

## **4.2 Control Mechanisms**

The basic criterion for the evaluation of managers’ actions should be the extent to which they contribute to the maximization of shareholders’ wealth. However, it

is not always simple for shareholders to exercise the appropriate control upon managers' conduct of firms' affairs.

Average shareholder may not possess the adequate experience in order to identify which actions of professional managers really serve his interests. For instance, a decision of management might not lead to the maximization of shareholders' wealth, not because that decision was intentionally value reducing, but due to the impact, at the implementation phase, of factors that had not been anticipated by firms' management when that decision was made.

Furthermore, the average shareholder is difficult to have a full access to information relating to the management of a firm. Irrespective of their status in the organizational hierarchy, executives select to conceal from their superiors any information that will have an adverse impact on their compensation and their promotion prospects. Williamson (1988) argues that this problematic flow of information within an organization should not be considered as an inherent and inevitable characteristic of modern corporations with complicated structures. As a result, in many instances, the top management of a firm, and the firm's shareholders to a greater extent, has a very inaccurate picture of the real state of an organization.

It should be pointed out that the average shareholder might not have a particularly strong motive to exercise strict control upon the management of a firm. A typical investor holds a portfolio of securities, each of which constitutes only a small fraction of a firm's share capital. Therefore, he does not have to be worried about the performance of a particular stock. Besides, the cost of supervising firm's management and controlling its actions is not negligible and might be greater than the ensuing benefits.

Shareholders usually assign the responsibility for the supervision of managers' conduct to the board of directors, to internal and external auditors. Directors and auditors are supposed to have access to any relevant information concerning company's performance.

#### **4.2.1 Board of directors**

##### *4.2.1.1 The structure of the board of directors*

The board of directors has been recognized as a crucial corporate governance mechanism. Particular importance has been assigned to the structure of the board of directors. It has been argued that the participation of independent non-executive members in the board of directors increases its effectiveness as monitoring mechanism, and consequently contributes to the increase of the firm's value. The independent non-executive directors can effectively control managers while they can contribute additional know-how relating to firms' operations. (Fama and Jensen, 1983; Rosenstein and Wyatt, 1990). Consequently, the presence of

independent non-executive members in the board of directors facilitates the decision-making procedure of a firm (Cadbury, 1992; Hampel, 1998). Moreover, the independent non-executive directors are more likely to remove an incompetent CEO, so that the value of the firm to increase (Borokhovich *et al.*, 1996).

Due to the fact that they have limited access to inside information, the independent non-executive directors attribute more importance to the existence of a qualitative external audit, despite its cost. In the same time, the external auditors take more reliable responses from the independent non-executive directors in questions they put regarding the audit procedure and the preparation of the published financial statements (Hampel, 1998). Therefore the presence of independent non-executive members in the board of directors enhances the reliability and the faithfulness of the published financial statements (Beasley, 1996). The participation of independent non-executive directors in the committees that supervise the internal audit procedures is a matter of utmost importance. Otherwise, it is difficult for the internal audit to inspect with out bias the decisions and actions of the management (Menon and Williams, 1994).

The findings of empirical research provide mixed evidence regarding market reaction to the participation of independent non-executive members in the board of directors. Baysinger and Butler (1985) and Rosenstein and Wyatt (1990) found that the market reacts positively in the participation of independent non-executive members in the board of directors. On the other hand, Bhagat and Black (2002) did not find any evidence to support the argument that there is an association between abnormal stock returns and the existence of independent non-executive board members. Conyon and Peck (1998) argue that information asymmetry between executive and non-executive members of the board of directors, explains this result. Independent non-executive members of the board of directors, due to the limited access they have to inside information, may not have a complete and accurate view of the real financial position of firm. Thus, they are not in position to make suggestions that they will substantially improve the firm's operation and performance. The prime concern of independent non-executive directors is to secure that they will be reappointed to the board of directors (Nickell, 1995). They do not have a particular motive to replace the senior managers of a firm when the firm's performance is not considered to be satisfactory.

#### *4.2.1.2 The Size of the board of directors*

The quality of the decisions taken by the management of a firm seems to be associated with the number of the members of the board of directors. As a consequence the size of the board of directors can influence the market value of a firm.

There are two approaches regarding the association between the size of the board of directors and its effectiveness. According to the first approach, the boards

of directors with few members are more effective (Jewell and Reitz, 1981; Olson, 1982; Gladstein, 1984; Lipton and Lorsch, 1992; Jensen and Meckling, 1976). In contrast, in the larger boards the procedures are time-consuming, and the board delays to take decisions even for issues that demand an immediate response. Moreover, the members of larger boards appear to be less inclined to scrutinize and criticize the decisions of the firm's management (Jensen, 1993 - Lipton and Lorsch, 1992). Furthermore, it appears that when the board of directors has few members is more likely the senior managers – even the CEO - to be removed if the company's performance is not satisfactory (Yermack, 1996; Dahya *et al.*, 2002). Empirical evidence indicates that there is negative association between stock returns and size of the board of directors (Yermack, 1996; Eisenberg *et al.*, 1998).

The alternative approach maintains that when a board of directors has many members it can contribute more effectively in the maximization of the values of a firm. When the board of directors has many members is more likely that there will be directors with specialized knowledge in various subjects. Lipton and Lorsch (1992) argue that when a board of directors has many members an allocation of duties and responsibilities takes place. Consequently, the directors can monitor and control managements' actions more effectively. Anderson *et al.* (2004) argues that when the board of directors has many members a more accurate recording and reporting of firm's transactions is achieved. It appears, therefore, that as the number of the members of the board of directors increases a more efficient use of firms' resources is achieved. This development results in an increase in the firm's value.

It should be pointed out, however, that in larger boards the cooperation between the directors can be more cumbersome (Jensen, 1993; Lipton and Lorsch, 1992). Yet, in certain industries the large boards of directors are essential for the effective control of companies' management (Chaganti *et al.*, 1985; Klein, 2002 a and b; Adams and Mehran, 2002). It has been argued that when the existing mechanisms of corporate governance are ineffective, the usual response is to increase the number of the directors of the firm. Within this context the existence of board of directors with many members is the effect and not the cause of the unsatisfactory performance of a firm (Loderer and Peyer, 2002).

#### **4.2.2 CEO Duality**

Whether the same person is the president of the board of directors and the CEO of the firm is a factor that can influence the independence of the Board of Directors (Fama and Jensen, 1983; Carver, 1990; Millstein, 1992; Whittington, 1993; Brickley *et al.*, 1994). It has been argued that, when the same person holds both offices, management's decisions and actions may not be effectively controlled by the Board of directors (Finkelstein and D'Aveni, 1994). The executive directors may avoid asking a thorough

inspection of the managements' decisions and actions (Jensen, 1993), since such an action would have put in question the trustworthiness of the president of the board of directors. It should be pointed out; however, that the fact different persons hold the two offices does not necessarily mean that an effective control is applied upon the actions of the firm's management. There are many instances where the president of the board of directors decides to interfere – unofficially – with administrative issues. In this case he/she may not be in position to inspect effectively firm's managers (Dulewicz και Herbert, 2004). On the other hand, Donaldson and Davis (1991) support that CEO-chair has a thorough knowledge of the firm's financial condition and as a consequence is in position to make all the required decisions that improve firm's performance.

The absence of effective control of management by the Board of directors is likely to result in a reduction of shareholders' wealth (Worrell *et al.*, 1997). Firm's managers may aim to maximize their personal wealth and not the firm's value. It has been observed that even in cases of firms that they do not operate effectively, is rather difficult to replace a CEO if he/she is also the president of the Board of directors (Morck *et al.*, 1989; Calcagno and Renneboog, 2004). It follows, that in this case the prospects of firm's recovery are limited.

Moreover, empirical evidence suggest that when the CEO of a firm is the president of its board of directors the information provided to shareholders regarding the economic prospects of the firm is limited (Dalton and Kesner, 1987), since the board of directors is not independent enough to ensure that the appropriate information is provided to shareholders and to other parties interested about the corporation. As a consequence investors feel insecure and avoid investing in the particular firm (Cadbury Committee, 1993).

#### **4.2.3 Ownership structure**

The concentration of the ownership of firm's share capital to a limited number of shareholders (henceforth, block holders) facilitates the effective control of the management of a firm. Block holders are considered those shareholders that own more than 5 % of firm's share capital. Since they have made a considerable investment in a firm, block holders are expected to exercise a continuous control upon the management of the company, in order to ensure that the management's decisions lead to shareholders' wealth maximization (O'Sullivan, 2000). In addition, when there are shareholders that control a substantial proportion of firm's share capital it is more likely that ineffective managers will be removed and replaced (Calcagno and Renneboog, 2004; Kaplan and Minton, 1994). Therefore, the presence of block-holders contributes to the improvement of the administration of a corporation (Shome and Singh, 1995; Allen and Phillips, 2000); a fact that is reflected in higher share prices (Holderness and Sheeham, 1985; Barclay and Holderness, 1991).

However, the fact that a number of block holders controls the share capital of a firm does not secure the effective control of firm's management. It is important that the block holders participate actively in the inspection of management's actions (Bethel *et al.*, 1998). Yet, there are different categories of block holders. Each category has its own interests and motives. The most common category of external shareholders is the legal entities. The type and the size of legal entities determine, to a considerable extent, their ability to control effectively firm's management (Maury and Pajuste, 2005; Shivdasani, 1993; Sudarsanam, 1995). The institutional investors can exercise considerable influence upon the management of a company, since they control a substantial percentage of voting rights in the general meetings of the shareholders. In addition, the dominant position they hold in the financial markets, allows institutional investors to influence the share price of firms.

Empirical evidence suggests that the participation of institutional investors in a company is beneficial for the firm and for other categories of shareholders as well (Ashbaugh *et al.*, 2006), while it contributes to the increase of firm's market value (Nandeltadh and Rosenberg, 2003). In fact, Nandeltadh and Rosenberg (2003), maintain that institutional investors constitute the most important type of shareholders. Not only stock returns of a company are high when institutional shareholders own a substantial proportion of its share capital, but institutional investors press for a high quality of internal audit mechanism as well. Institutional investors can prompt firms' management to adopt policies that improve the return on the invested capital (Scott, 1986). The ownership of a substantial proportion of the share capital of a firm by institutional investors, can lead to the disclosure of high quality financial information (Kane and Velury, 2004). Institutional investors have the power to exercise pressure to companies to apply the appropriate accounting standards, and avoid using misleading accounting treatments (Chung *et al.*, 2002).

Additionally, Karathanasis *et al.* (2000) provide evidence that stock returns are significantly affected by the fact that institutional investors control a substantial proportion of firm's share capital. However, Gorton and Kahl (1999) argue that institutional investors cannot effectively control firm's management. Thus, their presence has no impact upon firms' share price.

## **5. Conclusions**

Historically, a number of corporate governance mechanisms have been proposed in order to deal with the agency problem that characterizes modern corporations. This study provides a review of these corporate mechanisms and their effectiveness.

The review of the existing corporate governance mechanisms provide useful

implications for both the shareholders and the regulatory authorities responsible for introducing corporate governance rules. In particular, shareholders can evaluate the system of corporate governance principles that a company applies and the extent to which these principles secure their interests. Moreover, the regulatory authorities may use this study to determine whether the corporate governance framework of their country effectively aligns managers' and shareholders' interests. However, it should be pointed out that in order to evaluate the corporate governance framework of a country, the specific characteristics of the business environment and the corporate ethics that pertain in a particular country should be taken into consideration.

## NOTES

1. According to the principle of economic rationality, an economic entity should aim towards the maximum result given the available resources or alternatively an entity should aim to achieve a given result with the minimum of resources.

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