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EXTRACTION OF NON-RENEWABLE RESOURCES: A DIFFERENTIAL GAME APPROACH

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Abstract

Exploitation of non–renewable resources is an intensively studied field of environmental economics in the last century. Since the influential Hotelling's paper a huge progress is made in the depletable resources literature. Although a variety of methodologies is used in that problem's solutions a basic question of time inconsistency arises in the solution process. We show the sources of dynamical time inconsistency in a leader–follower game for which the buyer leads while the extractor follows and the players employ open loop strategies. Also we make use of Markovian informational structure, in a non–renewable resource Nash game, in order to extract strategies that are time consistent. Finally we enlarge the utility function space from the logarithmic utility to the utility functions that exhibits relative risk aversion with the same, with respect to time consistency, strategies.

JEL classification: Q30, C60, C61, C62, C70, C72.

Keywords: Non–renewable resources, time consistency, Markovian strategies, leader–follower.

1. Introduction

Economists have given much attention to the role of natural resources in the operation of an economic system. The main interests in environmental history have been, at least in the beginning, the scarcity and exhaustion of natural resources. The systematic allocation of resources and the importance of markets were emphasized by the classical economists in the 19th century. Adam Smith (1776) gave attention to the dynamic effects of market. For Smith nature was generous and agriculture capable of offering outputs in excess of inputs and he did not consider as an obstacle to growth the resources scarcity problem. Malthus (1798, 1820) and Ricardo (1973) considered the land of a country as one of the main characteristics of its economy. Malthusian scarcity considers natural resources as homogeneous in quality while Ricardian considers them as varying in quality (Barnett and Morse, 1963).

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In the first neoclassical models there is an absence in the production functions of any natural resources. Natural resources are introduced into neoclassical models of economic growth in the 1970s with the systematic investigation of optimal resource depletion. Marshall (1890) and the new neoclassical economists adopted an optimistic view of natural resource scarcity which holds till 1960s. Modern Marxism has also seen natural resource scarcity as a potential growth constraint without proposing any alternative view.

After the Victorian economists and in the beginning of the last century economists showed little or no concern for resource exhaustion. Modern theories of natural resources scarcity in the 1960s and 1970s were proposed by Hotteling (1931) and Ramsey (1928). There is no big difference between Marshall's and Hotteling's views on exhaustible resource depletion but we may say that Hotteling's theory is more completely developed (Halkos, 2007).

In Economics of nonrenewable resources, it is well known that when there is a fixed stock of an exhaustible resource, Pareto optimality requires the difference between price and marginal extraction cost rise at the interest rate. The above Hotelling condition is true only in competitive market equilibrium. A monopolist, however, supplies the resource in such a way that the difference between marginal revenue and marginal extraction cost rises at the interest rate, as well. This is a type of modified Hotelling condition in monopolistic situations. As a result, a monopolist will not supply in general the resource efficiently.

The analysis of the dynamics of an economy with natural resources (exhaustible and non) demands attention to the nature of the group of consumption (extraction) paths available in this economic system. This requires thoughtful consideration of the technology of resource use. An emerging conclusion is that if a natural resource is necessary and un-substitutable and at the same time is available in a finite amount then in every feasible path extraction must decline to zero.

In the present paper we propose a simple nonrenewable resource extraction model and we find the precise analytic forms of the Markovian equilibrium resource exploitation strategies that are strongly time consistent. As a consequence the closed loop Markov perfect Nash equilibrium is by definition a robust one. We enlarge the utility function space from the usual logarithmic utility function to the wider class of utility functions that exhibit relative risk aversion. In this way, we conclude about the relationships of the utility functions and discount rates and the number of players of the induced dynamic game. Also we use the most recent modern perspective of dynamic economic ssanalysis that is the Hamilton–Jacobi–Bellman (hereafter HJB) equation of dynamic programming.

The structure of the paper is the following. Section 2 reviews the existing literature and states the problem into consideration while section 3 discusses the leader-follower formulation and time inconsistency in non-renewable resource

economics. Section 4 present the proposed model and section 5 discusses the utility function in terms of risk aversion. The last section concludes the paper.

2. Literature review and statement of the problem.

In the Economics of non-renewable resources arisen by the famous article of Hotelling (1931) every resource that is mined without the possibility to regenerate, also including the forests, is meant as exhaustible resources. The discussion on the Hotelling's paper is based on the problem to find "the optimum social value of the resource" under full competitive extraction. That is in a time instant this quantity is defined by $u(q) = \int_0^q p(q)dq$, where the integrant is a decreasing function, while the upper limit of integration is the market consumed quantity. Consequently if one discounts the future utility with the discount rate γ, then the present value will be expressed as: $V = \int_0^T u[q(t)]\ e^{-\gamma t}dt$. In the same manner in an oligopolistic situation the same problem is set as the choice of the quantity $q(t)$ under the constraint $\int_0^\infty qdt = \alpha$, that is the maximization of the present value $J = \int_0^\infty qp(q)\, e^{-\gamma t}dt$.

The above problems have been solved with the calculus of variation method and the main conclusion that was extracted of the celebrated Hotelling's paper is that perfect competition is able to induce a time trajectory that is a social optimum one, but the monopoly yields an extraction time path not only more conservative but also socially sub–optimal.

In the same model Stiglitz (1976) adopting a demand function of the form $p = f(t)q^{\alpha - 1}$ for one unit of quantity q, with $0 < \alpha < 1$ and demand elasticity expressed as $\frac{1}{1-\alpha}$, he concludes that in order to maximize the discounted revenues of one firm, extraction will be socially optimal, both under perfect competition and in a monopolistic environment, the Hotelling rule must hold. With Hotelling rule to represent the equation $\frac{\dot{p}}{p} = r$ holds, where r is the discount rate and $\frac{\dot{p}}{p}$ is the rate of the price increment. Substituting in the demand function the Hotelling condition yields finally the following necessary conditions that must hold under perfect competition and for monopolistic firms, as well:

$$\frac{\dot{p}}{p} = \frac{r - \frac{f'}{f}}{\alpha - 1}$$

together with the exhaustion condition of the resource:

$$\int_0^{\infty} q(t)dt \leq S_0,$$

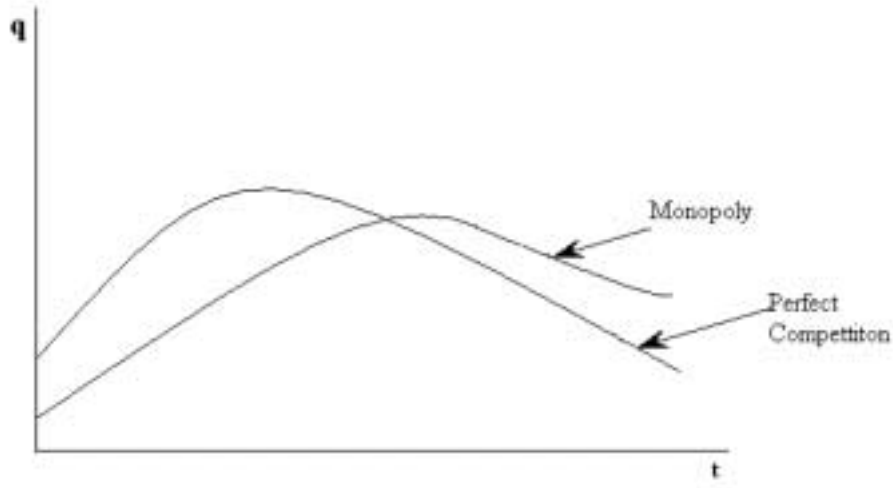
with S_0 to express the total stock of the resource.

However if the demand elasticity increases in time, that is an expected fact, the original Hotelling condition takes the following form:

$$\frac{\dot{p}}{p} = r - \frac{\alpha'}{\alpha}, \text{ with } \alpha' > 0$$

The latter equation leads us to conclude that the price increment rate will be slower in the monopolistic firms than in the competitive ones. Consequently the latter implies that if the resource exhaustion condition $\int_0^{\infty} q(t)dt \leq S_0$ holds then the resource extraction rate for the monopoly will be lower if the monopolistic firms follow more conservative extraction policies. The next figure compares the two extractions time paths for monopolistic and competitive firms respectively.

Figure 1. Extraction time paths under monopoly and perfect competition with an incremental demand elasticity.



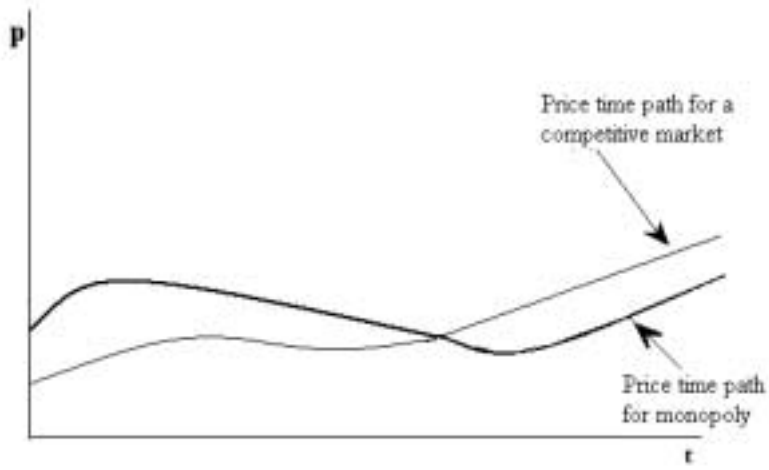
A similar biased situation takes place for monopolistic extraction firms that follow a conservative extraction policy if the extraction costs are entered into the utility function. Assuming constant costs per extracted unit and decreasing with respect to time cost functions, that is $g(t)$ is the cost function and $g'(t) \leq 0$, then monopolistic revenues will be $\int_0^\infty (fq^\alpha - gq)e^{-rt}dt$ and after simplifications and rearrangement of the terms the Hotelling condition now becomes:

$$\frac{\dot{p}}{p} = r(1 - \gamma_m) + \frac{\dot{g}}{g}\gamma_m$$

where $\gamma_m = \frac{g}{\alpha p} < 1$ is the quotient of the division of the extraction cost by the marginal revenue. Clearly the quantity γ_m is less than unit and if extraction cost decays quickly so does the market price.

The competitive market solution presupposes condition $\frac{\dot{p}}{p} = r(1 - \gamma_c) + \frac{\dot{g}}{g}\gamma_c$ to hold, with $\gamma_c = \frac{g}{p}$. Consequently in any time instant t the corresponding price $p(t)$ will be the same in both competitive and monopolistic markets, since $\gamma_c(t) < \gamma_m(t)$ and the rate of price increment $\frac{\dot{p}}{p}$ for the competitive market will be higher from the monopolistic. The price curves have only one intersection point and the monopolist follows a more conservative extraction policy. The above extraction policies are depicted in figure 2.

Figure 2. Price time paths for competitive market and monopoly.



3. Leader–follower formulation and time inconsistency in non-renewable resources economics

A considerable literature exists on the behavior of monopolistic or oligopolistic sellers of a non–renewable resource (Bergstrom et al., 1981; Dasgupta and Heal, 1979; Lewis et al. 1979; Ulph and Folie, 1980) but less progress has been made in analyzing imperfections on the buyer's side of the market. Karp (1984) studies the effect of allowing the buyers to exercise market power by using a tariff against sellers that assumed to behave competitively or monopolistically. While Kemp and Long (1980), in the same tariff argument, derive the open loop tariff for a non–renewable there is a considerable objection on the buyer's announced tariff. Precisely an importing country (modeled as a buyer) wants to revise the originally announced tariff. Kemp and Long point out that the open loop extracted tariff, in their model with constant extraction costs, is dynamically inconsistent. Karp (1984) in a different, with respect to extraction costs, model makes the assumption that the seller obtains no utility from consuming the resource, finds that the inconsistency on open loop tariff caused by the assumption of stock–dependence cost.

The well known leader–follower formulation can be adapted in the non–renewable resource modeling. The conflict between buyers (the users of the resource or even the importers) and sellers (the extractors of the resource) can be modeled as a Stackelberg game in which the buyers lead. The buyers choose a tariff and the sellers choose the rate of extraction. If the sellers control the rate of extraction in a non – cooperative Nash game, it would never be optimal for them to extract anything. If they committed themselves to extracting at a certain rate, the buyers could charge an arbitrary high tariff. Conversely if the sellers lead, consequently were allowed to choose the price at which they would sell the buyers would face an infinitely elastic supply curve, and the optimal price charged would be zero.

It is well known that the rationality of the follower, in a leader – follower game, implies that the open loop policy does not in general satisfies the principle of optimality (Kydland and Prescott, 1977), consequently that policy is not a time consistent one. In the non – renewable resource extraction game, for which the buyer leads, it is likely for the seller (the follower) would not believe an inconsistent policy even though the resulting payoff is less than with the open loop policy. On the other hand, if the buyer uses a consistent price charged against a competitive seller, the competitive rate of extraction results and if the buyer uses a consistent price aga inst a monopolist, the resulting extraction path may be either more or less conservative than the extraction path under pure monopoly.

More formally the conflict between buyers and sellers in the resource game can be modeled, in the case of unit price charged, as follows. The buyer's payoff is the

discounted stream of the difference between the utility of consuming at rate $x(t)$ and the payment $(P(x) - q)x$ and in the infinite date at which consumption terminates with discount rate ϱ, buyer's (leader's) payoff may be written as:

$$J_L = \int_0^\infty [u(x) - (P(x) - q)x]e^{-\varrho t}dt \qquad (1)$$

Taking now the follower's position his payoff maximization can be modeled as follows. Let $c(z)$ be the average cost of extracting a unit of the resource given that stock size is z then the instantaneous extraction cost is $c(z)x$. We assume $c'(z) \leq 0$ and $c''(z) \geq 0$ then the seller's payoff is the following:

$$J_F = \int_0^\infty [P(x) - q - c(z)]xe^{-\varrho t}dt \qquad (2)$$

In this setting together with the assumption that the follower enjoys no utility from consuming the resource, the leader controls .the quantity, $q(t)$, that buys and the follower controls the rate of its extraction $x(t)$. Both the players are constrained by the non negativity of the stock $z(t)$ with the justification that the resource reduces with the extraction rate that is the constraint:

$$\dot{z}(t) = -x(t),\ z(0) = z_0 \text{ given},\ z(t) \geq 0 \quad \forall t \qquad (3)$$

In the price path determination, the buyer takes into consideration the reaction of the seller.

In the case of a competitive seller open loop prices charged results in time inconsistent policies except when costs are constant. Indeed if the follower takes the announced leader's control variable $q(t)$ has to solve his problem for which the Hamiltonian formed as follows:

$H_F = [P(x) - q - c(z)]xe^{-\varrho t} - \lambda(t)x$ and the resulting first order conditions:

$$\frac{\partial H_F}{} = 0 \Rightarrow [P(x) - q - c(z)]e^{-\varrho t} - \lambda(t) = 0 \qquad (4)$$

(with respect to control) and:

$$-\frac{\partial H_F}{} = \dot{\lambda} \Rightarrow \dot{\lambda} = e^{-\varrho t}c'(z)x \qquad (5)$$

(with respect to state variable), with the co–state $\lambda(t)$ to denote the follower's marginal utility of an additional unit of stock at time t. It is worth noting that a prediction of the arisen time inconsistency is that the follower's co–state variable $\lambda(t)$ is dependent upon leader's control variable $q(t)$.

Following Simaan and Cruz (1973) leader's problem can be converted into an optimal control problem that he solves. The intuition behind this approach is straightforward. The leader treats the follower's first order condition as a constraint and the follower's co–state $\lambda(t)$ as a state (with equation of motion given by the second of the two first order conditions). The elimination of the leader's control

using the first of the first order conditions yields $q = P(x) - c(z) - e^{\varrho t}\lambda$ and substitution into the leader's payoff (1) the payoff can be written as:

$$J_L = \int_0^\infty [[u(x) - c(z)x]e^{-\varrho t} - \lambda x]dt \qquad (6)$$

Note the last term in equation (6) gives the present value of the total instantaneous rent which the leader pays. In order to find the source of time inconsistency the next step is to solve the leader's optimal control problem which is defined by maximization of its payoff, given by (6) subject to the original resource constraint $\dot{z}(t) = -x(t)$ and the follower's constraint given by its maximization problem, that is the constraint $\dot{\lambda} = e^{-\varrho t}c'(z)x$. The Hamiltonian and first order conditions of the latter problem are given by the following equations:

$$H_L = e^{-\varrho t}[u(x) - c(z)x] - \lambda x - \mu_1 x + \mu_2 e^{-\varrho t}c'(z)x \qquad (7)$$

$$\frac{\partial H_L}{} = e^{-\varrho t}[P(x) - c(z)] - \lambda - \mu_1 x + \mu_2 e^{-\varrho t}c'(z) = 0 \qquad (8)$$

$$-\frac{\partial H_L}{} = \dot{\mu}_1 \Rightarrow e^{-\varrho t}[c'(z) - \mu_2 c''(z)]x = \dot{\mu}_1 \qquad (9)$$

$$-\frac{\partial H_L}{} = \dot{\mu}_2 \Rightarrow x = \dot{\mu}_2 \qquad (10)$$

with μ_1, μ_2 to denote the co–states of the states z and λ respectively. Setting the boundary condition $\mu_2(0) = 0$, equation (10) , which gives the marginal value to the leader of an increase of the follower's rent, has the solution $\mu_2(t) = \bar{z} - z(t) > 0$. The last condition implies that the leader would like to increase (revise) the follower's rent and the dynamic time inconsistency arises because for the open loop information structure a commitment against deviations had made.

In the next sections we expose a simple nonrenewable resources extraction model in the lines of the previous research. For the proposed model the players of the Nash game follows Markovian strategies, that are by definition time consistent, and the aim is to extract some useful conclusions with respect to the player's risk aversion and for his maximized utility as well. The methodology used is that of the conjectured value function and strategies and of the maximized Hamiltonian with an auxiliary variables system.

4. The simple model

Assume an absolutely free natural resource, for example a type of fuel that is extracted simultaneously from *N* firms or *N* countries (players of the game). With

$x(t)$ we denote the resource stock at time t and $c_i(t)$ denotes the extraction rate for player i at the same time. As it is normal we assume that the extraction rate at every time except the bootstrap of the game (zero time) is positive, $c_i(t) \geq 0$, and if the resource stock at time t is zero, $x(t) = 0$, the extraction process ends up, that is $c_i(t) = 0$.

The nonrenewable resource exhaustion equation is described by the following differential equation of motion which simply claims the nonrenewable resource stock to exhaust with its extraction rate:

$$\dot{x}(t) = -\sum_{i=1}^{N} c_i(t) \tag{11}$$

Every player enjoys a utility function $u(c_i)$, well defined for every $c_i > 0$ which is concave and increment with the property $u(0) = -\infty$. The utility function is discounted with the discount rate $\varrho > 0$, so every player's objective function is given as:

$$J_i = \int_0^{\infty} e^{-\varrho t} u(c_i(t))dt \tag{12}$$

In order to extract every player's Markovian strategy we make use of the conjectured method for strategies and the value functions for problem (12) under constraint (11).

Proposition 1

In the symmetric resource extraction game with N firms and utility functions given in logarithmic form, $u(c_i(t)) = \ell n\, c_i$, every player follows linear Markovian strategies that are independent of the number of players.

Proof

Supposing that all rivals of the arbitrary $i \in N$ player use the stationary Markovian strategy φ the HJB equation for the arbitrary $i \in N$ player is given by:

$$\varrho V_i(x) = \max_{c_i} \left[\ln(c_i) + V_i'(x)\left(-c_i - (N-1)\varphi(x)\right)\right] \tag{13}$$

In order to find player's i best response we maximize the right hand side of (13) with respect to extraction rate c_i, that is:

$$\frac{\partial[\ln(c_i) + V_i'(x)(-c_i - (N-1)\,\varphi(x))]}{\partial c_i} = 0 \Rightarrow \frac{1}{c_i} = V_i'(x) \Rightarrow$$

$$\Rightarrow c_i = \varphi(x) = [V_i'(x)]^{(-1)} \tag{14}$$

We conjecture value functions of the form:

$$V_i(x) = A\ell n x + B \tag{15}$$

and $$V_i' = \frac{A}{x} \Rightarrow [V_i'(x)]^{(-1)} = \frac{x}{A} \tag{16}$$

Combining (14) and (16) the equilibrium Markovian strategies are given by the expression:

$$c_i = \varphi(x) = [V_i'(x)]^{(-1)} = \frac{x}{A} \tag{17}$$

which is clearly independent of the number of players N.

Substitution of the strategy given by (14) into the maximized HJB equation (13) yields:

$$\varrho V_i(x) = [\ln(c_i) + V_i'(x)(-c_i - (N-1)\varphi(x))] \tag{18}$$

Further substitution into (18) of the equilibrium strategy (17) yields the following differential equation:

$$\varrho V_i(x) = \left[\ln\frac{x}{A} + V_i'(x)\left(-\frac{x}{A} - (N-1)\frac{x}{A}\right)\right] = \left[\ln\frac{1}{V'(x)_i} - N\right] \tag{19}$$

with solution:

$$V(x) = \frac{\ln(x\varrho) - N}{\varrho} - \Omega \tag{20}$$

Where Ω is the integration constant. Clearly the value function is dependent upon the number of the players and on the extraction rate.

5. Utility function relative to risk aversion

We discus now the same model entering into the class of games where utility functions of the symmetric players exhibit the relative risk aversion. For this reason we consider the model as described by equation (12) under constraint (11). The present value of the corresponding Pontryagin function will be:

$$P_i(u, \lambda_i, c) = P_i(c, \lambda_i, u_i, \ldots, u_n) = u_i(c_i) - \lambda_i \sum_{i=1}^{n} c_i \tag{21}$$

Extraction rates are supposed to be non–negative $c_i \geq 0$, so the maximization of function (21) yields:

$$c_i = v_i(\lambda_i) = \begin{cases} \lambda_i = u_i'(c_i) = \dfrac{du_i(c_i)}{dc_i} & c_i > 0 \\ \lambda_i = 0 \quad c_i = 0 \end{cases} \tag{21a}$$

and the latter can be solved for $c_i = v_i(\lambda_i)$. Substitution into (21) gives the following Hamiltonian function of the game:

$$H_i(\lambda) = u_i(\upsilon_i(\lambda)) - \lambda_i \sum_{j=1}^{n} \upsilon_j(\lambda_j) \tag{22}$$

For symmetric utility functions the simplified Hamiltonian takes the form:

$$H(\lambda) = u(\upsilon(\lambda)) - N\lambda\upsilon(\lambda) \tag{23}$$

Player's i value function is $V_i = \int_0^{\infty} e^{-\varrho t}\left[u_i(c_i) - \sum_{i=1}^{n} c_i\right]dt$, which shows the player's fee for the sub–game that begins at time zero. If the value function is differentiable with respect to the nonrenewable resource remainder stock x, then the above function satisfies the Hamilton–Jacobi equation[1] $\varrho V_i = H_i\left(x, u_i^*, \hat{u}^*, \frac{dV_i}{dx}\right) \geq H_i\left(x, u_i, \hat{u}^*, \frac{dV_i}{dx}\right)$ with H_i to be given by equation (22) for the non symmetric case and by equation (23) for the symmetric one.

Discussion in the Dockner and Wagener (2008) paper reveals that differentiation of the Hamilton–Jacobi equation yields the following condition to hold:

$$\frac{\partial H}{} \lambda'(x) = \varrho\lambda - \frac{\partial H}{} \tag{24}$$

with the derivatives $\frac{\partial H}{} = u'\upsilon' - N\upsilon - N\lambda\upsilon'$ and $\frac{\partial H}{} = 0$. Substituting back the (23) (the symmetric case) into (24) gives:

$$\lambda'(x)[u'\upsilon' - N\upsilon - N\lambda\upsilon'] = \varrho\lambda \tag{25}$$

Using the maximization condition as given by (21α) we have $\lambda_i = u_i'(c_i) = \frac{du_i(c_i)}{dc_i}$ and $\upsilon'(\lambda) = \frac{1}{u''(\upsilon(\lambda))}$, (25) finally takes the form:

$$\lambda'(x)\upsilon\frac{u'\upsilon' - N\upsilon - Nu'\upsilon'}{\upsilon} = \varrho\lambda \Rightarrow \lambda'(x)\upsilon\left[N + (N-1)\frac{u'\upsilon'}{\upsilon}\right] = -\varrho\lambda \Rightarrow$$

$$\Rightarrow \lambda'(x)\upsilon\left[N + (N-1)\frac{u'}{u''\upsilon}\right] = -\varrho\lambda \tag{26}$$

We now make use of the Arrow–Pratt relative measure of risk aversion[2] in order to simplify (26) even more. The Arrow–Pratt measure is given by $\Xi(c) = -\frac{u''(c)c}{u'(c)}$ and the reverse measure is given by $\Theta(c) = \frac{1}{\Xi(c)} = -\frac{u'(c)}{u''(c)c}$. Taking into account that $\lambda'(x) = u''(c(x))c'(x)$ substitution of the latter into (26) yields finally:

$$u''(c)c'(x)u(c)\left[N + (N-1)\frac{u'(c)}{u''(c)u(c)}\right] = -\varrho u'(c) \Rightarrow$$

$$\Rightarrow u(c) \Rightarrow \frac{dc}{dx}\left[N + (1-N)\Theta(c)\right] = -\varrho\frac{u'(c)}{u''(c)} \Rightarrow \tag{27}$$

$$\Rightarrow u(c)\frac{dc}{dX}[N + (1-N)\Theta(c)] = \varrho\Theta(c)c \Rightarrow$$

$$\frac{dc}{dX} = \frac{\varrho\Theta(c)c}{\left[N + (1-N)\Theta(c)\right]u(c)}$$

We introduce the auxiliary variable ξ making the following assignments:

$$\begin{aligned} \frac{dc}{d\xi} &= \varrho\Theta(c)c \\ \frac{dX}{d\xi} &= \left[N + (1-N)\Theta(c)\right]u(c) \end{aligned} \tag{28}$$

and finally: $$\frac{dc}{dX} = \frac{\frac{dc}{d\xi}}{\frac{dX}{d\xi}} = \frac{\varrho\Theta(c)c}{[N + (1-N)\Theta(c)]u(c)}$$

Moreover we assume that all players enjoy a utility function of the form $u_i(c_i) = -e^{-\alpha_i c_i}$, where $\alpha_i > 0$ is a constant. It can be shown (Varian 1982) that this utility form is linear with respect to mean and variance of the c_i parameter that is $u_i(\bar{c}, \sigma_c^2) = \bar{c} - \frac{\alpha}{2}\sigma_c^2$. Moreover the same utility form exhibits constant absolute risk aversion as the following simplifications reveals:

$$\Theta(c_i) = \frac{1}{\Xi(c_i)} = -\frac{u'(c_i)}{u''(c_i)c_i} = \frac{e^{-\alpha_i c_i}\ell n(e)}{-e^{-\alpha_i c_i}\alpha_i^2\ell n(e)^2 c_i} = \frac{1}{\alpha_i c_i}$$

while for symmetric players the latter simplifies to:

$$\Theta(c) = \frac{1}{\alpha c} \tag{29}$$

Substituting (29) into (27) yields:

$$\frac{dc}{dX} = \frac{\varrho\Theta(c)c}{[N + (1-N)\Theta(c)]u(c)} \Rightarrow \frac{dc}{dX} = \frac{\varrho}{\left[N + (1-N)\frac{1}{\alpha c}\right]\alpha u(c)} \tag{30}$$

The integration of (30) and taking into account the initial condition $c(0) = 0$ the symmetric extraction rates are given by the following expression:

$$c(\mathrm{x}) = \frac{(N-1) + \sqrt{(1-N)^2 + 2\varrho N\alpha x}}{N\alpha} \tag{31}$$

The previous reasoning leads us to next corollary.

Corollary 1.

If all players of the nonrenewable resource extraction game enjoy the same utility function that exhibits constant relative absolute risk aversion, then in the symmetric case extraction rates are dependent upon the total number of extractors and upon the remainder stock. Extraction strategies are given by (31).

Alternatively we can use the auxiliary system (28) which under the assumptions of the constant relative risk aversion is modified as:

$$\begin{aligned} \frac{dc}{d\xi} &= \frac{\varrho}{\alpha} \\ \frac{dx}{d\xi} &= Nu\,(c) + \frac{(1-N)}{\alpha} \end{aligned} \tag{32}$$

The integration of the first yields the solution $\mathrm{c}(\xi) = \mathrm{c}_0 + \frac{\varrho}{\alpha}\xi$, while second's solution is: $\mathrm{x}(\xi) = x_0 + \left[Nc(x) + \frac{1-N}{\alpha}\right]\xi$. Taking the initial conditions $\mathrm{x}_0 = 0$, $\mathrm{c}_0 = 0$ the solutions turn out to the simplified $\mathrm{c}(\xi) = \frac{\varrho}{\alpha}\xi$ and $x(\xi) = \left[Nc(x) + \frac{1-N}{\alpha}\right]\xi$.

We consider now the utility function of the form:

$$u(c) = \frac{c^{1-\alpha}}{1-\alpha} \tag{33}$$

with $0 < \alpha < 1$. The above function exhibits constant relative risk aversion. Indeed calculating the reverse relative risk aversion for symmetric player's we have:

$$\begin{aligned} \Theta(c) = \frac{1}{\Xi(c)} = -\frac{\mathrm{u}'(c)}{\mathrm{u}''(c)\mathrm{c}} = -\frac{c^{(1-\alpha)}}{c^2\left[\frac{c^{(1-\alpha)}(1-\alpha)}{c^2} - \frac{c^{(1-\alpha)}}{c^2}\right]} = \\ = \frac{c^{(1-\alpha)}}{c^{(1-\alpha)}[1-\alpha-1]} = \frac{1}{\alpha} \end{aligned} \tag{34}$$

Substituting equation (34) into (27) is transformed into:

$$\frac{dc}{dx} = \frac{\varrho\Theta(c)}{[N + (1 - N)\Theta(c)} \Rightarrow \frac{dc}{dx} = \frac{\varrho}{\left(N + \frac{1 - N}{\alpha}\right)\alpha} \tag{35}$$

And the solution of (35) (with direct integration) is:

$c(x) = \frac{\varrho x}{(1 - \alpha)N - 1} + \Omega$, Ω is the integration constant.

Setting zero extraction rates at time zero that is $x(0) = 0$, the extraction strategy finally takes the following linear form:

$$c(x) = Ax \tag{36}$$

with

$$A = \frac{\varrho}{(1 - \alpha)\, N - 1} \tag{37}$$

The previous reasoning leads to the following corollary.

Corollary 2

Under the assumption of the utility function that exhibits constant relative risk aversion for the symmetric players of the non renewable resource game, all the game players follow Markovian linear strategies of the form (36) proportional to the discount rate and decrement to the number of players.

To that end we reexamine the model under the assumption of a logarithmic utility function, according to the relative risk aversion approach. Further we assume the logarithmic utility function $u(c) = \ln(c)$. The reverse function of relative risk aversion now is:

$$\Theta(c) = \frac{1}{\Xi(c)} = \frac{-u'(c)}{u''(c)c} = -\frac{\frac{1}{c}}{-\frac{1}{c^2}c} = 1$$

and substituting the latter into (37) gives:

$$\frac{dc}{dx} = \frac{\varrho\Theta(c)}{\left[N + (1 - N)\Theta(c)\right]} \Rightarrow \frac{dc}{dx} = \frac{\varrho}{(N + 1 - N)} = \varrho \tag{38}$$

Direct integration of (38) yields the equilibrium strategy:

$$c(x) = \varrho x \tag{39}$$

The form of (39) verifies the conjectured strategy that is used in order to obtain the equilibrium Markovian strategies for the symmetric case of Proposition 1 for $A = \frac{1}{\varrho}$.

6. Conclusions

In this paper we propose a model of nonrenewable resource extraction along the lines of the classical Hotelling model and his successors. We adopt the dynamic programming techniques in order to extract the equilibrium Markov strategies that the players of the proposed differential game must follow. First we make use of a conjectured strategy method and conjectured value functions of the Hamilton– Jacobi equation. This conjecture is verified at the end of the paper. Moreover we enlarge the utility function space from the logarithmic space to the utility functions that exhibits relative risk aversion. This enlargement case reveals interesting results. Specifically the reverse measure of Arrow–Pratt relative risk aversion is given by the expression $\Theta(c) = \dfrac{\mathrm{u}'(c)}{\mathrm{u}''(c)c}$.

Consequently for utility functions of the form $u_i(c_i) = -\mathrm{e}^{-\alpha c_i}$ for every symmetric player of the game we are able to derive the analytic forms of the equilibrium strategies for every player. These analytic forms of equilibrium strategies are dependent on the number of the players and on the discount rate, as well. A second application of the shadow price system is the case of constant relative risk aversion that is induced for the utility functions of the form $u_i(c_i) = \dfrac{\mathrm{c_i}^{(1-\alpha)}}{1-\alpha}$ $0 < \alpha < 1$. Applying the reverse measure of relative risk aversion, that is expression $\Theta(c) = \dfrac{1}{\Xi(\mathrm{c})} = \dfrac{1}{\alpha}$ then we are able to calculate the analytic forms of the Markovian solution strategies in equilibrium.

The Markovian equilibrium strategies for this case were linear expressions dependent upon discount rate and decrement with respect to the number of the players. To that end the usage of the auxiliary shadow price system verified the initial conjecture about linear equilibrium strategies and value functions for logarithmic utility functions $u_i(c_i) = \ln(\mathrm{c}_i)$. Precisely Markovian strategies are given by linear expressions of the form $\mathrm{c}(x) = \dfrac{\mathrm{x}}{A}$, where $\mathrm{A} = \dfrac{1}{\varrho}$.

NOTES

1. For a full exposition of differential games see Olsder and Basar (1998).
2. Microeconomic Analysis Varian (1982), page 189.

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ECONOMIC HISTORY RESEARCH AND ECONOMIC DEVELOPMENT

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Abstract

In this paper, is attempted to correlate two of the branches of Economics: Economic History and Economic Development. This effort involves the redefinition of a framework for economic history research, which may prove useful for further study of the evolutionary process of development, resistance to its achievement (natural and human), as well as the socio-political conditions and processes in which this development takes shape. Also are questioned some of neoclassical tools explaining the main causes and "roads" of economic development.

JEL classification: B2, N01, O10, O20.
Keywords: Economic History, Economic Development

"Economics needs history
much more than history needs economics"
Charles P. Kindleberger (1990)

1. Introduction

It is common knowledge that one of the separate branches of Economics is that of Economic History.[1] Indeed, beginning in the 19th century, with the appearance of the German Historical School[2] in particular, economic historiography acquired great importance for the study and interpretation of economic events and phenomena, and at the same time served as an additional methodological tool[3] for the investigation of the determinants of the economic evolutionary process. Of course this does not mean that this particular branch or any other could become independent from the general structure and rules governing the parent science. In the light of this, the interrelation among individual branches is not only necessary but also indispensable for an all-embracing, integrated interpretation and resolution of the separate economic problems.

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In this paper, we attempt to approach and correlate two of the branches of Economics: Economic History and Economic Development. This effort involves the redefinition of a framework for economic history research, which may prove useful for further study and investigation of the evolutionary process of development, resistance (natural and human) to its achievement, and the socio-political conditions and processes in which this development takes shape. The latter constitute a web of more complex and interdependent factors (variables), since apart from the economic aspects; the interpretation of development can and must include social, political, institutional and cultural aspects of society. Moreover, it is here that the difficulty of economic historiographical research lies and here that economic history may constitute an efficient tool in similar investigative analyses and interpretations.

It should also be noted that the approach we are attempting has been reformulated in order to pinpoint the weaknesses and problems of the orthodox economic approaches to the interpretation and goals of development that have heretofore predominated. The fact is that, after the middle of the last century in particular, such analytical approaches and the attendant development policies, which were based exclusively on neoclassical economics and overlooked the magnitude and role of historical evolution, completely eliminated the broader social aspects of economic theory and narrowly treated the problems of development "economically". What is more, they limited the whole study of economic relations to the exchange activities of subjects acting as individuals.[4] One reaction to the above-mentioned theoretical analyses, as well as the influence then being exerted by the American Institutionalist School[5] and previously by the German Historical School, was the emergence of the proponents of the neo-institutionalist school, who pointed to the need to make economic analyses and research broader by including in them social data, trends and behaviours.[6] On the other hand, of course, there has always been and still is a minority trend that treats economic theory as "political economy" (the first valid version of economics), i.e. as the sum total of economic relations of the social classes, which is formed on the basis of either the tradition of A. Smith and D. Ricardo or the tradition of K. Marx.[7]

Of course, nowadays few people would genuinely doubt that the theory of development is more or less by definition an interdisciplinary area, since its subject matter is drawn from a range of scientific fields (economics, sociology, political science, economic geography, social anthropology, etc.). Also, it has been almost universally recognised that for the problems of societies to be studied many other socio-political factors should also be taken into account, mainly in the course of their long-run progress.

On the basis of the above, in continuing our work we will go forward to list

certain fundamental variables that contribute to economic development, from the standpoint of the economic historian. The origin and systematic investigation of these variables, insofar as the data are sufficient and reliable, could determine the anticipated economic transition of a society to a higher level of progress and prosperity. This has been and still is the goal of economists and of social scientists more generally. Moreover, economic life is not a thing apart from politics and the culture in general of a civilisation, whether it refers to the field of history,[8] or to the field of current reality.

2. Economic history research and the process of development

If the predominant topics of economics are summed up as: a) the choice, quantity and rate of the goods and services produced, b) the search for natural and human resources, the type of production processes and the origin of the savings with which the final goods and services will be produced, c) investigation of the form of the economic units or the organisations producing them, and finally d) identification of the end recipients/consumers of these goods and services, then it becomes apparent that these topics are also necessarily the main subjects for research by economic history.

Between these two scientific disciplines there is nevertheless a difference in emphasis. Economic theory concerns itself mainly with the "present" and only to a lesser degree with the past. Thus it deals with analyses, which seek to throw light on current problems and help create economic policies, whose purpose is to lead societies to a higher level of prosperity. By contrast, economic history is concerned with the problems of "becoming", and for that reason it places greater emphasis on the evolutionary process, longitudinal trends and qualitative determinants of successive changes. Of all the inexhaustible topics and phenomena that economic history has been concerned with, the topic of economic development has been shown to the predominant one.[9]

But what is "development"? Although there has never been any consensus on what "development" is or should be,[10] in a broad sense there has been a tendency to associate the word with something positive or desirable, whether in reference to societies, regions or specific population groups. In the last hundred years, the viewpoints of Western economic culture have been characterised to a large extent by overlapping concepts such as progress, evolution, development and growth.[11] Initially emphasis was laid on progress and more generally on evolution. But since the Second World War –not coincidentally[12]– the term "development" appears to be the one that has predominated.[13]

Thus, economic development usually refers to progressive economic changes from a relatively lower to a relatively higher level of progress and prosperity. In this case, economic history is concerned with the determinants of the various stages of evolution, which drive a unit or a system from one economic stage to another.[14]

As we know, economic development may refer in particular to an increase in the goods and services that people have at their disposal. It may relate to the economic change of a political or geographical region (see e.g. Ithakisios, 1988; Ithakisios - Kalafatis, 2000) or any other portion of humanity, e.g. the development of Western European culture (see e.g. Clough–Rapp, 1959; Bautier, 1971). Nevertheless, the effects of such changes vary from one place to another or from one period to another. In other words, the element of place and time is the basic parameter for fully justifying an economic change and determining the magnitude of the development process. Thus, goods and services may increase not only in absolute total magnitudes, but also in proportion to the increase in the population. Therefore economic development may mean not only the increase in total supply of goods and services in a unit of people, but, much more importantly, it may also mean an increase in goods and services per capita of the population of which this unit is a part.

In the present period, the goods that are produced and the services that are provided are usually expressed through the concepts of national income or net domestic product. In the past and for long periods of time, there were no reliable statistical data on national income, and many countries lacked the information necessary to derive real national income. What is more, this was the case until recently, and in many instances is still the case nowadays for many developing countries of the Third World (e.g. African countries). Both the World Bank, which early on had assumed the role of leading international institution for the collection, analysis and publication of data relating to economic conditions and growth in the developing countries, and also contemporary development economists, by and large were aware that measurements of development or growth in terms of higher per capita income contained errors (*problems of reliability*) and failed to provide in all cases a real picture of conditions and changes at a given time (*problems of validity*).[15]

In the relatively recent past (before the 19th century), when there were no national income data, one could get some idea of economic changes from the statistics on mining activities, including mining of iron or coal, and also from data regarding the transport of cargoes, or data on the volume of foreign trade. We can obtain indications on evolution in the more distant past from port traffic, the development of private enterprises, number of innovations, application of new technical methods or the rise in real wages derived from time series of prices and

wages. For even more remote times, we can obtain general impressions from various writings or ancient monuments. Some picture of economic development can also be deduced from long-term population increases in relation to natural and other resources. We can even form some idea of economic development from the growth of cities, since urban centres grow in proportion to the increase in population. In addition we can get a sense of economic progress from improvements to peoples' living standards, as shown by better clothing, the variety and quantities of foodstuffs, or even an increased supply of food, better housing or the construction of large, imposing buildings and works of art.

The interpretation of economic development, or what economists call "planning or analysis of development", is extremely difficult work, because different factors, different forces and different combinations of them have affected development in different times and regions and in different conditions. In this case, no one single interpretation can be made of such a complex phenomenon. The work, therefore, of the economic historian is to interpret economic evolution on the basis of many factors (variables) - to explain what these factors were, what was their importance or effectiveness, and how they coincided to produce the effect they ultimately brought about, or if they really did bring it about, and above all the implications of those changes and in particular the factors that contributed to them in the periods under examination.

The historian of economic life can organise his historical analysis around the basic questions of economics - why goods and services are produced, which human and natural resources are used, through which production processes using which savings. It becomes apparent that the population's desire for greater production of goods and services is the foundation for finding ways and means of economic development. The use of better technology in the production process certainly means that every unit of human labour produces more products. It can also be seen that the easy acquisition of materials for processing facilitates production, whereas it stands to reason that society should maintain some reserves with which it can maintain itself and at the same time experiment with new ways and methods of manufacturing and producing goods (economies of scale).

Goods are produced and services provided first of all in order to meet people's biological and physiological needs,[16] that is, their efforts to keep themselves and the dependent members of their families alive. In order to meet these needs, it is necessary, depending on climate or specific local geographical conditions, to store up goods in order to address future emergencies such as non-productive seasons of the year, droughts, natural disasters, famines, etc. That is why in most societies, even primitive ones, surpluses are produced, even though these may not be used to produce more goods. But apart from meeting physical needs, people may produce goods in order to satisfy their desires, which are inspired by the environment in

which they live and develop, or by their culture, such as tools, valuable objects and jewellery, means of transport or even grand buildings or works of art. As long as people are free to seek what they want,[17] what counts for the economy is not real needs - which in any case cannot be defined except in relation to the subsistence level - but desires, as expressed by individuals and society.[18] The variety of goods produced depends not only on the ideologies that the specific culture has created, but also on the society's productive capacity. In any case there is evidence to show that cultures that lack the means to increase their material prosperity minimise the desire for wealth and establish as defining ideologies religion, physical asceticism and inertia (India is one characteristic example).

If the acquisition of material goods is an important objective of the society, the achievement of this objective depends on a wide variety of other factors. Among them, the availability of natural resources to the population per capita plays an important part. Throughout the course of history, the soil and the exploitation of the plant and animal world have been the resources most used on a global scale.[19] Later, great development was noted in areas where individuals could have access to the resources of other areas through commerce.[20]

In the course of time, people began to consume what has been called "nature's capital" - to exploit, sometimes indiscriminately, various natural resources. Nowadays we tend to refer to this category using the term "non-reproductive capital," so as to stress the finite, irreplaceable nature of these materials, since when some reserve, e.g. of coal, is exhausted, it is not humanly possible to replace it. But in all cases, the exploitation of nature depended to a large extent on the level of technology. Raw materials such as coal, iron, copper and even wheat only came to be regarded as natural resources in the strict economic sense of the term when people began to exploit them because they had enough technological knowledge to discover and use them. Only when the desire for goods is accompanied by the ability to acquire them do the wealth-producing resources of the earth become important for economic development.

Also of fundamental importance for economic development is the direction of human resources towards the production of goods and services. The greater the part of the population devoting its activity to the production process and the more work it performs, the greater the quantities of goods and services it can expect to have at its disposal. In addition, the higher the ratio of natural resources to population, the more opportunities there will be to produce surpluses that can be invested in order to produce even more goods, without overlooking other factors such as the effectiveness of institutions and mechanisms capable of increasing the efficiency of labour and capital.

Knowledge of the technology of production constitutes a fundamental agent of economic development, because to a large extent it determines the quantity of

human labour that will be embodied in each unit of product.[21] In the history of technology it is often argued that in the Western world during classical antiquity a series of striking innovations was followed by a long phase of stagnation, and only at "*the beginning of the Middle Ages did people begin to find a way of breaking out of the (technological) impasse*" (Lilley, 1973, p. 188).[22] The new technical methods may have independent origins, that is, they may have developed within a society, or they may have been introduced from other societies, i.e. have adaptive origins. In the first case they usually appear to be the result of some socially perceptible need or the result of accumulated experience of the past and, at some moment in time, the synthesis of these experiences. In the second case, a society may willingly borrow the new technology from another, or a more developed society may impose its technology on another more backward society. The process of disseminating technology is usually carried out first in less developed regions that are culturally related other more developed regions, with which they already exchange goods and ideas. Later it spreads to more backward regions, as the more developed ones seek more raw materials and increased quantities of foodstuffs.[23] The variety of technological methods and the transplanting of institutions are dependent on the acceptance or non-acceptance and on the adaptability of the new ideas to the production processes and knowledge existing in the recipient regions. This is what modern management calls the "process of technology transfer" (in the economic organisations). Simple technological methods, which facilitate the production and distribution of basic goods and services, such as better means of transport, usually precede technological developments aimed at producing complex or luxury goods. What is more, the new technological methods or the modernisation of already existing ones, which require little capital, are most of the time disseminated earlier than those requiring large amounts of capital.

Another important issue for economic historians is to pinpoint the source of these surpluses and the manner in which they arise: when recycled in the production process, they may help increase productivity. In other words, the importance of savings to economic development is a significant element of their analysis.[24] The expansion of productive activity entails the creation of surpluses from current output, making it possible to develop new, cheaper and better methods, as well as to modernise technological equipment.[25] This is why a society aiming at economic development, instead of devoting a major part of its activity to the production of non-durable goods, must also makes available a substantial part of this activity for the production of capital or producer goods. Such savings may be voluntary or forced (i.e. made without the will of the savers). Whatever its nature, however, saving is facilitated if the economy has for its exchanges some recognised durable means of measuring values, first and foremost gold (and previously also silver), in which savings can be accumulated,[26] and also if there are

suitable mechanisms for the collection of the savings of a society, which can be made available in the form of credits for making productive investments, or even if there are the respective institutions for the protection and safekeeping of such savings (i.e. credit institutions).[27] In this way, the flow of monetary incomes becomes cyclical. If, however, all or part of monetary reserves remains unavailable (unspent), the volume of flow decreases correspondingly and the economy begins to experience anti-inflationary pressures. If this process continues, the contraction of the flow may reach a limit beyond which saving is no longer possible.

In a modern economy, monetary savings are channelled, as we know, into the money market and the basic problem is whether there will be enough individuals and/or organisations willing to absorb them in the form of loans for investment purposes. Nevertheless, in pre-industrial Europe large amounts of monetary savings - most in (metal) coins[28] - were often hoarded up. This meant that they failed to reach the money market (which existed only in a primitive form) and remained out of circulation. The pitfall of hoarding was in fact very effective, and from this point of view the historical evidence and archaeological finds are overwhelming (Cipolla, 1980, p. 58 et seq.).

The organisation of enterprises and the closely associated methods of financing production and commerce were later regarded as important agents of development. By the term “organisation” is meant daily, rational management of business affairs, long-term decisions relating to the volume and composition of output, or even the manner and monitoring of product marketing and price fluctuations. Problems of financing include obtaining initial capital and expansion capital, as well as the sources and terms of financing. In this case, much may also depend on the division of labour, which requires developed commerce and it has been empirically proven that in societies that had and have a high per capita income the proportion of the labour force employed in commerce and transport is relatively higher than in backward societies.

We could also note other factors, each of which may contribute to development. In modern societies in particular, undoubtedly of great importance for economic development are the suitable training of human resources (which may be considered to be an investment in human capital) and the successful assumption of business motives.[29] Whether or not leaderships of enterprises are talented will depend on whether or not they are chosen on the basis of merit (as to the second, enterprises in the public sector are vulnerable in this regard),[30] on their level of education and on the incentives offered them.

Another basic factor is that purchasing power must be fairly –or at least adequately– shared out among the population so that there is active demand for goods on the part of the public, since the public’s desires do not necessarily lead to active demand if not accompanied by the corresponding purchasing power. The

market is indifferent to the hungry, whose excruciating desire for food is not accompanied by a corresponding ability to buy food. Desires are transformed into active demand and registered by the market only when they are manifested in the form of expenditure. Therefore, only when there is enough demand are entrepreneurs encouraged to risk capital and resources for the production of more and usually better-quality goods.

Moreover, the general prevailing conditions are an important element for progress and the smooth operation of the economy. Thus in periods of peace, social harmony and calm, as well as political stability, more activity may be devoted to economic progress than in periods of social upheavals.

Nor could we leave out, as an equally important agent of economic development, the overall institutional setting, the tradition and the culture of a society (see e.g. Bitros–Karayiannis, 2008). The institutional setting, or in other words the institutional rules of behaviour of a society that comprise an institution, and their effectiveness in particular, may have a variety of impacts, which are of great importance for explaining the existence of low levels of development or vice versa, or for addressing the problems of development. The researcher of economic life should not remain indifferent to the institutional setting, as it plays a decisive part in economic progress. Even though the institutions themselves do not directly add resources to the economy, they may create the right environment, in which a rational combination of factors of production can help accelerate the rate of development.[31]

A list of the fundamental variables contributing to economic development could not be considered complete without an attempt to identify the final recipients of the goods produced and the services provided. In other words, the analysis should seek an answer to the central question: who will ultimately use the goods and services that are produced, and which take precedence in production: capital or consumer goods? At this point we could make another distinction among goods, as historical reality has demonstrated: goods that are destined to be added to everything that has been accumulated over the centuries (positive production) and "goods" that have been and are destined to destroy everything that humankind has created (negative production).

As has been noted, in an economy that is expanding rapidly, producer goods absorb a greater proportion of the national income than they do in a stagnant or declining economy. What occurs in this case is that such societies sacrifice enjoyment of current consumption for the sake of future consumption. In a developing economy the consuming public usually adheres to this model of behaviour, because their standard of living rises with economic expansion, and since they are satisfied with the achievement of some improvement, they do not ask to use immediately everything in their power financially to have. Another

characteristic of this form of economy is that economic benefits are not absorbed by one or more small groups of society, whether consisting of the members of the church, military or political hierarchy, or of a certain social class. There is, in other words, a relatively equal distribution of wealth. The basic economic needs of the few are quickly met, and when they have been met, spending is directed at luxury rather than capital goods. As a result of the distribution of purchasing power among bigger masses of the population, demand remains at high levels, and thus the expansion of the economy is encouraged.

It is also well-known that ownership of the means of production has an effect on economic development. Thus, it is desirable for ownership to be relatively concentrated, so as to achieve the maximum return on development efforts, but not so concentrated as to drive a group of people to acquire excessive power and impose unwanted sacrifices on the others. It is apparent that it is preferable to have some degree of competition so that one group cannot acquire such power, which it could use against the interests of society as a whole. Finally, a great concentration of ownership of goods might prevent the creation of incentives that would operate productively, whether such incentives are amount of pay, social status, or simply the personal satisfaction of creation.

A systematic study of the above-mentioned elements and factors can determine, insofar as data are sufficient and reliable, the degree of economic change in space and time, even though often in the past, as has already been mentioned, a certain confusion has been created between the concepts of development, progress and what we call “economic change.” There are a number of approaches, which link development with basic structural changes in the economy, such as changes in organisation, consumer attitudes, entrepreneurship and the structure of the market. By contrast, progress has been associated with the economic characteristics of relatively advanced economies, in which the basic structure of the elements making up the economy is by and large well established and the analysis deals with temporary or short-term fluctuations within the given structural framework. The concept of economic change includes both development and progress, and extends to the economy of stagnation and decline. Thus economic change or the lack thereof covers all economic phenomena observed during the economic life of humankind.

The elements and factors noted above can contribute to a progressive transition of a society from a relatively lower level of development to a higher one. The question that arises in this case could be formulated as follows: May some of these factors be of decisive importance or have a more decisive impact than others, at the outset or in the realisation of this change? For many years now, the relevant research has attempted to identify which of these factors determines the start of the chain reaction of economic development. Some authors argued that economic

changes come about very slowly and that sudden changes can be understood only when the long-term evolution is known, during which all the necessary elements and factors appear. Others believed that if a certain percentage of the national income is made available for investments in capital goods, then economic development begins to be sustained, because the investment of that portion of the national income will take the form of a standard model of socio-economic behaviour.[32] Some expressed the view that economic development takes place first in certain sectors of the economy, such as the textile industry, international commerce or transport, and then spreads to other sectors. By contrast, the proponents of balanced development argued that the features of development spread very rapidly from one sector to another.[33]

Although the above considerations have some basis, at the end of the day both economic analysis and historical economic research show –and we share this view– that economic development is a result of the impact and the combination of all the factors mentioned above. It also becomes apparent that the elements and factors making up the process of development are formed over a very long period of time. The *time* element constitutes the basic parameter of economic history. In the course of humankind's economic life, past knowledge was accumulated and supplemented from time to time in such a way that, when the conditions were right and the social environment was ready to accept them, they combined so as to lead to a higher level of development. The historian of economic life, by studying the course of economic development, discovers phenomena that are repeated in different conditions. That is why the proportional phenomena of human experience can be used to provide an indicative picture, but only with difficulty could they constitute a measure of proof. The fact that under certain conditions people behaved in one way or another may mean that if the same conditions are created they will use their experience and avoid the reversals that they faced in the past. And it is precisely this accumulated experience from which people may benefit that constitutes the real justification for studying the economic past and the importance of economic history.

Let us add here that history, not in the universal sense of the term, but as the history of each separate civilisation, may prove useful for another reason. Often during the last fifty years, the views on development and the opinions expressed regarding a common evolution have treated different types of cultures and different forms of social life as equal, and consequently it was sought to apply a more or less common development policy to dissimilar civilisations. No one, however, has the power to set development goals on behalf of others. Present-day researchers –and historians and anthropologists in particular– are called on to focus on revealing and describing each separate culture with the greatest possible precision, not for the purpose of changing it but in order to understand and

consequently choose ways and means for its evolution in accordance with, or at least partly in accordance with, its own views. With regard to this matter Danish anthropologist Kirsten Hastrup (ref. Martinusen, 1997, pp. 99-100) argues: "*We are not going to suggest that others remain with tradition for the sake of tradition, but we should work as mediators between the West and the rest of the world, so that the latter can retain those aspects of its culture which it regards as important and change or abolish any of the others as it wishes*". In this way development becomes a culturally grounded process, where the objectives cannot be put forward from outside the cultural sphere of the parties concerned, whether these are ethnic communities with their own state or local communities. Only then can development become self-development.

In any case, in general it should be noted that no matter how desirable economic expansion is, it cannot continue indefinitely, in perpetuity. By itself it creates certain natural and human resistance, which tends to neutralise it. In the past, the most important of these inhibitory factors were: a) an increase in population beyond the technological capabilities of society, b) exhaustion of natural resources, c) inflexibility of institutions, which hindered technological changes and restricted the ability of the economy to respond to exogenous forces, and d) any extra-economic factors per se (wars, natural disasters, etc.).

3. Conclusion

From the previous analysis is deduced that in economic history, no instances of linear progress have ever been noted. Having a simplified idea of progress, without calculating periods of regression in productivity and human prosperity, prevents us from properly understanding the history of the economic life of humanity. Experience is the best teacher, and present-day humankind is capable of designing better than its ancestors and avoiding some of the reversals and pitfalls of the past. Economic history has taught us that many radiant civilisations that reached the peak of their economic power at some point displayed self-destructive tendencies, which ultimately led them to economic decline or in the long term even to their destruction. One of the reasons that this happens may be the fact that, irrespective of the dynamic conditions and circumstances that are created from time to time in the course of humanity's progress, there is another constant coefficient that displays consistent psychological and physiological reactions, and this is none other than humanity, human nature itself. To a large extent, this also a cause of the correspondence of historical events.

NOTES

1. For the role and importance of economic history see, inter alia, Grass (1927, pp. 12-34); Clapham (1931, pp. 315-320); Car (1961); Gustavson (1957, p. 1 et seq.); Stigler (1964); Fogel (1967, pp. 283-308); Elton (1967, pp. 70-113); Topolski (1972, pp. 713-726); Houmanidis (1980, Vol. A', pp. 13-62); Kindleberger (1990, ch. 2, pp. 12-26)
2. For the Historical School, see Roll (1938, pp. 305-313); Rima (1978, pp. 176-177); Houmanidis (1979, pp. 199-214; 1980, Vol. I, pp. 25, 36-37), Karayannis (1995a, pp. 145-150, 158-159). Many economists have since, beginning from the well-known "*Methodenstreit*", cast doubt on the validity of the approach of the Historical School. Mainly, as concerns the method of unadulterated "historicism" adopted by at least some of those authors for defining the economic stages through which society develops and the attempt they made to replace *homo economicus* with *homo societatis* –a common characteristic of the contributions of this School. However, few could deny the impact it has had on economic thought.
3. If we consider the fact that there is no universally accepted scientific method through which the sciences develop, the same can be seen to be true of economics.
4. To take one example, Lazear (2000, pp. 99-146), writing in the millennium issue of the *Quarterly Journal of Economics* on the state of economics at the turn of the 21st century, stressed that orthodox economics show a tendency towards imperialist expansion into fields and subjects which until recently had remained outside or on the margins of their range, and in fact championed this trend.
5. The School made a serious contribution to the evolution of economics, because it directed its research towards the sociological and institutional consideration of economic phenomena. For example, Commons (1934, pp. 723-725) stressed that in order to understand the manner in which people behave from the point of view of economics, we should take into consideration individuals' personal values and habits, along with the various ways they are impacted by institutions and society.
6. One of the representatives of this school (or of the current of economic thought, making up the so-called new social economics), Myrdal (1930, pp. xviii, 1-3), considered it inconceivable, for instance, that economists would try to construct economic theories without taking account of people's moral,

social and other *"values"* and *"beliefs"*. As he points out, even if we succeed in constructing theories of that type, their usefulness in the exercise of economic policy will be negligible. Other views, not completely the same but similar, regarding the approach to economic phenomena and problems were expressed by other representatives of this current of economic thought, such as J.M. Clark, M. Copeland, et al.

7. From the perspective of "political economy", Fine (2002, pp. 2057-2070), notes that the theory of development is a field par excellence within economic theory and more generally the social sciences, where this penetration of the imperialism of economics, which he views as negative, is tested; see also Karayannis (1995a, pp. 349-351).
8. For an indication of the relationship between history and the other social sciences, see Stern (1956), Komazovsky (1957).
9. Let it be noted here that the study of economic development also includes economic decline. See, inter alia, the theories of decline deployed by Walbank (1953); Pirenne (1957); see also Tuma (1971, Ch. 3).
10. It is indicative that a study conducted in the mid-1980s listed 72 different meanings of the term (Riggs, 1984).
11. J. Schumpeter (1939, p. 72 et seq.), for example, was the one who differentiated the concept of "development from that of *"growth"*, arguing that the magnitude of the changes in the basic forces of production", *"social organisation factors"* –as he calls them– *nature* and *labour*, in conjunction with the respective magnitude of change of the *capital equipment* created from the combination of these two factors, as well as the level of technology and the socio-institutional and cultural environment in general, which *"…is the product of the exertion of intellectual and material forces of society…"* –as he says– will also ultimately determine the magnitude of the total output produced by a community or an economized society. All three of the first factors, which in fact show a greater rate of change, have to do with the concept of *growth*, whereas the technological innovations and those factors relating to the socio-institutional and formative structure have to do with the concept of *development*; see also, Adelman (1962, p. 95 et seq.); Martinussen (1997, pp. 67-68).
12. During the second half of the 1940s and the early 1950s the economic reconstruction of Europe was paramount, following the destruction brought about by the war. The views coming into being at that time about development –indeed, in the narrow, "economic" sense of the term– were associated with the negotiations of the great powers for the establishment of a new

international economic order in conjunction with the creation of an American foreign policy for Europe. The negotiations at that time (Bretton Woods, 1944) ended in the establishment of the International Bank for Reconstruction and Development (IBRD, 1946), now known as the World Bank, and the International Monetary Fund (IMF, 1947). On the other hand, the best known part of American foreign policy regarding reconstruction, mainly of the countries of Europe, was known as the Marshall Plan (1947), which, through loans and a massive transfer of resources, attempted to set the economies of this region of the world back on their feet (in fact, the first recipients of economic aid in this regard, for reasons beyond the scope of this paper, were Greece and Turkey). The World Bank pursued a similar strategy during this period.

13. A relatively recent and widely accepted definition of economic development is *"the process whereby the real per capita income of a country increases over a long period of time, while poverty decreases and inequality in society in general decreases"* –or at least does not increase (Meier, 1989, Ch. 6). This definition can be seen to include, inter alia, the desire to improve living conditions and achieve the prosperity of all the citizens of a society.
14. For the theories of evolutionary or developmental change that have been put forward from time to time, see, inter alia: Marx (1964, pp. 67-115); Buckingham (1958, Ch. 3); Baran - Hobshawn (1964, pp. 540-549); Rostow (1960, p. 10 et seq.); Weber (1958, p. 17 et seq.; 1961, pp. 200-210); Tuma (1971).
15. With regard to the question of *reliability*, the statistics were usually of low quality, because the poorer countries simply were not able to collect the necessary information. Furthermore, there were important internal sources of inaccuracy in their national accounts which were based on measurements of output and consumption at values that assumed market exchange of all products. Nevertheless, large proportions of the output of such countries were used in the households themselves or were exchanged in other ways (without pricing). As regards the question of *validity*, the most important problem was that the data of the national accounts of the developing countries was most of the time not representative of the real distribution of incomes among their citizens. Therefore the total increase in per capita income could reflect, for example, a substantial increase for high-income groups and at the same time a decrease or standstill for low-income groups (Martinussen, 1997, pp. 85-88).
16. As described e.g. by Maslow (1954).
17. A relatively recent concept of human development, also adopted by the *United Nations Development Programme (UNDP)* when the first *Human*

Development Report was published in 1990 (UNDP, 1990), under the leadership of Pakistani economist Mahbub ul Haq, defined it as *"…a process of enlarging people's choices"*. In the beginning, interest was focused on three essential areas: the opportunity to live a long and healthy life (i.e. the existence of a high average life expectancy), the opportunity to be educated and the opportunity to have access to the resources necessary for a decent standard of living. In this regard, see Martinussen (1997, pp. 459-477). Later on, a series of other factors were added for a *"…sustainable human development"*, with reference to political freedoms and human rights, equal treatment for men and women, environmental and other aspects of sustainability, as well as issues regarding citizens' participation and their ability to influence political decision-making in society; see Haq (1995).

18. Cipolla (1980, pp. 15-18); see also Drakopoulos–Karayannis (2007, pp. 53-62).
19. In the known past, economic development was carried out for the first time in areas where the soil was extremely fertile, such as in the plains of the Tigris and Euphrates (also known as the *"Fertile Crescent"*), the Indus and the Nile, where the level of peoples such as the Sumerians, Persians and Egyptians reached a high degree of development for those times (Spielvogel, 1991, pp. 1-30).
20. As happened in pre-classical Greece with the great wave of Greek colonisation in the Mediterranean basin (12th-6th centuries BC), as well as the expansionist commercial activity of the Phoenicians.
21. In fact, the extreme view has been expressed that technology influences all economic and social changes and that all the other aspects of life must be adapted to these changes, in accordance with the manner in which people perform their work; see Ogburn (1952, p. 49).
22. See also Mundy (1973, pp. 126-129, 141-153).
23. In the ancient world the city-states of Classical-era Greece with their colonies may be regarded as characteristic examples, in medieval Europe during the Renaissance the Mediterranean possession of the city-states of the Italian peninsula, and in modern times (18^{th} century) the developed West (Europe) and the countries of the Ottoman Empire.
24. A milestone in the economic history of Europe since the 11^{th} century was, e.g. the fact that savings were activated for the purposes of production to an extent inconceivable in the past.
25. Rostow (1960, p. 10), combining historico-economic research with economic analysis, argued that during the fourth stage (out of five) of the development process, which he called *"drive to maturity"*, development appears to be based

on a high level of savings and investments, output increases more rapidly than population, and new habits and institutions develop. As he argued: *"…formally, we can define maturity as the stage in which an economy demonstrates its capacity to move beyond the original industries which powered its takeoff* [the third stage] *and to absorb and to apply efficiently over a very wide range of its resources … the most advanced fruits of [then] modern technology"*.

26. This was precisely the reason that since the most ancient of times (gold or silver) coins were adopted as money, i.e. as a means of exchange and measure of values: it was due not only to the rarity of the precious metals, but also to the fact that they possessed certain properties, first described by Aristotle (*Politics*, 1257.a.), such as portability, durability, divisibility and general acceptance.

27. B. Hildebrand, as early as the mid-19th century, regarding the means of exchange as a criterion for differentiating the stages of the economy, argued that the credit economy *(Kreditwirtschaft)* follows the natural economy *(Naturalwirtschaft)* and the money economy *(Geldwirtschaft)*; see Tuma (1971, Ch. 3); Houmanidis (1980, Vol. A', p. 28).

28. Hoarding of coins, in those times, was the most expedient means of concealing and protecting wealth, even in regions or periods noted for their peacefulness and stability. Metal coins - the predominant form of money in circulation in those times - always fascinated people and the temptation to hide shiny pieces of gold and silver was stronger than the tendency to hide printed paper. What is more, prior to the 11th century, organisations for consolidating savings and channelling them into productive uses were either non-existent or inadequate.

29. Business motives has been analysed by many authors in connection with economic development; see, inter alia, Adelman (1962, pp. 9, 95), Ithakisios (1988, p. 343 ftn. 52, also p. 391). For the role of the entrepreneur and the businessman's gain in the evolution of economic thought, see Karayannis (1990).

30. In fact the overall view of society on the issue of meritocracy can constitute a serious agent of either development and progress or stagnation and regression (in the case of lack of meritocracy). For more on this issue, see Karayannis (1995b, pp. 241-255).

31. Apart from the institutional authors, other more recent authors have underscored the importance of culture and the institutional setting. They include Turner (1921, pp. 1-2), who argued that *"The study of institutions is of equal importance* [for the study of the process of development] *provided that*

they reflect the model of social and economic relationships", whereas Adelman (1962, pp. 9, 95), basing himself on Schumpeter (1911, p. 57), also introduced the variable of culture to the proposed function of economic development; see also Houmanidis (1986, p. 251); Ithakisios (1988, p. 391); Skountzos (1997, Vol. I, pp. 285-301).

32. For an overview of certain views that have been expressed on this matter, see Rostow (1964); see also Kuznets (1959).

33. One of the main supporters of uneven development was Albert O. Hirshman (1958), whereas a proponent of balanced development was Ragnar Nurske (1953).

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PATTERNS OF PUBLIC HEALTH EXPENDITURE AND HEALTH CARE FINANCING IN MODERN GREECE: 1833-1911

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Abstract

Published data and statistical series regarding health expenditure in Greece are considered rather unreliable, as they haven't been collected on the basis of a consistent methodology over time, while successive governments never adopted a systematic approach in defining and classifying the magnitude.

The main objectives of this paper are to construct, for the first time, a series of public health expenditure for Modern Greece for the period 1833-1911, to disaggregate this total into its main components and to present and discuss the patterns of change of these magnitudes and to make relevant comparisons with the changes of other available macroeconomic magnitudes for the same period unveiling their relationships.

Our conclusions show that, during the period, Public Health Expenditure (in 1914 constant prices) exhibit overall a very small increasing tendency, its growth rate being considered satisfactory only during the sub-period 1846-1858.

Both, as a percentage of Gross Domestic Product and Total Public Expenditure, Public Health Expenditure show a marked decline during the period in question. The data suggest that the health policy's objectives in Greece throughout the period 1833-1911, were encompassed in overall government policy, but that implementation was seriously constrained by limited funding and inadequacies in organization.

JEL classification: H51, I10, I11, I18, I19, N33.

Keywords: Public Health Expenditure, Health Care Financing, Health Policy, 19th century Greece.

1. Introduction

As in many other countries, the health sector has dominated the economic and political landscape in Greece, for a long time. The health sector of the economy merits attention for its remarkable size, nowadays constituting a large share (≈10%) of the country's Gross Domestic Product (GDP) (OECD, 2007). It also

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represents a substantial investment and employs a large and growing share of the labour force. For these reasons health economics has emerged as a distinct specialty within the general field of economics, studying on the one hand how resources are allocated to and within this sector of the economy and on the other the production of health care services and their distribution across the population. Seeking to demonstrate the magnitude and importance of the health sector and to establish its relevance to both individual and national policy concerns, health economists use various measures of size and growth. More particularly, the interest in health economics focuses upon three related topics: a) the size of the contribution of the health sector to the overall economy, b) national health policy concerns, resulting from public health needs and wants and c) other health issues having a substantial economic element (Folland, Goodman & Stano, 2007).

Following the theories of human capital and economic growth that prevailed in European economic thought in the last thirty years of the19th century, the economic aspects of public health raised questions among contemporary Greek economists as well (Empiricos, 1888). According to these theories, a downgraded level of public health led to a reduction of national capital for various reasons, while, on the other hand, an improvement in the level of public health was transformed to progress in the mental, the moral and the economic sector. In the European context, the confrontation and solution of the issues of mental and physical sickness, focused initially upon the overall interests of the society as a whole and did not constitute a simple expression of charity. It was imposed in order to guarantee an abundant working potential.

As a result of the above, in our research the analysis of public health expenditure was considered critical in understanding the role of the health sector in the overall budget process and in identifying policy priorities. In this context, several levels of analysis were considered useful. More specifically, the first level of the analysis consisted of an examination of the evolution, over time, of the trend of the magnitude for total public health expenditure. Here, it was deemed useful to present these numbers in per capita terms as well, in order to be able to negate, as much as possible, the effects of the border changes and, as a consequence, the large population changes, that took place in the period examined and facilitate inter-temporal comparison. It is important to note, that these calculations included only central level allocations and especially all health expenditures that are administered through the Ministry of Interior.

The second level of analysis consisted of the construction of relevant series and the description of resource allocation within the health sector across major expenditure categories (e.g., Health Centres, Hospitals, Public Health and health promotion, etc.). Then, the levels and shares of the allocations across categories are presented.

The third level of the analysis was to compare the magnitudes derived, with other macroeconomic magnitudes for the same time period, such as GDP, total Public Expenditure and total Social Expenditure.

Finally, the analysis of the public health expenditure's patterns and its allocations was critical to the identification of health policy in Greece throughout the period under consideration. Health policy evaluation must document that potential policy objectives are government priorities. Policy objectives should be derived from, and placed in the context of, the broader development and government objectives of that period. Our conclusions document that the health policy's objectives in Greece throughout the period 1833–1911, were encompassed in overall government policy, but that implementation was seriously constrained by limited funding and inadequacies in organization.

2. Historical Outline and the General Economic Environment

Greece became an independent state in 1830 after a long occupation period, of approximately 400 years, by the Ottoman Empire. Independence was achieved at the end of a ten year revolution which started in 1821 and left the country in ruins, as both its productive structure and overall infrastructure were destroyed and its population decimated (Kostelenos, 1995) (Kostelenos et al., 2007).

A quick survey of the economy during the earlier years of the independent state, since its establishment and up to the end of the reign of King Otto (October 1862), reveals the following general features: a continuous budgetary deficit, extensive borrowing from abroad to pay for it, increased military spending and small public investment (Kostelenos, 2006). In fact, these features remained more or less dominant for the whole duration of the period under examination. In addition, one has to note the large payments made for the expenses of the monarchy, the low standards of the management of public finances and the backwardness of infrastructures and human capital levels relative to normal European standards of the period. These developments consisted a particularly negative context within which public finances were managed and taxpaying citizens functioned and made the achievement of the state's objectives very difficult. It is therefore not surprising that in September 1843 the country defaulted and suspended payments of the debt and in 1848 a forced currency regime was implemented (Kostelenos, 1995) (Kostelenos et al., 2007) (Sakellaropoulos, 1993) (Antoniou, Kostelenos & Kaskarelis, 2009).

The fall of Otto's regime in 1862 obviously created turmoil both as far as the administration of the country is concerned as well as in regard to its economic perspectives.

In the subsequent years, and for a brief period, the situation improved, as tax revenues increased as a percentage of total government revenues. However, in 1865, in spite of the inclusion for the first time of the figures from the Ionian Islands, they dropped again in the lowest per capita figure for the decade. The drop in revenues from direct taxes was accompanied by a smaller one in revenues from indirect taxes. This was reversed significantly in 1864 and 1865. In fact, this increase, which was a result of the taxing system regarding indirect taxation that was implemented in the Ionian Islands, compensated for the decline in revenues from direct taxes.

It has to be noted here that the tithe, as a system of direct taxing, was not implemented in the new territory. Overall, the integration in 1864 of the new territory in Greece was accompanied by an increase of government revenues by approximately 11%.

This was less than anticipated, since in addition to the general increase in government revenues and expenditure expected (in accordance to Wagner's Law) (Sideris, 2007) the population of the Ionian Islands amounted to 21% of the total population of the previous territory of the Hellenic realm (Mansolas, 1867).

The period that followed after the integration of the Ionian Islands is characterised by political tensions. These were essentially the manifestation in the Balkans of the problems related to the eastern question. In addition one must also mention the international economic crisis of the 1873–1896.

In 1881 Greece acquired two new territories: Thessaly and a part of Epirus. These were neglected, quite poor and underdeveloped. In addition, the tax system changed. In particular, the tithe, a tax system that brought in a very important percentage of overall tax revenues, was abolished. Subsequently, in order to raise revenues to meet the extra demands created by increased public expenditure for public works, military purposes and debt servicing, the Trikoupis administration was forced to implement, in 1884, a new customs tariffs schedule.

The next decade, the 1890s, consist a particularly bleak period for the Greek economy. In 1892 the price of currants, by far the most important export item of the country, dropped considerably. Customs duties were then increased by 15% in 1892 but the country could not avoid declaring bankruptcy in 1893. In 1897 Greece fought a losing war against the Ottoman Empire and lost Thessaly for a period a little over one year, during which the territory suffered extensive looting and enormous damages. Finally, in 1898, in order to achieve peace and the return of the lost territory, the country acquiesced to pay large War indemnities to Turkey as well as to accept the imposition of an International Financial Commission to which various important receipts and monopolies were assigned in order to secure the repayment of the debt (Kostelenos, 2006).

In general, the largest part of the increase in the country's public expenditure,

during the period examined, is due to increased military spending, this being a result of wars as well as of the overall difficult international environment. In this respect, a more careful look of the figures reveals that public expenditure increased to levels higher than 30% of GDP in 1834 (a period of internal turmoil), 1879-1881 (the years before, during and after the military mobilisation and liberation of Thessaly and part of Epirus), 1889–1890 (when the "Cretan Question" was prominent) and in 1898 (when the war indemnities -referring to the 1897 war- were paid to Turkey) (Antoniou, Kostelenos & Kaskarelis, 2009) (Kostelenos, 2003).

Summing up, the years in question were not characterised by tranquility and stability. Instead, this was essentially a period of political and social turmoil, frequent wars and territorial changes, as the new nation-state struggled to find its equilibrium. However, it was a period sufficiently homogeneous, as far as the basic characteristics of the economy concerned, for the data to be meaningful and therefore useful as a tool for studying the long term economic developments of the country (Kostelenos et al., 2007) (Kostelenos, Athanassiou & Antoniou, 2006).

3. The Organization of Public Health and Health Care Policy in Greece

The establishment of the health care system in Greece was mostly influenced by the general socio-economic, cultural and political conditions that prevailed immediately after the end of the Turkish occupation and the declaration of National Independence (1827), as well as the historical economic situations of this new course (WHO,1996).

The period in question (1833-1911) is characterized by the lack of organised efforts for the creation of public health services and the fragmentary and isolated activities undertaken for the resolution of the severe problems that the newly established state faced. (Katrougalos,1996). The efforts, which were organised on the basis of the perceptions of the Bavarians for a "centralized" state, were characterised by various fragmentary actions that aimed to combat contagious diseases with the creation of a "Sanitary Police" force and the establishment of a "Sanitary Regulation" code (1845) (Mossialos & Davaki, 2002).

In Greece health care was organized and supervised by the Ministry of Interior, which in 1833 created a special branch called the Sanitary Department. This department enacted special measures for the prevention of so called "outside threats". Thus, Health Offices, Health Guard Houses and Lazarettos were founded, as well as Centres for Contagious Diseases in those parts of the country where epidemics were most likely to occur (Yfantopoulos, 2003).

The Sanitary Department was also responsible for public health and hygiene in

cities, towns and villages, where the supervision was the responsibility of the municipalities (Makridis, 1933). In public health matters, the municipal authorities were assisted by the municipal police and municipal doctors, the latter ensuring compliance with the public health regulations. At the same year, the Iatrosynedrion, a Medical Board-Medical Council was founded, concerned mainly with the practice of and the studies for the medical and paramedical professions. After 1834, scientific studies were obligatory for the new members of the medical profession. In 1837 the School of Medicine of the University of Athens and in 1838 a school for midwives were founded and in 1839 the first chair of Pharmacy was created.

In 1835, following the examples of their colleagues abroad, doctors created their professional association, the Medical Society of Athens. In 1866 the Society of Greek Doctors and in 1882 the Hygiene Society were founded. (Korasidou, 2002). In Table 1 the most significant milestones in the evolution of health services in Greece for the period under consideration are presented:

Table 1: *Milestones in the evolution of health services in Greece (1833-1911).*

1833	• Sanitary Department in the Ministry of Interior • Medical Officers nomination
1836	• Public Health issues assignment to Municipalities • Market and sanitary regulation enactment • Public Health responsibility assignment to Sanitary Police
1837	• School of Medicine of the University of Athens establishment
1840	• "Visiting Health Centres" foundation
1845	• "Sanitary Legislation" • "Sanitary regulation" • Organization and staffing of Health Guard Houses, Lazarettos and Centres for Contagious Diseases
1852	• Municipal Doctors
1865	• Medical Officers abrogation • Abrogation of the director of the Sanitary Department in the Ministry of Interior
1911	• School of Nurses establishment

Contrary to the Western European societies, which from the end of 18th century transformed their old hospitals and asylums in "curative mechanisms", the absolute non-existence of similar institutions in Greece in the years just after the independence, compelled the Greek state to operate the hospitals as curative means from the beginning.

Thus, the increased health needs of the population were covered initially by the church which, in the mean time, had transformed certain monasteries into infirmaries and subsequently by certain wealthy Greeks who had founded a number of private hospitals. Therefore, the absence of the state in the health care sector, owing to the bad economic situation of this period, was partially covered by the church and some well-off individuals.

The foundation of the first public-owned hospital took place in 1827, in the island of Syros. It was founded by donations of wealthy Greeks, and was named "Vardakeion and Proion Hospital of Syros". Ten years later, i.e. in 1836, the municipal hospital "Elpis" was founded in Athens. The foundation of various other hospitals followed. These were, the "Ofthalmiatreion" in 1843, the French Hospital of Syros in 1853 and the Academic hospital "Astyclinic" in 1857, the foundation of the last two institutions being the result of private initiatives. By 1870 in the Greek state there were fifteen (15) Municipal Hospitals, eight (8) General Hospitals funded by private charity initiatives, fourteen (14) General Public Hospitals and a (1) Special Hospital also funded by private initiative, i.e. a total of forty-three (43) Hospitals in operation.

It must, however, be noted, that though Greece had acquired an important number of hospitals by that period, these were not in full operation, as one must take into account that the state, owing to the bad overall economic situation, significantly reduced the available budget for the public health (Matsaganis, 2000). In general, starting in 1864, a period of down-turn in the health care services commenced, a fact that essentially slackened the implementation of sanitary legislation (Liakos, 1993).

4. Conceptual and methodological Issues

4.1. Purpose of our research

The main objectives of this paper are to construct, for the first time, a series of public health expenditure for Modern Greece for the period 1833-1911, to disaggregate this total into its main components, to present and discuss the patterns of change of these magnitudes and to make relevant comparisons with the changes of other available macroeconomic magnitudes for the same period unveiling their relationships.

4.2. The period examined

The period examined (1833–1911) begins with the establishment of the Modern Greek state, which followed a long period of Turkish occupation. Appropriately

and conveniently, the period ends with a major discontinuity in the flow of events, i.e. with the outbreak first of the Balkan Wars and second of World War I immediately afterwards.

This choice of period, in addition to making sense from a historian's point of view, also makes sense from the economist's point of view, as it covers a period for which no systematic official data for public health expenditure were presented or relevant estimates made. Nevertheless, this period was sufficiently homogeneous, as far as the basic characteristics of the economy concerned, for the data to be meaningful and therefore useful as a tool for studying the long term economic developments of the country.

4.3. The data

Contrary to what is generally believed, the research undertaken revealed the existence of adequate data, which proved sufficient enough to permit the construction of the public health expenditure series.

Obviously, many difficulties were inherent in the task on hand as, besides the size of the operation and the amount of work it has entailed, there were numerous problems stemming from the shortcomings of the raw data on which the series for public health expenditure would be based. In particular, such data, even though were found for all of the years in question, usually did not exist for all the items that should be included in the specific, in each case, magnitude.

An interesting point that must be noted is that most of the raw data available originated from official publications and were compiled by official agencies. For this reason all the data presented in this paper have been recovered from their original sources (state balance sheets, state balance accounts, statistical publications, ministerial reports, etc.) or from comprehensive publications of estimates for the same period.

4.4. Methodology

The backbone of our study is based on data drawn directly from the original State Annual National Balance Accounts and Annual National Budgets for the years in question.

In the course of the work, an effort was made adhere to all the standard conventions adopted in the construction of modern National Health Accounts (OECD, 2000). This, however, was found difficult, given the limitations inherent in the raw data used. As a consequence, we had to make compromises in the creation of categories for the accurate disaggregation of public health expenditure, in order to succeed in our main purpose.

As we mentioned earlier on, health care in Greece was organized by the Ministry

of Interior. As a result, public health expenditures were included in the financial statements of this Ministry and were specifically listed under the expenses' category titled *Public Health.* We didn't take into consideration other public health expenses in the broad meaning made by other ministries, such as public investments for health care infrastructure, education, or expenses for marsh draining or other health care expenses, such as public expenditure for the treatment of soldiers or naval personnel, that are normally included in the broad area of total social expenditure.

For the years 1833 and 1834, in the state's official financial statements only the total public health expenditure was mentioned. So we had to allocate this amount in the broad categories we finally decided to reconstruct ex-post. Through the years 1835-1850 public health expenditure in the state's official financial statements was classified in four very broad main categories: a) *Iatrosynedrio (Medical Council-Board) & Health Offices, b) Municipal Doctors, c) Health Guard Houses, Lazarettos and Centres for Contagious Diseases and d) Other Expenses.*

Through the years 1851 to 1911, a more analytic methodology of public health expenditure recording and presentation was adopted in the Accounts, the most consistently appearing categories over time being: *Iatrosynedrio (Medical Council-Board), Public Doctors, Maternity Clinic, Hospital for Contagious Diseases, Mental Hospital, Other Hospitals, Health Guard Houses, Lazarettos, Other Sanitary Expenses, Public Baths. Occasionally, additional minor categories were mentioned, such as Specialty Hospitals, Unplanned Expenses,* etc.

Some of the above mentioned categories included small amounts of expenses annually while others had an over-extended and detailed analysis, without this serving any useful purpose. As a consequence, we first considered it imperative to group public health expenditure in broad and homogeneous categories, so as to facilitate the presentation of the allocation over time in a consistent, meaningful and practical way.

The **four broad categories** chosen, were: a) ***Doctors*** *(including: Iatrosynedrio, Public & Municipal Doctors)*, b) ***Hospitals*** *(including: All Hospitals and Maternity Clinics)* c) ***Health Centres*** *(including: Health Offices, Centres for Contagious Diseases, Health Guard Houses, Lazarettos and Public Baths)* and d) ***Other Public Health Expenses*** *(including: Other Sanitary Expenses, Unplanned Expenses*, etc.).

The figures appearing in the Accounts for the period 1833–1880 are expressed in the current, at the time, monetary unit, this being the old drachma. The series constructed were therefore adjusted by dividing the figures by 1.12, so as to make them comparable with the post 1880 data, which were expressed in the new monetary unit, this being the Latin Monetary Unit (LMU) or new drachma (Kostelenos, 1995) (Kostelenos, Athanassiou & Antoniou, 2006) (Willis Parker, 1968).

In this manner we calculated the total public health expenditure for the period 1833-1911, the per head public health expenditure for the same period, the allocation of total public health expenditure per category and the annual and overall rate of change. All the above amounts are expressed in constant 1914 drachmae. As there exists no specific health expenditure deflator for the period in question, we converted the current amounts using the 1914 GDP deflator, this being the most reliable of the three relevant existing deflators (1860, 1887) (Kostelenos et al., 2007).

Finally, we compared the patterns of change of the total public health expenditure, to other relevant magnitudes, i.e. GDP, total public expenditure and total social expenditure.

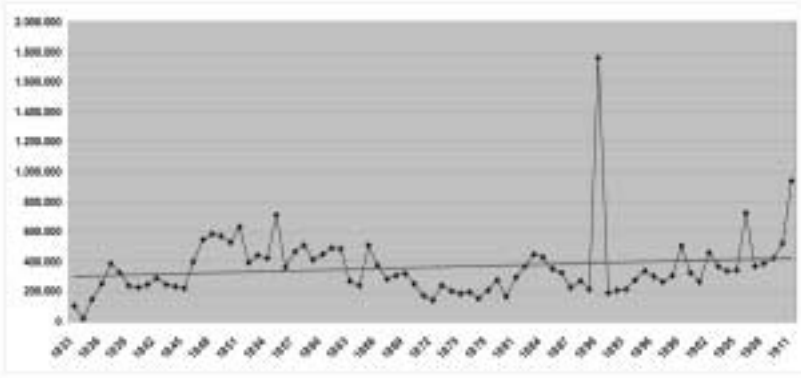
5. Patterns of public health expenditure in Greece (1833-1911)

5.1. Total Public Health Expenditure (1833-1911)

In Figure 1, we present the time course of Total public health expenditure annually throughout the years 1833-1911, expressed in constant 1914 prices. Here we notice a very slight upwards trend for the whole period. Actual figures are higher than the trend in the sub-period 1846–1862 and during the end of the period and lower in almost all other cases. The abnormally high value of 1890 is due to a specific historical occurrence, i.e. the extra financing (of 1.320.000 LMU) for the treatment of Cretan refugees.

Moreover, the diagram suggests some sort of a cyclical pattern (periodical), for the periods 1834–1845, 1846–1864, 1865–1881, 1882–1899, 1900–1905 and 1906–1911. The full series of Total public health expenditure is presented in Table 1 of Appendix.

Figure 1: *Total public health expenditure (1833–1911) in constant 1914 prices.*



Source: Official financial statements and own calculations from Table 1 of Appendix.

5.2 Public Health Expenditure Composition (Allocation) 1833-1911

The aggregate Total Public Health Expenditure through the years 1833–1911 amounted to **28.602.575,1** drachmae in constant 1914 prices, allocated in the four major categories we constructed, as shown in Table 2:

Table 2: *Total Public Health Expenditure Composition (Allocation) 1833-1911. (in constant 1914 prices and as %)*

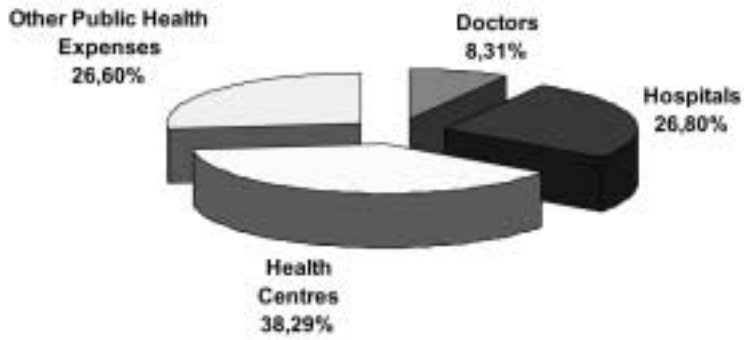
	Doctors	Hospitals	Health Centres	Other Public Health Expenses	Total public health expenditure
Total	**2.376.048,44**	**7.666.333,66**	**10.952.069,55**	**7.608.123,46**	**28.602.575,12**
% in Total	**8,31%**	**26,80%**	**38,29%**	**26,60%**	**100,00%**
Average of Annual %	**9,07%**	**29,82%**	**39,39%**	**21,72%**	**100,00%**

Source: Own calculations from Tables 1 and 2 of Appendix.

The figures suggest a favorable financing of the category *Health Centres* (38,29%), a balanced allocation in the financing the major categories of Hospitals (26,80%) and *Other Public Health Expenses* (26,60%) and only a small proportion oriented to the category Doctors (8,31%).

In Figure 2 we present the composition (allocation) of Total Public Expenditure in the four major categories:

Figure 2: *Total Public Health Expenditure % Composition (Allocation) 1833–1911.*

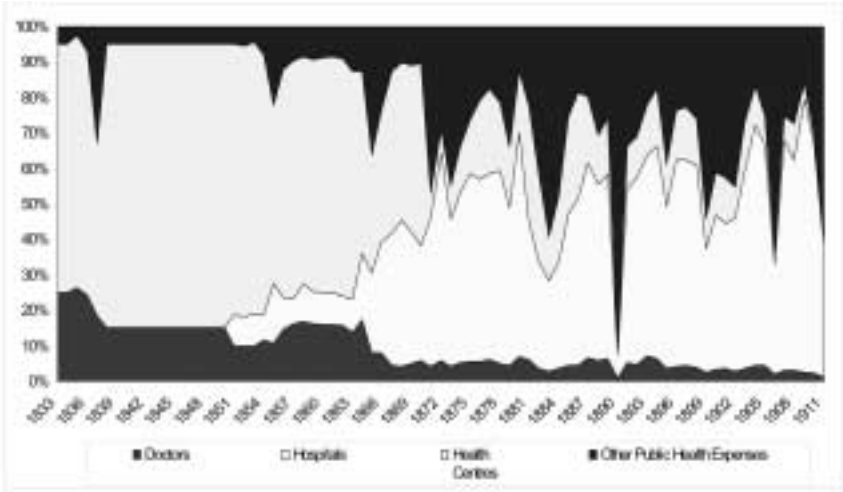


Source: Own calculations from Table 1 of Appendix.

This percentage composition, was not stable through the period 1833–1911. The

allocation of public health expenditure differentiated over time, in order to address occurring Public Health problems and to fulfil the current at the time needs of the health system. It must be noted that the average of the annual percentages of public expenditure in the four major categories does not differ significantly from the % Composition of Total Public Health Expenditure as shown above in Table 2. In Figure 3, the differences in public health financing for the four major categories over the period under consideration becomes apparent.

Figure 3: *Annual Public Health Expenditure % Composition (Allocation) 1833-1911.*



Source: Own calculations from Table 2 of Appendix.

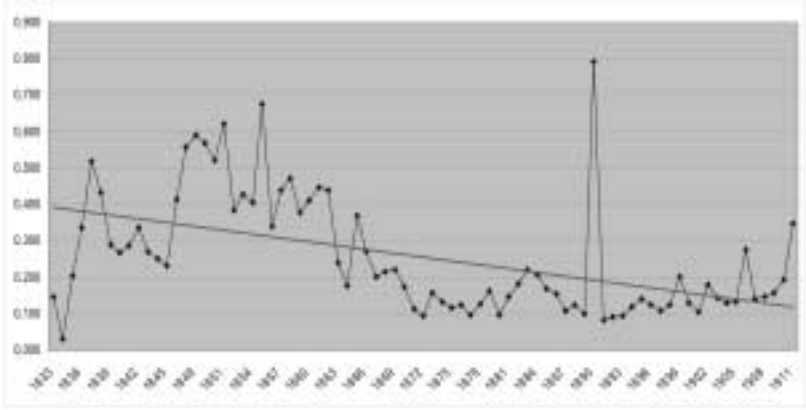
In this respect one must note that public health expenditure for Health Centres was significantly limited after 1865, owing to the overall improvement of Public Health and to the minimization of Contagious Diseases. On the other hand, public health expenditure for *Hospitals* follows an increasing trend from 1850 onwards, this resulting from the foundation of various hospitals all over the Greek regions.

5.3 Per head health expenditure (1833-1911)

If seen alone, Public Health Expenditure in constant 1914 prices does not offer much information as a magnitude (except for its variation over time). To do so it must be associated and compared with other magnitudes, such as total public expenditure, total social expenditures, total population and the GDP of the country for the same period, thus unveiling their relationships over time, as well as facilitating comparisons with foreign countries.

In this context, the first step of the analysis was to calculate the per head Public Health Expenditure, its graphical expression to depicted in Figure 4:

Figure 4: *Per head health expenditure (1833-1911) in constant 1914 prices.*



Source: Own calculations from Table 3 of Appendix.

For the period 1833-1911 the annual average Public Health Expenditure in constant 1914 prices was **362.057,91** drachmae whereas the average population of the country for the same period was 1.632.536 citizens. These figures imply an average per head Public Health Expenditure of 0,22 drachmae (Table 3 of Appendix). One notes an unacceptable low per head Public Health Expenditure amount especially from 1863 onwards, with a remarkable downward trend for the whole period. This suggests that the Greek state had not set among its priorities the improvement of the Public Health, a policy that appears to have been consistent all over the time period under consideration. Therefore, it could neither meet the demand for health services nor offer them in a satisfactory quality level, so as to cover the needs of the continuously increasing population (note years 1864 to 1881). However, a slight reversal of the trend appears to have commenced during the end of the period.

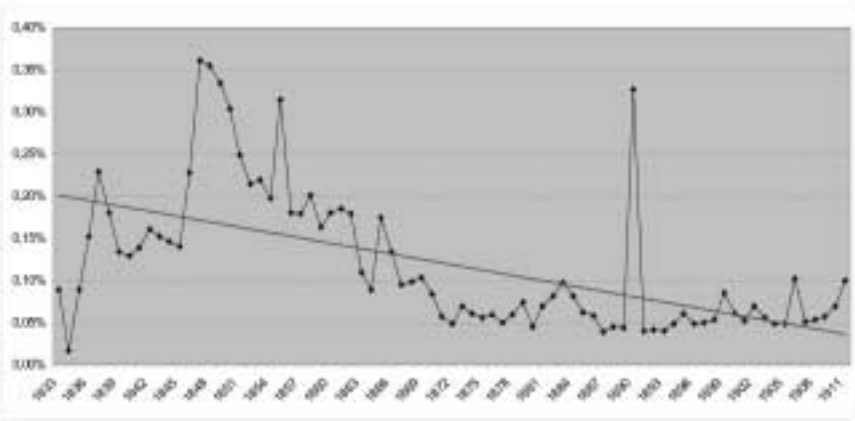
5.4 Total public health expenditure as a % of GDP (1833-1911)

The most revealing and critical comparison of Public Health Expenditure is the one with the GDP of the country for the same period. Public health expenditure expressed as a share of the GDP is the most appropriate indicator for the evaluation of the health policy of a country. High percentages are usually met in developed countries; for example, in Greece the public health expenditure for 2005 accounts for about 5% of GDP [1]. As a matter of fact, a high public health expenditure as a % of GDP, is a common characteristic of most European (EU15) countries, showing the social sensitivity orientation of modern states. Total public

expenditure on healthcare represented about 7 % of GDP in 2002 on average in the EU-15 Countries (E.C., 2005).

In Figure 5, the annual progress of Total public health expenditure as a % of GDP through the years 1833–1911 is depicted:

Figure 5: *Total public health expenditure as a % of GDP (1833-1911).*



Source: Own calculations from Table 4 of Appendix.

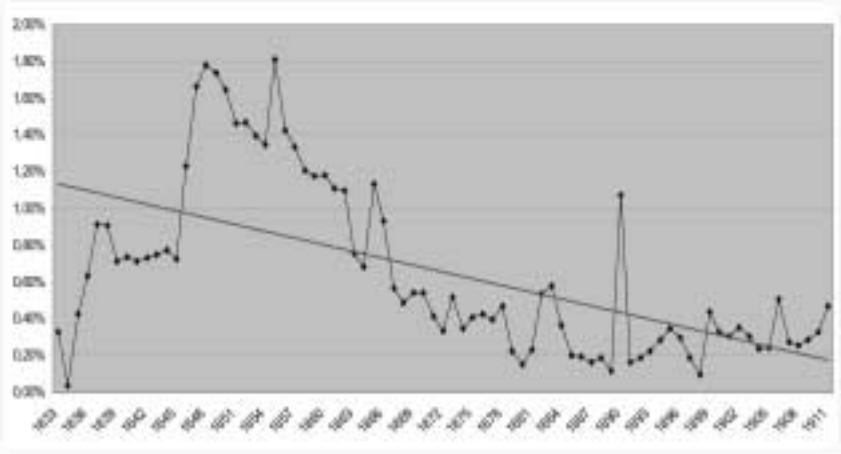
The examination of this figure does not alter the picture obtained from the earlier analysis. Public Health expenditure accounts for an unacceptably low, almost non-existing, percentage of the GDP of Greece for the period 1833-1911. Even more, there's a continuous downward trend, showing the reduction of available resources directed to the health care sector. This might reflect the major crisis of the European economy of 1872–1896, as well as the priorities of most governments to shift the limited available resources to the creation of public infrastructure (mainly transportation). Once again an improvement in the trend appears during the last years of the period.

5.5 Total public health expenditure as a % of Total public Expenditure (1833–1911)

Another revealing comparison of Public Health Expenditure is the one with the Total public expenditure of the country for the same period. Public health expenditure expressed as a share of Total public expenditure indicates how significant the health of the population is regarded for a country and what priority its financing represents. In Figure 6, the annual time course of Total public health

expenditure as a % of Total public expenditure through the years 1833–1911 is depicted:

Figure 6: *Total public health expenditure as a % of Total public Expenditure (1833–1911)..*



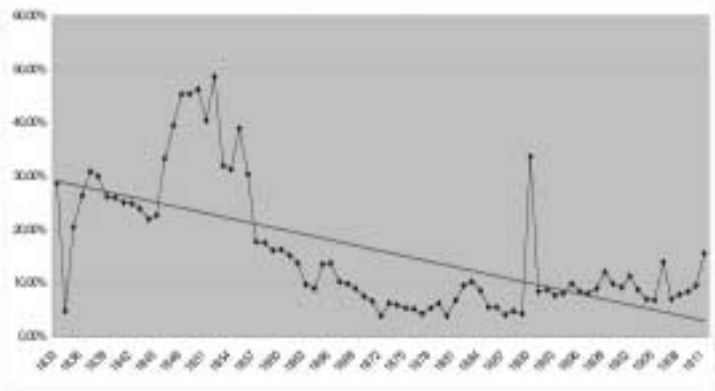
Source: Own calculations from Table 5 of Appendix.

Once again one notes the familiar down-warding trend line, verifying that the Greek state set the confrontation of the population's health problems at a very low priority for a long time period.

5.6 Total public health expenditure as a % of Public Social Expenditure (1833–1911)

Probably, the most appropriate magnitude for the evaluation of the social orientation of a country is the level of total public social expenditure and the way this is allocated among the various available interventions, always aiming to serve the basic needs of the public (Venieris, 1997). As a matter of fact, there's no magic prescription for the allocation of the social budget. In Figure 7, the annual time course of Total public health expenditure as a % of the total public social expenditure through the years 1833–1911 is depicted:

Figure 7: *Total public health expenditure as a % of Public Social Expenditure (1833–1911).*



Source: Own calculations from Table 6 of Appendix.

Social policy was not an urgent priority in the building of the nation, except to aid refugees and provide disaster relief. It has proved hard to "normalize" welfare as an expectation that citizens customarily have of the state, and there is still no universal entitlement to a minimum income through social assistance. While health and welfare developed in a rudimentary way after 1860, it covered only special occupational groups such as seamen, miners, and the military (Papadopoulos, 1997) (Fuduli, 2008). As a result, during the period under consideration in Greece, health care seems to absorb only a small fraction of the total social expenditure, the larger portion directed to smoothen the pain of the poor, of the widows, of the disabled and the needy in general. Only during the period 1846–1858 one can consider the financing of health care from the social budget satisfactory.

6. Conclusions

In summary, one can assert that, unlike the case of other European countries, no organized system of social providence or care which would require a simple reformation in accordance to the new demands generated by the economic, social and demographic conditions that resulted from the industrial revolution, existed in the newly founded Greek State. In fact, a totally new system, respecting existing socioeconomic conditions and covering the new needs created after the liberation from Turkish rule had to be founded.

From the analysis that preceded it becomes clear that the period 1833–1911 in Greece is characterized by the lack of sufficient financial means, the result being

that the various administrations were forced to follow restrictive economic policies this leading to a continuous deficiency in the financing of Public Health.

More specifically, during the period Public Health Expenditures in 1914 constant prices exhibit overall a very small increasing tendency, their size being considered satisfactory only during the sub-period 1846–1858.

On the other hand all other series show a declining trend this being slightly reversed in the last few years of the period.

Both, as a percentage of GDP and of Total Public Expenditure, Public Health Expenditures show a marked decline during the period in question. The deficiency in the financing of the sector led to the inability to improve the sanitary conditions in the country which resulted in the number of reported instances of deceases being larger than the relevant European average (Kooij & Sapounaki–Drakaki, 2003).

In order to explain this policy one must point out that the analysis of the data of the period examined suggest that overall, social expenditure not related to purposes associated with national defense did not appear to constitute an important priority of the Greek State. In particular, the data for the period indicate that on the average only 4% of total public expenditure was allocated for the social needs of the population (Antoniou, Kostelenos & Kaskarelis, 2009). At the same time, the data suggest that the basic priorities of the newly founded Greek State consisted almost totally of assuring the security of its borders and the preservation of its independence. This at least is implied by the size of the expenses undertaken by the departments of the Army and the Navy as well as by the size of the total of Social or Other Expenses directly related with the needs generated by military actions or the consequences of such actions. In fact, these expenditures amounted to almost 40% of total public expenditure or 8% of GDP for the whole of the period.

From the outset, after a 400 year Turkish occupation and a ten year long war for independence, the new country faced dire economic conditions. During the period of consideration, i.e. the first 80 years of its existence, the situation did not change significantly, the country showing a modest economic growth which resulted in it's inability to sustain a sufficient financing of certain important social needs and essential shortages of the population (Kostelenos et al., 2007).

A significant part of these needs was covered by private donations and financing from affluent individuals, usually from abroad.

Finally, the depressing picture, as regards the financing of Public Health during the period 1833–1911, can be completed by the inexistence or inability to implement a coherent policy in the Sector.

The basic feature of this lack of policy is the inexistence of a relevant Ministry and the fact that the administration of Public Health was undertaken by the Ministry of the Interior. In this context, the protection of Public Health was

implemented by use either of certain suppressive and inspective mechanisms (Health Police) or of isolation mechanisms (lazarettos). The inadequacy of the legal system, the existence of conflicting laws, the inability to implement declared measures and the overall "absence" of the authorities from any intervention in the domain of Health were the factors causing the disappointing situation of the Public Health sector until the earlier years of the 20th century.

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APPENDIX

Table 1: *Total Public Health Expediture (1833-1911) in LMU drachmae and constant 1914 prices.*

Year	Doctors	Hospitals	Health Centres	Other Public Health Expenses	Total public health expenditure
1833	26.412,03	0,00	73.953,69	5.282,41	**105.648,13**
1834	5.332,31	0,00	14.930,47	1.066,46	**21.329,25**
1835	39.602,75	0,00	106.748,32	3.683,79	**150.034,86**
1836	60.320,07	0,00	170.782,17	17.417,27	**248.519,51**
1837	71.813,05	0,00	187.510,80	128.163,43	**387.487,28**
1838	48.748,48	0,00	259.991,88	16.249,49	**324.989,85**
1839	35.743,52	0,00	190.632,13	11.914,51	**238.290,16**
1840	34.068,84	0,00	181.647,14	11.352,96	**227.068,93**
1841	36.948,52	0,00	197.058,75	12.316,17	**246.323,43**
1842	43.138,15	0,00	230.070,12	14.379,38	**287.587,65**
1843	37.156,23	0,00	198.186,58	12.385,41	**247.708,23**
1844	35.148,06	0,00	187.456,31	11.716,02	**234.320,39**
1845	33.447,25	0,00	178.385,32	11.149,08	**222.981,65**
1846	60.171,37	0,00	320.913,95	20.057,12	**401.142,44**
1847	81.668,02	0,00	435.582,79	27.222,67	**544.453,49**
1848	87.321,29	0,00	465.713,57	29.107,10	**582.141,97**
1849	85.190,81	0,00	454.351,00	28.396,94	**567.938,75**
1850	78.865,38	0,00	420.615,34	26.288,46	**525.769,18**
1851	52.996,41	42.937,52	483.248,80	52.568,05	**631.749,78**
1852	38.748,77	32.645,24	299.021,84	21.879,69	**392.295,55**
1853	43.520,94	40.490,99	338.792,90	19.996,57	**442.801,41**
1854	49.144,08	29.868,89	310.104,15	33.537,45	**422.654,57**
1855	75.660,41	120.457,04	358.684,49	158.481,78	**713.283,72**
1856	52.760,66	32.125,81	232.869,38	43.587,88	**361.343,74**
1857	75.971,81	33.564,31	313.197,84	45.323,45	**468.057,41**
1858	84.726,84	55.363,96	326.218,69	42.822,73	**509.132,21**
1859	65.945,48	37.361,78	268.476,64	37.782,91	**409.566,81**
1860	71.462,03	40.871,66	296.749,93	39.397,05	**447.480,67**
1861	77.803,46	44.914,23	327.199,93	41.220,87	**491.138,49**
1862	76.887,15	39.468,69	327.269,76	44.100,48	**487.726,08**
1863	36.981,04	25.064,20	173.595,57	33.960,74	**269.601,56**
1864	41.308,42	44.963,37	123.067,17	30.355,73	**239.694,69**
1865	41.335,43	113.949,04	169.506,39	185.607,25	**510.398,12**
1866	30.314,28	118.087,40	139.791,76	88.552,24	**376.745,69**
1867	12.670,17	106.290,90	129.901,39	35.970,06	**284.832,52**
1868	12.582,26	125.288,84	135.691,87	31.326,74	**304.889,71**
1869	16.075,33	117.924,30	150.012,30	35.445,61	**319.457,54**
1870	14.485,08	82.419,65	129.415,66	26.700,66	**253.021,04**
1871	7.009,05	70.545,71	12.011,50	79.697,18	**169.263,44**
1872	8.272,64	83.954,03	9.438,94	41.571,65	**143.237,27**
1873	9.712,41	100.385,36	22.294,17	108.712,57	**241.104,52**
1874	10.531,45	98.007,59	26.272,53	68.809,93	**203.621,49**
1875	10.049,53	95.969,01	27.256,80	47.798,93	**181.074,28**
1876	11.071,83	101.809,75	43.855,60	41.438,60	**198.175,77**

1877	9.346,70	82.111,91	37.595,13	27.345,90	**156.399,64**
1878	10.141,22	114.339,92	39.912,73	45.145,65	**209.539,51**
1879	12.088,21	122.570,57	47.051,62	94.128,04	**275.838,43**
1880	11.617,71	104.405,54	28.849,08	21.053,44	**165.925,78**
1881	18.129,18	112.957,41	96.413,66	65.991,62	**293.491,86**
1882	13.194,83	112.142,79	92.699,62	153.059,51	**371.096,75**
1883	12.191,53	114.746,12	55.811,55	267.441,53	**450.190,74**
1884	15.222,23	128.134,86	79.770,17	205.063,44	**428.190,71**
1885	15.247,31	150.362,41	95.281,20	89.707,05	**350.597,97**
1886	14.501,15	152.478,25	96.745,79	60.854,94	**324.580,14**
1887	15.300,98	125.202,84	41.991,53	45.365,29	**227.860,65**
1888	15.836,72	133.247,03	37.098,39	82.838,29	**269.019,44**
1889	12.391,55	136.174,92	28.831,63	39.361,77	**216.759,88**
1890	12.284,53	116.003,53	29.057,43	1.600.497,07	**1.757.842,57**
1891	9.967,29	92.813,97	22.865,17	64.029,63	**189.676,06**
1892	10.124,20	110.633,30	24.384,29	65.462,21	**210.604,01**
1893	15.237,44	123.618,78	30.784,05	47.801,86	**217.442,13**
1894	17.710,80	165.785,63	45.232,04	48.923,25	**277.651,91**
1895	12.084,58	154.133,79	40.087,73	131.940,05	**338.246,14**
1896	12.799,84	176.356,31	42.403,31	71.756,64	**303.316,09**
1897	12.020,10	153.912,50	39.324,10	60.473,73	**265.730,42**
1898	12.062,75	175.985,53	40.080,82	80.826,81	**308.955,91**
1899	13.000,27	174.091,85	42.285,96	270.906,22	**500.284,29**
1900	10.847,25	140.528,18	38.733,97	133.764,45	**323.873,85**
1901	9.231,19	109.268,72	33.843,64	113.470,19	**265.813,74**
1902	12.811,83	196.912,60	41.008,91	207.400,45	**458.133,79**
1903	13.420,47	204.608,49	50.064,66	98.729,41	**366.823,03**
1904	14.907,38	227.058,44	36.845,87	55.622,11	**334.433,80**
1905	14.885,15	214.466,92	28.227,83	86.766,82	**344.346,71**
1906	14.030,08	225.279,36	23.180,82	462.433,86	**724.924,11**
1907	11.043,30	238.527,50	25.979,10	92.578,99	**368.128,89**
1908	11.333,23	231.147,68	39.223,04	107.437,02	**389.140,97**
1909	10.474,88	324.311,41	19.845,03	67.252,01	**421.883,33**
1910	10.817,32	336.354,68	11.689,58	162.117,36	**520.978,93**
1911	10.634,15	350.930,44	21.433,78	556.781,38	**938.779,75**
TOTAL	2.376.048,44	7.666.333,66	10.952.069,55	7.608.123,46	**28.602.575,12**
%	**8,31%**	**26,80%**	**38,29%**	**26,60%**	**100,00%**

Source: State Official financial statements and own calculations.

Table 2: *Total Public Health Expediture Composition (as a% Allocation) 1833-1911.*

Year	Doctors	Hospitals	Health Centres	Other Public Health Expenses	Total public health expenditure
1833	25,00%	0,00%	70,00%	5,00%	100,00%
1834	25,00%	0,00%	70,00%	5,00%	100,00%
1835	26,40%	0,00%	71,15%	2,46%	100,00%
1836	24,27%	0,00%	68,72%	7,01%	100,00%
1837	18,53%	0,00%	48,39%	33,08%	100,00%
1838	15,00%	0,00%	80,00%	5,00%	100,00%
1839	15,00%	0,00%	80,00%	5,00%	100,00%
1840	15,00%	0,00%	80,00%	5,00%	100,00%
1841	15,00%	0,00%	80,00%	5,00%	100,00%
1842	15,00%	0,00%	80,00%	5,00%	100,00%
1843	15,00%	0,00%	80,00%	5,00%	100,00%
1844	15,00%	0,00%	80,00%	5,00%	100,00%
1845	15,00%	0,00%	80,00%	5,00%	100,00%
1846	15,00%	0,00%	80,00%	5,00%	100,00%
1847	15,00%	0,00%	80,00%	5,00%	100,00%
1848	15,00%	0,00%	80,00%	5,00%	100,00%
1849	15,00%	0,00%	80,00%	5,00%	100,00%
1850	15,00%	0,00%	80,00%	5,00%	100,00%
1851	8,39%	6,80%	76,49%	8,32%	100,00%
1852	9,88%	8,32%	76,22%	5,58%	100,00%
1853	9,83%	9,14%	76,51%	4,52%	100,00%
1854	11,63%	7,07%	73,37%	7,93%	100,00%
1855	10,61%	16,89%	50,29%	22,22%	100,00%
1856	14,60%	8,89%	64,45%	12,06%	100,00%
1857	16,23%	7,17%	66,91%	9,68%	100,00%
1858	16,64%	10,87%	64,07%	8,41%	100,00%
1859	16,10%	9,12%	65,55%	9,23%	100,00%
1860	15,97%	9,13%	66,09%	8,80%	100,00%
1861	15,84%	9,14%	66,62%	8,39%	100,00%
1862	15,76%	8,09%	67,10%	9,04%	100,00%
1863	13,72%	9,30%	64,39%	12,60%	100,00%
1864	17,23%	18,76%	51,34%	12,66%	100,00%
1865	8,10%	22,33%	33,21%	36,37%	100,00%
1866	8,05%	31,34%	37,11%	23,50%	100,00%
1867	4,45%	37,32%	45,61%	12,63%	100,00%
1868	4,13%	41,09%	44,51%	10,27%	100,00%
1869	5,03%	36,91%	46,96%	11,10%	100,00%
1870	5,72%	32,57%	51,15%	10,55%	100,00%
1871	4,14%	41,68%	7,10%	47,08%	100,00%
1872	5,78%	58,61%	6,59%	29,02%	100,00%
1873	4,03%	41,64%	9,25%	45,09%	100,00%
1874	5,17%	48,13%	12,90%	33,79%	100,00%
1875	5,55%	53,00%	15,05%	26,40%	100,00%
1876	5,59%	51,37%	22,13%	20,91%	100,00%
1877	5,98%	52,50%	24,04%	17,48%	100,00%
1878	4,84%	54,57%	19,05%	21,55%	100,00%

1879	4,38%	44,44%	17,06%	34,12%	100,00%
1880	7,00%	62,92%	17,39%	12,69%	100,00%
1881	6,18%	38,49%	32,85%	22,48%	100,00%
1882	3,56%	30,22%	24,98%	41,25%	100,00%
1883	2,71%	25,49%	12,40%	59,41%	100,00%
1884	3,56%	29,92%	18,63%	47,89%	100,00%
1885	4,35%	42,89%	27,18%	25,59%	100,00%
1886	4,47%	46,98%	29,81%	18,75%	100,00%
1887	6,72%	54,95%	18,43%	19,91%	100,00%
1888	5,89%	49,53%	13,79%	30,79%	100,00%
1889	5,72%	62,82%	13,30%	18,16%	100,00%
1890	0,70%	6,60%	1,65%	91,05%	100,00%
1891	5,25%	48,93%	12,05%	33,76%	100,00%
1892	4,81%	52,53%	11,58%	31,08%	100,00%
1893	7,01%	56,85%	14,16%	21,98%	100,00%
1894	6,38%	59,71%	16,29%	17,62%	100,00%
1895	3,57%	45,57%	11,85%	39,01%	100,00%
1896	4,22%	58,14%	13,98%	23,66%	100,00%
1897	4,52%	57,92%	14,80%	22,76%	100,00%
1898	3,90%	56,96%	12,97%	26,16%	100,00%
1899	2,60%	34,80%	8,45%	54,15%	100,00%
1900	3,35%	43,39%	11,96%	41,30%	100,00%
1901	3,47%	41,11%	12,73%	42,69%	100,00%
1902	2,80%	42,98%	8,95%	45,27%	100,00%
1903	3,66%	55,78%	13,65%	26,91%	100,00%
1904	4,46%	67,89%	11,02%	16,63%	100,00%
1905	4,32%	62,28%	8,20%	25,20%	100,00%
1906	1,94%	31,08%	3,20%	63,79%	100,00%
1907	3,00%	64,79%	7,06%	25,15%	100,00%
1908	2,91%	59,40%	10,08%	27,61%	100,00%
1909	2,48%	76,87%	4,70%	15,94%	100,00%
1910	2,08%	64,56%	2,24%	31,12%	100,00%
1911	1,13%	37,38%	2,28%	59,20%	100,00%
Average	**9,07%**	**29,82%**	**39,39%**	**21,72%**	**100,00%**

Source: Own calculations from Table 1 of Appendix.

Table 3: *Per head health expenditure (1833-1911) in LMU drachmae and constant 1914 prices.*

Year	Total public health expenditure	Population	per head health expenditure
1833	106.648,13	719.040	0,15
1834	21.329,25	725.520	0,03
1835	150.034,86	732.070	0,20
1836	248.519,51	738.680	0,34
1837	387.487,28	745.350	0,52
1838	324.989,85	752.077	0,43
1839	236.290,16	823.773	0,29
1840	227.058,93	850.246	0,27
1841	246.323,43	861.019	0,29
1842	287.587,65	853.005	0,34
1843	247.708,23	915.059	0,27
1844	234.320,39	930.295	0,25
1845	222.981,65	960.236	0,23
1846	401.142,44	968.988	0,41
1847	544.453,49	977.819	0,56
1848	582.141,97	986.731	0,59
1849	567.938,75	996.302	0,57
1850	525.769,18	1.005.966	0,52
1851	631.749,78	1.015.724	0,62
1852	392.295,55	1.025.577	0,38
1853	442.801,41	1.035.527	0,43
1854	422.654,57	1.044.482	0,40
1855	713.283,72	1.053.515	0,68
1856	361.343,74	1.062.627	0,34
1857	468.057,41	1.069.377	0,44
1858	509.132,21	1.076.170	0,47
1859	409.566,81	1.083.006	0,38
1860	447.480,67	1.089.886	0,41
1861	491.138,49	1.096.810	0,45
1862	487.726,08	1.110.703	0,44
1863	269.601,56	1.124.772	0,24
1864	239.694,69	1.359.064	0,18
1865	510.398,12	1.375.043	0,37
1866	376.745,69	1.391.216	0,27
1867	284.832,52	1.407.585	0,20
1868	304.889,71	1.424.152	0,21
1869	319.457,54	1.440.920	0,22
1870	253.021,04	1.457.894	0,17
1871	169.263,44	1.480.994	0,11
1872	143.237,27	1.504.460	0,10
1873	241.104,52	1.528.298	0,16
1874	203.621,49	1.552.414	0,13
1875	181.074,28	1.577.114	0,11
1876	198.175,77	1.602.103	0,12
1877	156.399,64	1.627.488	0,10
1878	209.539,51	1.653.275	0,13
1879	275.838,43	1.679.470	0,16
1880	165.925,79	1.695.161	0,10
1881	293.491,86	2.004.991	0,15
1882	371.096,75	2.026.813	0,18
1883	450.190,74	2.048.901	0,22
1884	428.190,71	2.071.257	0,21
1885	350.597,97	2.093.886	0,17
1886	324.580,14	2.116.792	0,15
1887	227.860,65	2.139.978	0,11
1888	269.019,44	2.163.449	0,12
1889	216.759,88	2.187.208	0,10
1890	1.757.842,57	2.220.844	0,79
1891	189.676,06	2.254.997	0,08
1892	210.604,01	2.289.675	0,09
1893	217.442,13	2.324.887	0,09
1894	277.651,91	2.360.640	0,12
1895	338.246,14	2.396.943	0,14
1896	303.316,09	2.433.806	0,12
1897	265.730,42	2.451.185	0,11
1898	308.955,91	2.468.688	0,13
1899	500.284,29	2.486.316	0,20
1900	323.873,85	2.504.070	0,13
1901	265.813,74	2.521.951	0,11
1902	458.133,79	2.539.966	0,18
1903	366.823,03	2.558.097	0,14
1904	334.433,80	2.576.364	0,13
1905	344.346,71	2.594.761	0,13
1906	724.924,11	2.613.290	0,28
1907	368.128,89	2.631.952	0,14
1908	389.140,97	2.649.218	0,15
1909	421.883,33	2.666.597	0,16
1910	520.978,93	2.684.090	0,19
1911	938.779,75	2.701.698	0,35
average	**362.057,91**	**1.632.535,61**	**0,22**

Source: State Official financial and demographics statements and own calculations.

Table 4: *Total Public Health Expediture as a% of GDP 1833-1911 in LMU drachmae and current prices.*

Year	Total public health expenditure	GDP in (LMU drs)	%
1833	44.034,13	49.327.592	0,09%
1834	10.086,61	60.111.409	0,02%
1835	68.067,71	76.038.359	0,09%
1836	98.553,26	64.873.632	0,15%
1837	162.874,83	71.130.900	0,23%
1838	138.478,10	76.561.464	0,18%
1839	109.817,65	82.158.944	0,13%
1840	116.758,91	90.511.374	0,13%
1841	113.551,25	81.524.303	0,14%
1842	115.761,32	72.050.835	0,16%
1843	107.517,67	70.304.740	0,15%
1844	106.115,17	72.286.510	0,15%
1845	101.947,35	72.555.290	0,14%
1846	176.655,22	77.310.985	0,23%
1847	253.202,52	70.202.232	0,36%
1848	279.155,70	78.740.260	0,35%
1849	271.109,59	81.072.203	0,33%
1850	272.337,58	89.725.822	0,30%
1851	232.032,54	93.491.567	0,25%
1852	238.563,61	111.072.033	0,21%
1853	225.501,47	102.915.915	0,22%
1854	235.252,57	118.870.213	0,20%
1855	346.100,68	109.909.135	0,31%
1856	273.826,99	151.598.737	0,18%
1857	261.499,36	145.799.997	0,18%
1858	274.256,59	136.394.946	0,20%
1859	271.436,36	166.176.291	0,16%
1860	274.614,78	152.205.786	0,18%
1861	277.793,21	150.281.238	0,18%
1862	277.468,70	154.490.247	0,18%
1863	175.720,24	160.133.781	0,11%
1864	166.372,21	187.269.130	0,09%
1865	318.792,86	182.285.007	0,17%
1866	259.689,68	194.257.887	0,13%
1867	214.805,69	227.097.909	0,09%
1868	215.274,79	217.616.329	0,10%
1869	200.491,73	193.019.153	0,10%
1870	192.691,26	230.486.438	0,08%
1871	151.183,68	263.454.291	0,06%
1872	108.990,72	221.459.580	0,05%
1873	165.767,04	239.559.808	0,07%
1874	155.937,48	256.489.074	0,06%
1875	142.250,96	256.007.212	0,06%
1876	148.437,71	246.853.109	0,06%
1877	139.318,29	280.196.087	0,05%
1878	171.569,79	287.893.761	0,06%
1879	211.481,39	294.472.478	0,07%
1880	132.469,75	294.015.339	0,05%
1881	236.127,03	340.537.237	0,07%
1882	308.299,80	378.493.245	0,08%
1883	394.331,50	402.037.420	0,10%
1884	336.201,89	409.597.771	0,08%
1885	249.152,50	404.370.356	0,06%
1886	252.480,92	427.884.977	0,06%
1887	176.448,84	445.552.567	0,04%
1888	207.023,92	457.843.916	0,05%
1889	191.736,38	441.011.848	0,04%
1890	1.517.941,03	463.711.498	0,33%
1891	201.943,14	506.074.775	0,04%
1892	221.775,67	530.183.043	0,04%
1893	219.944,60	550.345.214	0,04%
1894	244.655,01	497.796.032	0,05%
1895	318.245,23	519.172.168	0,06%
1896	271.882,01	551.490.094	0,05%
1897	258.659,45	512.247.564	0,05%
1898	306.961,29	569.609.039	0,05%
1899	461.501,52	542.817.095	0,09%
1900	358.277,42	585.318.900	0,06%
1901	345.470,04	663.880.009	0,05%
1902	443.407,39	638.047.417	0,07%
1903	352.743,79	623.984.536	0,06%
1904	277.767,94	572.452.526	0,05%
1905	280.440,30	579.591.946	0,05%
1906	618.902,96	604.516.897	0,10%
1907	329.255,21	646.723.396	0,05%
1908	343.156,47	638.396.799	0,05%
1909	391.463,80	689.464.639	0,06%
1910	462.129,56	660.869.107	0,07%
1911	850.703,01	847.536.747	0,10%
average	**258.666,41**	**301.934.406,41**	**0,09%**

Source: State Official financial statements and own calculations.

Table 5: *Total Public Health Expediture as a% of Total public Expediture 1833-1911 in LMU drachmae and current prices.*

Year	Total public health expenditure	Total public expenditure	%
1833	44.034,13	13.314.353	0,33%
1834	10.086,61	28.756.763	0,04%
1835	68.067,71	16.033.498	0,42%
1836	98.553,26	15.509.745	0,64%
1837	162.874,83	17.757.009	0,92%
1838	138.478,10	15.241.393	0,91%
1839	109.817,65	15.374.706	0,71%
1840	116.758,91	15.876.044	0,74%
1841	113.551,25	15.920.696	0,71%
1842	115.761,32	15.820.366	0,73%
1843	107.517,67	14.310.248	0,75%
1844	106.115,17	13.672.804	0,78%
1845	101.947,35	14.015.926	0,73%
1846	176.655,22	14.339.282	1,23%
1847	253.202,52	15.228.358	1,66%
1848	279.155,70	15.676.619	1,78%
1849	271.109,59	15.587.704	1,74%
1850	272.337,58	16.556.939	1,64%
1851	232.032,54	15.837.003	1,47%
1852	238.563,61	16.215.065	1,47%
1853	225.501,47	16.130.907	1,40%
1854	235.252,57	17.438.428	1,35%
1855	346.100,88	19.142.758	1,81%
1856	273.826,99	19.230.072	1,42%
1857	261.499,36	19.603.869	1,33%
1858	274.256,59	22.696.336	1,21%
1859	271.436,36	23.091.231	1,18%
1860	274.614,78	23.206.298	1,18%
1861	277.793,21	25.020.583	1,11%
1862	277.468,70	25.332.213	1,10%
1863	175.720,24	23.322.052	0,75%
1864	166.372,21	24.348.063	0,68%
1865	318.792,86	28.185.945	1,13%
1866	259.689,68	27.777.761	0,93%
1867	214.805,69	37.801.362	0,57%
1868	215.274,79	44.192.749	0,49%
1869	200.491,73	37.016.664	0,54%
1870	192.691,26	35.617.686	0,54%
1871	151.183,68	36.626.459	0,41%
1872	108.990,72	32.744.850	0,33%
1873	165.767,04	32.092.152	0,52%
1874	155.937,48	45.044.786	0,35%
1875	142.250,96	34.750.403	0,41%
1876	148.437,71	34.696.792	0,43%
1877	139.318,29	34.969.383	0,40%
1878	171.569,79	36.359.815	0,47%
1879	211.481,39	95.007.321	0,22%
1880	132.469,75	88.166.141	0,15%
1881	236.127,03	101.332.132	0,23%
1882	308.299,80	57.191.535	0,54%
1883	394.331,50	67.795.869	0,58%
1884	336.201,89	91.346.784	0,37%
1885	249.152,50	122.797.767	0,20%
1886	252.480,92	129.717.525	0,19%
1887	176.448,84	107.128.254	0,16%
1888	207.023,92	108.060.859	0,19%
1889	191.736,38	168.739.262	0,11%
1890	1.517.941,03	141.465.394	1,07%
1891	201.943,14	122.836.386	0,16%
1892	221.775,67	117.664.730	0,19%
1893	219.944,60	97.016.230	0,23%
1894	244.655,01	85.135.753	0,29%
1895	318.245,23	91.641.968	0,35%
1896	271.882,01	90.890.608	0,30%
1897	258.659,45	137.043.930	0,19%
1898	306.961,29	312.056.605	0,10%
1899	461.501,52	104.608.513	0,44%
1900	358.277,42	109.318.359	0,33%
1901	345.470,04	114.130.697	0,30%
1902	443.407,39	124.504.306	0,36%
1903	352.743,79	116.259.581	0,30%
1904	277.767,94	116.150.470	0,24%
1905	280.440,30	116.321.328	0,24%
1906	618.902,96	121.599.878	0,51%
1907	329.255,21	119.919.093	0,27%
1908	343.156,47	133.651.768	0,26%
1909	391.463,80	136.789.925	0,29%
1910	462.129,56	140.440.328	0,33%
1911	850.703,01	181.368.628	0,47%
average	**258.666,41**	**63.867.621,03**	**0,41%**

Source: State Official financial statements and own calculations.

Table 6: *Total Public Health Expediture as a% of Public Social Expenditure (1833-1911) in LMU drachmae and current prices.*

Year	Total public health expenditure	Total public social expenditure	%
1833	44.034,13	153.539	**28,68%**
1834	10.086,61	213.004	**4,74%**
1835	68.067,71	331.045	**20,56%**
1836	98.553,26	373.376	**26,40%**
1837	162.874,83	527.750	**30,86%**
1838	138.478,10	460.697	**30,06%**
1839	109.817,65	419.466	**26,18%**
1840	116.758,91	448.989	**26,00%**
1841	113.551,25	453.923	**25,02%**
1842	115.761,32	466.406	**24,82%**
1843	107.517,67	447.158	**24,04%**
1844	106.115,17	483.262	**21,96%**
1845	101.947,35	451.003	**22,60%**
1846	176.655,22	530.244	**33,32%**
1847	253.202,52	641.583	**39,47%**
1848	279.155,70	615.463	**45,36%**
1849	271.109,59	597.724	**45,36%**
1850	272.337,56	589.233	**46,22%**
1851	232.032,54	573.887	**40,43%**
1852	238.563,61	490.364	**48,65%**
1853	225.501,47	705.915	**31,94%**
1854	235.252,57	752.027	**31,28%**
1855	346.100,88	888.118	**38,97%**
1856	273.826,99	902.532	**30,34%**
1857	261.499,36	1.473.894	**17,74%**
1858	274.256,59	1.566.118	**17,51%**
1859	271.436,36	1.683.020	**16,13%**
1860	274.614,78	1.693.642	**16,21%**
1861	277.793,21	1.828.277	**15,19%**
1862	277.468,70	2.019.475	**13,74%**
1863	175.720,24	1.828.270	**9,61%**
1864	166.372,21	1.846.719	**9,01%**
1865	318.792,86	2.359.715	**13,51%**
1866	259.689,68	1.896.311	**13,69%**
1867	214.806,69	2.092.584	**10,27%**
1868	215.274,79	2.184.198	**9,86%**
1869	200.491,73	2.225.472	**9,01%**
1870	192.691,26	2.568.969	**7,50%**
1871	151.183,68	2.321.888	**6,51%**
1872	108.990,72	2.773.297	**3,93%**
1873	165.767,04	2.662.844	**6,23%**
1874	155.937,48	2.693.063	**5,79%**
1875	142.250,96	2.653.931	**5,36%**
1876	148.437,71	2.892.928	**5,13%**
1877	139.318,29	3.318.022	**4,20%**
1878	171.569,79	3.265.258	**5,25%**
1879	211.481,39	3.426.017	**6,17%**
1880	132.469,75	3.383.842	**3,91%**
1881	236.127,03	3.534.625	**6,68%**
1882	308.299,80	3.238.820	**9,52%**
1883	394.331,50	3.858.601	**10,22%**
1884	336.201,89	3.889.407	**8,64%**
1885	249.152,50	4.556.923	**5,47%**
1886	252.480,92	4.560.364	**5,54%**
1887	176.448,84	4.291.497	**4,11%**
1888	207.023,92	4.364.465	**4,74%**
1889	191.736,38	4.498.720	**4,26%**
1890	1.517.941,03	4.504.093	**33,70%**
1891	201.943,14	2.414.579	**8,36%**
1892	221.775,67	2.522.099	**8,79%**
1893	219.944,60	2.891.114	**7,61%**
1894	244.655,01	3.026.937	**8,08%**
1895	318.245,23	3.199.627	**9,95%**
1896	271.882,01	3.207.372	**8,48%**
1897	258.659,45	3.205.984	**8,07%**
1898	305.961,29	3.418.926	**8,98%**
1899	461.501,52	3.813.272	**12,10%**
1900	358.277,42	3.652.218	**9,81%**
1901	345.470,04	3.769.391	**9,17%**
1902	443.407,39	3.901.608	**11,36%**
1903	352.743,79	4.013.225	**8,79%**
1904	277.767,94	3.972.639	**6,99%**
1905	280.440,30	4.099.104	**6,84%**
1906	618.902,96	4.461.367	**13,87%**
1907	329.255,21	4.676.093	**7,04%**
1908	343.156,47	4.317.292	**7,95%**
1909	391.463,80	4.602.794	**8,50%**
1910	462.129,56	4.818.192	**9,59%**
1911	850.703,01	5.492.560	**15,49%**
Average	**258.666,41**	**2.404.409,69**	**10,76%**

Source: State Official financial statements and own calculations.

REFORMING THE REGIONAL POLICY IN EUROPE

G. KORRES* G. POLYCHRONOPOULOS**

Abstract

The European and Monetary Union is a long story, stated since 19th century. In particular, the former so-called European Economic Community (EEC) established under the Treaty of Rome (1957), with the participation of six Benelux countries, (namely, Belgium, Luxembourg, France, Italy, Germany and Netherlands). One of the main goals of EEC (European Economic Community) was to succeed the free movement of persons, capitals, goods and services, between member states. This was also induced by White Paper (Single European Act) and the Single European Market and finally completed by Monetary Union. This article attempts to review the main steps towards the integration-process of the European Union, and paying emphasis on the development and the enlargement process of EU, emphasizing the framework and the reform of regional policy. In particular, it examines the regional policy and the process of convergence and cohesion for the member states.

JEL classification: J10, R11, O52.

Keywords: European Union, regional policy, cohesion, convergence, development and growth.

1. Introduction

The integration of Europe was proposed as early as the fourteenth century, but these ideas did not start to be realized until the period of economic, political, and military reconstruction following world war two. European integration was motivated by political, economic and security considerations. There was a need to base Western security and defense on economic reconstruction, along with the desire for Franco-German reconciliation as the rock of stability within Western Europe.

The European economy was in a shambles by the end of World War II. Things were so bad that some Europeans believed that the reconstruction of western Europe could only be possible with the creation of a unified European state, so they started thinking in those terms.

Two French statesman named Jean Monnet and Robert Schuman believed that France and Germany might put aside their long-running differences and join hands in favor of a better economic future.

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Robert Schuman proposed the creation of a common authority to regulate the coal and steel industries in West Germany and France, the membership was also open to other western European countries. The French proposal was welcomed by the West German government and also by the governments of Belgium, Italy, Luxembourg and the Netherlands. The five countries signed the Treaty of Paris in 1951, and the European Coal and Steel Community (ECSC) was established in August 1952.

Later the foreign ministers of the ECSC nations agreed to examine the possibilities for further economic solidarity. This resulted in two new treaties which created the European Economic Community (EEC) and the European Atomic Energy Community (Euratom). Of these, Euratom turned out to be of very little significance since each national government kept control of it's own nuclear power programs. But the EEC treaty had the mission of (i) eliminating the trade barriers among its member nations, (ii) the development of a common tariff for imports from the rest of the world, and (ii) the creation of a common policy for managing and supporting agriculture.

Seeing the economic success of the EEC nations, the United Kingdom which was not a member of the EEC, together with six other non-EEC countries decided in 1960 to form the European Free Trade Association (EFTA). The UK also began negotiations towards membership in the EEC. But the then French president, Charles de Gaulle, vetoed British membership because of its close ties with the USA. They tried again and he vetoed their admittance again.

In July 1967, the three communities (the EEC, the ECSC, and Euratom) merged to become the EC or the European Community. No progress was made on enlargement of the EC until after Charles de Gaulle resigned as president of France in 1969. The next French president, Georges Pompidou, was more open to new inclusions in the EC and a summit meeting of the leaders of the member states was held. This paved the way for the creation of a permanent financing arrangement for the EC, the development of a framework for foreign-policy cooperation among the member nations, and the opening of membership negotiations with the United Kingdom, Ireland and Denmark.

In January 1973, after several years of negotiation, these applicant countries also became part of the EC. Greece entered the EC in 1981 and, after eight years of negotiations, Spain and Portugal joined in 1986. In April 1990 East Germany too became an automatic member after the reunification of Germany.

The European Union or the EU, as it is known, was created on the 1st of November, 1993 with the approval of the Treaty on European Union or the Treaty of Maastricht. This treaty was ratified at Maastricht in the Netherlands by the heads of government of the 12 countries that form the European Community. The twelve countries that form the EC were Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain and the United

Kingdom. Before this the EU was known as the EC. Now the countries are the EU members and the EC is the policy making body of the EU. In 1995 the EU accepted another three new member states with the admission of Austria, Finland and Sweden.

On January 1999 the euro became the official currency of eleven member states of the European Union, with a fixed conversion rate into their national currencies. Euro banknotes and coins appeared official on 1 January 2002, and the new currency used by consumers, retailers, companies and public authorities in non-cash form. Moreover, the European Central Bank based in Frankfurt, the European Central Bank is responsible for the monetary policy of the euro zone.

Agenda 2000 is the name given to a series of reforms seeking to modernize Community policies such as agricultural policy and economic and social cohesion, and to give the European Union a new financial framework for 2000 – 2006. In a spirit of solidarity, it should enable the Union to rise to the challenges which it will face in the years to come and to carry out its future enlargement successfully. The process of enlargement of the European Union was launched with the following twelve applicants: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia. The basic principle of the negotiations is that all the applicant countries must accept existing EU law.

This article reviewing the main steps towards the integration-process of the European Union, and also it attempts to analyze and to emphasize towards the framework and the reform of regional policy. In particular, it examines the regional policy and the process of convergence and cohesion for the member states.

2. The Structure and Policies of European Union

The European Union's mission is to organize relations between the Member States and between their peoples in a coherent manner and on the basis of solidarity.

The main objectives are:

- to promote economic and social progress (the single-market was established in 1993; the single currency was launched in 1999);
- assert the identity of the European Union on the international scene (through European humanitarian aid to non-EU countries, common foreign and security policy, action in international crises; common positions within international organizations);
- introduce European citizenship (which does not replace national citizenship but complements it and confers a number of civil and politic rights on European citizens);

- develop an area of freedom, security and justice (linked to the operation of the internal market and more particularly the freedom of movement of persons);
- maintain and build on established EU law (all the legislation adopted by the European institutions, together with the founding treaties).

The Commission consists of Commissioners appointed, subject to approval by the European Parliament, for 5 years. It runs European common policies, implements the budget and ensures compliance with the Treaties. It is based in Brussels.

The European Council brings together the Heads of State or Government of the Member States of the European Union and the President of the European Commission. It should not be confused with the Council of Europe (which is an international organization) or with the Council of the European Union (which consists of the Ministers of the fifteen Member States).

The European Council is hosted by and takes place in the Member State holding the Presidency of the Council, and punctuates the political life and development of the European Union by meeting at least twice a year (generally in June and December). It is an important event; the presence in an European city of fifteen representatives with unimpeachable democratic credentials, accompanied by other Ministers and close collaborators, has for almost twenty-five years now been an eagerly awaited political event.

The European Court of Auditors monitors the sound management of Community finances and it is based in Luxembourg.

The Court of Justice ensures compliance with the law in the application and interpretation of the Treaties. It is the Union's supreme court and consists of judges, appointed by the Member States by common accord, and 9 advocates-general. Its seat is in Luxembourg. It should not be confused with the International Court of Justice in The Hague which is a United Nations body or with the European Court of Human Rights in Strasbourg which comes under the Council of Europe.

A consultative committee in Brussels consisting from representatives of various economic and social groups in the Union.

The European System of Central Banks (ESCB) is composed of the European Central Bank (ECB) and the national central banks (NCBs) of all 15 EU Member States. The “Eurosystem” is the term used to refer to the ECB and the NCBs of the Member States which have adopted the euro. The NCBs of the Member States which do not participate in the euro area, however, are members of the ESCB with a special status – while they are allowed to conduct their respective national monetary policies, they do not take part in the decision-making with regard to the single monetary policy for the euro area and the implementation of such decisions.

In accordance with the Treaty establishing the European Community (the “Treaty”) and the Statute of the European System of Central Banks and of the

European Central Bank (the "Statute"), the primary objective of the "Eurosystem" is to maintain price stability. Without prejudice to this objective, it shall support the general economic policies in the Community and act in accordance with the principles of an open market economy. The basic tasks to be carried out by the Eurosystem are:

- to define and implement the monetary policy of the euro area;
- to conduct foreign exchange operations;
- to hold and manage the official foreign reserves of the Member States; and
- to promote the smooth operation of payment systems.

In addition, the "Eurosystem" contributes to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system. The ECB has an advisory role vis-à-vis the Community and national authorities on matters which fall within its field of competence, particularly where Community or national legislation is concerned. Finally, in order to undertake the tasks of the ESCB, the ECB, assisted by the NCBs, shall collect the necessary statistical information either from the competent national authorities or directly from economic agents. The process of decision-making in the "Eurosystem" is centralized through the decision-making bodies of the ECB, namely the Governing Council and the Executive Board. As long as there are Member States which have not yet adopted the euro, a third decision-making body, the General Council, shall also exist. The Governing Council comprises all the members of the Executive Board and the governors of the NCBs of the Member States without a derogation, i.e. those countries which have adopted the euro. The main responsibilities of the Governing Council are:

- to adopt the guidelines and make the decisions necessary to ensure the performance of the tasks entrusted to the "Eurosystem";
- to formulate the monetary policy of the Community, including, as appropriate, decisions relating to intermediate monetary objectives, key interest rates and the supply of reserves in the "Eurosystem", and to establish the necessary guidelines for their implementation.

The different policies of European Union are Agriculture, Environment, Audiovisual policy, Equal opportunities, Common commercial policy, External relations, Common foreign and security policy, Financing Community activities Competition, Fisheries, Consumer policy and health protection, Humanitarian aid, Culture, Industrial policy, Development policy, Information society, Telecommunications, Economic and monetary policy, Internal market, Economic and social cohesion, Justice and home affairs, Education, Vocational training and youth, Public health, Employment and social policy, Research and technology, Energy, Trans-European networks, Enlarging the EU, Transport, Enterprise policy.

3. The Enlargement of European Union

The course to the unification of European Union was often characterized by turbulences but also from various "intermediary federal visions", as for example, the Single Act, the Treaty of Nice, Maastricht, the Amsterdam, etc. The successive enlargements of European building, with Denmark, Ireland, United Kingdom (1973), Greece (1981), Spain and Portugal (1986), Austria, Finland and Sweden (1995), we should note that a lot of populations, although even their will, they could not participate in the Community experience.

Table 1: *The Division of Votes in the European Parliament.*

Member-States	Before the Accession of Bulgaria and Romania (Elections of 2004)	After the Accession of Bulgaria and Romania (The Elections before 2009)	After the Accession of Bulgaria and Romania (The Elections after 2009)
Member States	**570**	**570**	**535**
Germany	99	99	99
France	78	78	72
Italy	78	78	72
United Kingdom	78	78	72
Spain	54	54	50
Nordic Countries	27	27	25
Belgium	24	24	22
Greece	24	24	22
Portugal	24	24	22
Sweden	19	19	18
Austria	18	18	17
Denmark	14	14	13
Finland	14	14	13
Ireland	13	13	12
Luxembourg	6	6	6
New Member States	**162**	**162**	**151**
Poland	54	54	50
Czech Republic	24	24	22
Hungary	24	24	22
Slovak	14	14	13
Lithuania	13	13	12
Letonia	9	9	8
Slovenia	7	7	7
Esthonian	6	6	6
Cyprus	6	6	6
Malta	5	5	5
Romania	--------	36	33
Bulgaria	--------	18	17
Total	**732**	**786**	**736**

Source: European Union.

Table 1 illustrates the distribution of seats of European Parliament, with the integration of new member states. Fifty years afterwards the constitution of ECSC, that was limited in the sectors of Coal and Steel, and forty years afterwards the signature of Treaty of Rome, with that was created European Economic Community (EEC), the European Union achieves also her enlargement with new members.

The European Parliament pronounced officially, on 9 April 2003, in favor the enlargement of Union with ten candidate countries that completed with success the accession's negotiations with the European Committee, with Estonia, Cyprus, Latvia. Lithuania, Malta, Hungary, Poland, Slovakia, Slovenia and the Czech Democracy. More concretely, the accession's negotiations began officially, on 31 March 1998, with six from the candidate countries, Cyprus, Estonia, Poland, Slovenia, Czech Democracy and Hungary On 13 October 1999, the European Council assigned in the European Committee the command to begin the "negotiations", that is to say that terms with which each candidate country will be included in the European Union, with Bulgaria, Latvia, Lithuania, Malta, Romania and Slovakia.

4. The Framework and the Reform of Regional Policy in E.U.

The basic tendencies that prevail today and determine the future of Regional growth, they can be summarized in the followings:

- We should point out and confrontation the main global problems. For instance, we could say that the pollution of environment, the sources of energy and the dangers that they encompass, the demographic explosion in the third world, the revolutionary changes in the communications and the information technology, and finally the implications of the technological change in the international division of labor, that affecting the problems of unemployment and growth. All this problems undeniable have territorial dimension and seek complex, specialized and completed solutions.
- Direct and continuous transformation of knowledge in action of policy planning. This orientation constitutes answer in the pressing problems that are presented in the territorial units, but also correspondence of social sciences in the development of technological sciences in the field of competition of international markets.
- Extended the analysis and the study in all levels of territorial units. The globalization of markets and the regard the economic and social changes in their global dimension impose the corresponding territorial analysis.

- Enlargement and confrontation the problems of region, as the basic problems of "geopolitical unit". This term is imported by the Peter Nijkamp in order to it focus intensely and also completed the tendency of split of states, in the extreme case or the tendency of increase of autonomy of regions, in the case of smooth activation of social mechanism of "regional conscience". The "regional identity" is strengthened at the same time with the economic completion and for this observes the constant course, even slow, to "Europe of regions". Certain in deed as the Riccardo Cappellin they began to appear the need of establishment of "regional diplomacy" and "regional alliances", exceeding in the practice the recognized national borders.
- Research of phenomenon of "multi-centre networks" in the space and synergy that is developed among these networks. The new poles and the networks and their multidimensional relations are encouraged by the globalisation of economy and are altered in flexible means of confrontation of competition and facilitation of mobility of factors of production.

Table 2 shows the Real GDP for most of the European member states indicating the existing inequalities and differences between the member states. Whereas, Table 3 illustrates the Output Gaps between members states in the E.U. The "Output Gap" is calculated using the "production function method", as indicated by the OECD.

Table 2: *Real GDP.*

Percentage change from previous year	Average 1979-89	1990	91	95	97	98	99	2000	01	02	03	04	2005	2008	2009
Austria	2.1	4.7	3.3	1.6	1.6	3.9	2.7	3.4	0.8	1.4	0.8	1.6	2.4	1.8	-3.4
Belgium	2.2	3.1	1.8	2.3	3.7	2.1	3.2	3.7	0.7	0.7	0.7	1.9	2.8	0.8	-3.0
Czech Republic	..	..	..	5.9	-0.8	-1.0	0.5	3.3	3.1	2.0	2.5	2.9	3.2	2.3	-4.1
Denmark	1.4	1.0	1.1	2.8	3.0	2.5	2.6	2.9	1.4	2.1	0.5	2.4	2.8	-0.9	-4.9
Finland	3.6	-0.3	-6.4	3.4	6.3	5.0	3.4	5.1	1.2	2.2	1.0	3.4	3.8	1.2	-7.8
France	2.2	2.6	1.0	1.8	1.9	3.6	3.2	4.2	2.1	1.3	0.1	1.7	2.4	0.3	-2.5
Germany	1.9	5.7	5.1	1.8	1.5	1.7	1.9	3.1	1.0	0.2	0.0	1.4	2.3	1.0	-4.9
Greece	0.8	0.0	3.1	2.1	3.6	3.4	3.4	4.4	4.0	3.8	4.0	4.1	3.6	2.0	-2.0
Hungary	..	..	..	1.5	4.6	4.9	4.2	5.2	3.8	3.3	2.9	3.3	3.8	0.4	-5.7
Ireland	3.1	8.5	1.9	9.9	11.1	8.6	11.3	10.1	6.2	6.9	1.8	3.6	4.8	-3.0	-7.1
Italy	2.4	1.9	1.4	3.0	2.0	1.7	1.7	3.3	1.7	0.4	0.5	1.6	2.1	-1.3	-5,1
Luxembourg	4.5	5.3	8.6	1.4	8.3	6.9	7.8	9.1	1.2	1.3	1.2	2.0	2.9	0.0	-3.4
Netherlands	2.0	4.1	2.4	3.0	3.8	4.3	4.0	3.5	1.2	0.2	-0.5	1.0	2.0	2.0	-4.0
Poland	..	..	..	7.0	6.8	4.8	4,1	4.0	1.0	1.4	3.3	3.5	4.5	5.0	1.8
Portugal	3.3	4.0	4,4	4.3	4.0	4.6	3,8	3.4	1.7	0.4	-0.8	1.5	2.6	0.0	-2.7
Slovak Republic	..	..	..	6.5	5.6	4.0	1.3	2.2	3.3	4.4	3.9	4.2	4.4	6.2	-4.7
Spain	2.7	3.8	2,5	2.8	4.0	4.3	4.2	4.2	2.8	2.0	2.3	2.9	3.1	0.9	-3.6
Sweden	2.2	1.1	-1.1	4.0	2.4	3.6	4.6	4.4	1.1	1.9	1.5	2.3	2.7	-0.6	-5.1
United Kingdom	2.3	0.8	-1.4	2.8	3.3	3.1	2.8	3.8	2.1	1.7	1.9	2.7	2.9	0.5	-4.9
Euro area	2.2	3.6	2.5	2.3	2.4	2.8	2.8	3.7	1.7	0.9	0.5	1.8	2.5	0.5	-4.1
European Union	2.2	3.1	1.9	2.5	2.6	2.9	2.8	3.7	1.7	1.1	0.7	1.9	2,5	..	..
Total OECD	**3.0**	**3.1**	**1.3**	**2.6**	**3.5**	**2.7**	**3.1**	**3.9**	**0.9**	**1,8**	**2,0**	**3.0**	**3.1**	**0.5**	**-3.3**

Source: OECD: OECD Economic Outlook Sources and Methods (http://www.oecd.org/eco/ sources-and-methods).

Table 3: *Output gaps.*

Deviations of actual GDP from potential GDP as a percent of potential GDP	1986	1987	1990	1991	1993	1994	1995	1997	1998	1999	2000	2001	2002	2003	2004	2005	2008	2009
Belgium	-3.0	-2.1	2.5	1.7	-2,3	-1,5	-1,2	-0,7	-0,4	0,8	2,5	0,8	-0,8	-1,9	-2,1	-1,4	-1,5	-6,5
Denmark	3.4	1.8	-0.8	-1.2	-3,5	-0,3	0,0	0,9	1,0	1,3	1,7	0,6	0,4	-1,2	-1,0	-0,4	-0,4	-6,5
Finland	-0.5	1.4	3.5	-4.3	-11,2	-9,0	-7,3	-2,9	-1,2	-1,0	1,2	-0,5	-1,0	-2,6	-1,5	-0,3	0,4	-8,9
France	-3.9	-3.2	1.7	0.7	-2,5	-2,3	-2,4	-3,8	-2,5	-1,5	0,5	0,3	-0,4	-2,4	-2,8	-2,6	-0,6	-4,5
Germany	1.0	0.8	5.4	2.3	-1,9	-1,4	-1,1	-2,0	-1,6	-1,1	0,3	-0,4	-1,7	-3,3	-3,5	-2,9	0,9	5,2
Greece	-1.1	-4.2	-0.1	0.6	-4,1	-4,0	-3,9	-2,8	-2,8	-2,6	-1,7	-0,6	0,0	0,8	1,3	1,3	0,0	-3,8
Ireland	-4.6	-3.5	3.9	0.5	-4,4	-4,7	-2,3	1,0	0,5	3,7	6,8	6,1	6,4	2,9	1,2	1,3	-2,0	-9,2
Italy	-2.0	-1.3	1.3	0.6	-3,2	-2,3	-1,0	-1,1	-0,9	-0,9	0,5	0,5	-0,9	-1,8	-1,7	-1,0	-0,3	-5,5
Netherlands	-0.8	-1.2	2.7	2.3	-0,7	-0,3	0,2	1,0	2,0	3,1	3,7	2,4	0,3	-1,6	-2,8	-2,4	1,5	-4,1
Norway	3.5	2.2	-4.3	-3.4	-2,1	-1,2	-0,5	2,0	3,0	2,8	2,5	1,7	0,7	-0,7	-0,1	0,0	-0,2	-3,8
Portugal	-8.3	-4.8	3.5	4.7	-2,2	-3,7	-2,0	0,3	1,8	2,4	2,5	1,1	-1,1	-3,4	-3,5	-2,7	-0,7	-3,9
Spain	-3.2	-1.1	3.0	2.5	-3,5	-3,7	-3,9	-3,3	-1,8	-0,5	0,5	0,3	-0,4	-0,8	-0,6	-0,1	-1,2	-5,5
Sweden	2.6	3.9	3.6	0.3	-6,2	-4,3	-2,6	-2,8	-1,4	0,7	2,3	0,6	0,3	-0,5	-0,4	0,1	0,4	-7,1
United Kingdom	-0.5	2.0	2.7	-1.4	-3,8	-2,0	-1,6	-0,6	-0,1	0,0	1,2	0,5	-0,5	-1,1	-0,9	-0,4	0,1	-6,4
Euro area	-1.5	-1.0	3.2	1.6	-2,5	-2,1	-1,7	-2,0	-1,3	-0,6	0,9	0,3	-0,8	-2,2	-2,4	-1,9	0,0	-5,1
European Union	-1.4	-0.6	2.9	1.0	-2,9	-2,2	-1,7	-1,8	-1,0	-0,4	0,9	0,4	-0,7	-2,0	-2,1	-1,5	..	..
Total OECD	**-1.1**	**-0.5**	**1.9**	**-0.3**	**-2,1**	**-1,3**	**-1,1**	**-0,2**	**0,1**	**0,5**	**1,2**	**-0,5**	**-1,2**	**-1,7**	**-1,2**	**-0,6**	**-0,3**	**-5,1**

Note: Potential output for all countries except Portugal is calculated using the "production function method" described in Giorno et al, "Potential Output, Output Gaps, and Structural Budget Balances", OECD Economic.

The decade 1980 appears the diffusion of innovation in the space and the equipment of regions with advanced systems of telecommunications and innovation activities. The decade the 1990 shapes a more complicated strategy, that her main component of is the appointment of forces of synergy among all these factors that promote the developmental process, the organization of networks institutional, sector-based and territorial form and the constitution of completed parcels of strategic drawings, that serve medium and also long-term developmental scenarios.

Afterwards the signature of ESA (European Single Act, 1986) was placed the question of discovery of resources for the confrontation of new directions of Community policy. With base the beam of proposals Delors, the question was examined in the Summit meeting of 11-13 February 1988 as necessary supplement of decision on the promotion of program of Internal Market and was decided finally in June 1988 the increase of proper funds from 1 % of Community GNP in the 1.20 % up to 1992. From this increase, substantially profited came out the structural policies, that is to say those that aim at as the structural developmental intervention in the less favored developed regions of Community.

The increase of credits of obligations for the structural energies was important. It is almost doubling of resources of structural Funds (Regional, Social, Rural-orientation), while were increased also the credits for policies of multiannual subsidy, that is to say, for energies that aim at local development and regional growth.

Furthermore, if we are compared the relative sizes of expenses as percentage of budget for the structural interventions (for instance, structural expenses and policy of multiannual subsidy) in 1992 in comparison to 1988, the increse is very important (from almost 19,9% in 1988 in 30% in 1992). However, apart from the increase of resources for structural interventions were even adopted new processes of Community's actions with. E.U./2052/88 and E.U. 4253/88.

More specifically, COM 2052/88 of EU determines concrete objectives for the structural Funds, that is to say the ERDF, social and rural-orientation, as well as explicit terms of financing. The E.U. determines thus five objectives with base the article 130A and 130G the European Single Act (ESA) that concerns the economic and social cohesion and the reduction of distance between the various regions.

Article 1 COM 2052/88 of EU determines the objectives of action of E.U. that based in the available pecuniary means:

- Objective 1st: Promotion of growth and structural adaptation of regions that is lagging behind.
- Objective 2nd: Reformation of regions, frontier regions or departments of regions, included also areas of employment and urban centers, that have been affected by industrial decline.

- Objective 3rd: Fighting of unemployment of long duration.
- Objective 4th: Facilitation of professional integration of young persons.
- Objective 5th: In the prospect of reform of Common Rural Policy:
- Objective 5(a): Acceleration of adaptation of rural structures.
- Objective 5(b): Promotion of growth of rural areas.

The article of 2 same regulation fixes the destination of structural Funds as for the service of above objectives:

- For objective 1: ERDF, Social and FEOGOA (Rural) Orientation.
- For objective 2: ERDF and Social Fund
- For objective 3: Social Fund
- For objective 4: Social Fund
- For the objective 5(a): FEGOA (Rural) Orientation
- For objective 5(b): FEGOA (Rural) Orientation, Social Fund and ERDF.

The same article reports also that the European Investment Bank (EIB) and that other financial instrument (e.g. financial resources on the IMP) collaborate for the achievement of above objectives with the structural Funds.

The objective 1 concerning for the promotion of growth and the structural adaptation of regions that is found to lag behind, and it mainly concerns four more poorly states of E.U., that is to say Portugal, Greece, Ireland in percentage of 100 % of their geographic space, Spain at 70%, as well as certain regions of Italy, France and the United Kingdom. This objective absorbs the 65 % of total of resources of structural Funds, since it concerns the most developed countries and regions.

According to COM 2052/88 of EU, these regions were the following:

- Spain: Andalucia, Asturias, Castilla y Leon, Castilla-La Mancha, Centa y Melilla, Communidad Valenciana.
- Greece: Total of country
- Ireland: Total of country
- Portugal: Total of country
- Italy: Abrusi, Basilicata, Calabria, Campania, Molise, Puglia, Sardegna, Sicilia.
- France: Corsica and overseas grounds
- United Kingdom: North Ireland

According to the new processes of structural and the regional action of E.U., each member sate would be supposed to submit a total program-frame named “Community Structural Funds” (CSFs). For time period 1989-1993, the CSFs

determined the total sum of investments for the growth of economy of each country so much from national what from Community resources. With this way, each state-member committed itself that it will finance investment programs of concrete height. In the case of the most developed countries, this investment programs reached they represent high percentages of GNP. The percentages of total financing of investment programs in five-year period 1989-1993, were 5.2 % for Greece, 6.6 % for Portugal, 3.8 % for Ireland and their bigger part emanated from the structural Funds of E.E. but also from the European Bank of Investments.

Apart from the financing of Community Frames of Support, in period 1988-1993, the European Community supplemented the action with "Community initiatives" and "initiative's action" for the service same or even more general developmental objectives. This initiatives, as Intereg for the growth of frontier regions, Leader for the growth of rural space with initiative's proposals, etc., that they played important role and represented the 9 % of roughly total resources that they were been disposed for the structural Funds.

As stated in relative report of J. Delors (Committee, 1992), these pronciples were developed satisfactorily by the states-member. The Community action for the achievement of objective the social and economic cohesion can be considered successful. The ascertainments, these cannot, however, blunt the problems, so much because the difficulties of application of this policy what because the insufficiency of resources, particularly in the countries and regions that have more need of economic growth and adaptation in the conditions of competition of Internal Market afterwards 1993.

5. The Cohesion' Process of Member States within the EU

As has been recognized by successive European Councils, strict control of state aid is necessary to achieve the Lisbon objectives and Member States have been called on to reduce the overall amount of aid and to reorient it towards horizontal areas of com-mon interest, including cohesion objectives.

Control of state aid can make a positive contribution to cohesion. By allowing aid only to regions and sectors where it is most needed and has the least effect in dis-torting competition, control serves to concentrate aid on regions which are in most need of catching up and so helps to reduce regional disparities across the Un-ion. At the same time, the discipline exercised by con-trol encourages Member States to put money into schemes which bring tangible results to both them and the EU as a whole and, accordingly, tends to im-prove the effectiveness of public intervention.

Overall expenditure on state aid across the EU fell from EUR 102 billion in 1997 to EUR 86 billion in 2001. This fall was due to a significant reduction in aid to financial services, the coal industry, agriculture and manufacturing as well as in aid to assisted regions.

The level of state aid in relation to GDP declined in 12 of the 15 EU Member States between 1997-99 and 1999-2001, Table 4, in line with the commit-ment made at the Stockholm Council to reduce aid by 2003 at the latest. Within this, moreover, the share of aid going to support horizontal objectives increased by 10 percentage points between the two periods.

Table 4: *State aid per head in Member States, 1997-2001.*

	Total aid per head (PPS)			Total aid per head excluding agriculture and transport (PPS)		Aid as a percentage of GDP			
	1997-1999	**1999-2001**	**% change**	**1997-1999**	**1999-2001 %**	**2005**	**2006**	**2007**	**2008**
EU15	251.0	226.0	-10.0	123.0	97.0	0.56	0.56	0.53	2.24
BE	322.0	325.0	0.9	83.0	80.0	0.36	0.36	0.40	5.63
DK	274.0	360.0	31.4	144.0	186.0	0.78	0.76	0.78	2.02
DE	313.0	288.0	-8.0	179.0	157.0	0.75	0.77	0.62	2.68
EL	185.0	155.0	-16.2	73.0	61.0	0.38	0.38	0.39	0.42
ES	178.0	154.0	-13.5	112.0	90.0	0.46	0.47	0.45	0.56
FR	286.0	263.0	-8.0	145.0	109.0	0.58	0.57	0.51	1.37
IE	320.0	329.0	2.8	226.0	188.0	0.39	0.43	0.57	20.20
IT	284.0	231.0	-18.7	132.0	84.0	0.44	0.44	0.35	0.35
LU	450.0	578.0	28.4	108.0	82.0	0.25	0.23	0.20	7.83
NL	207.0	246.0	18.8	43.0	44.0	0.41	0.38	0.38	2.73
AT	265.0	251.0	-5.3	65.0	61.0	0.44	0.74	0.40	0.46
PT	252.0	177.0	-29.8	190.0	133.0	0.93	0.92	1.32	1.19
FI	439.0	396.0	-9.8	89.0	78.0	1.35	1.27	1.15	1.13
SE	169.0	169.0	0.0	48.0	48.0	0.98	1.01	0.90	1.03
UK	112.0	115.0	2.7	53.0	42.0	0.24	0.22	0.32	4.00

IE: Data cover the period 1998-1999 instead of 1997-1999. Source: DG Competition, State Aid Scoreboard.

The State Aid Scoreboard, nevertheless, shows that significant disparities remain between Member States in aid to manufacturing and that the gap between the level in the most prosperous Member States and that in the four Cohesion countries hardly changed over the period. The Cohesion countries (11.5% of EU GDP in 2001) continued to account for 10% of total ex-penditure on state aid to the manufacturing sector in 1999-2001, whilst the share of the four big economies (Germany, France, Italy and the UK _ 72% of EU GDP in 2001) fell from 79% in

1997-1999 to 76% in 1999-2001.

In 2001, around EUR 8 billion of state aid, some 9% of the total, went to regions in the EU classified as type “a”, which are almost precisely the same as Objective 1 regions. This was much lower than the a peak of EUR 27 billion in 1993, when Germany (EUR 17 billion) and Italy (EUR 7 billion) accounted for nearly 90% of the total. In 2001, these two coun-tries were still responsible for more than half of re-gional aid, though in absolute terms, the amount spent was much smaller than 8 years previously (EUR 2.5 billion in Germany and EUR 2,1 billion in Italy). This biggest reduction was in aid to the new German Länder, which received substantial amounts immediately following unification. Be-tween 2000 and 2001, however, the overall value of type “a” aid remained much the same.

In 2001, around EUR 800 million of state aid (exclud-ing agriculture, fisheries and transport) went to wholly assisted regions of type “c”, these corresponding closely to those eligible for Objective 2 support from the Structural Funds. In addition, nearly EUR 4.5 bil-lion went to NUTS 2 regions of type “c” which were par-tially assisted. Unfortunately, lack of data below the NUTS 2 level means that it is not possible to determine the proportion of these aids which went to assisted parts of regions and, therefore, to compare the ex-tent of aid between Member States.

Although most Member States have reduced State aid and reoriented it towards horizontal objectives, in line with EU strategy, reorientation towards cohesion objectives is less evident since regional aid has declined.

On 10 February 2004, the Commission adopted a proposal for the financial perspectives of the enlarged European Union of 27 Member States for the period 2007-2013 [COM(2004)101]. In this context, the Commission took the view that the Union's intervention in a number of key policy fields required strengthening. In particular, the Commission decided that an ambitious cohesion policy should be an essential element of the financial package.

The decision reflected the work that had been undertaken since the publication of the Second cohesion report in 2001 which launched the debate on the future of cohesion policy in the enlarged Union [COM(2001)24]. On 18 February 2004, the Commission adopted the Third cohesion report [COM(2004)107] which presented a detailed proposal for the priorities and delivery system for the new generation programmes under cohesion policy for the period 2007-2013. The proposal is coherent with the broad guidelines set out in the Commission's communication on the next financial perspective. Table 5 illustrates the planning for the breakdown of Structural and Cohesion Funds for the period 2007 -2013.

The Third cohesion report concluded that the enlargement of the Union to 25 Member States, and subsequently to 27 or more, presents an unprecedented challenge for the competitiveness and internal cohesion of the Union. Enlargement

has resulted in the widening of the economic development gap, a geographical shift in the problem of disparities towards the east and a more difficult employment situation:

- the gap in per capita GDP between the 10% of the population living in the most prosperous regions and the same percentage living in the least prosperous ones has more than doubled compared with the situation in EU15.
- in EU25, 123 million people - representing some 27% of the total population - live in regions with a per capita GDP below 75% of the EU average as against 72 million people, or 19% of the total, in EU15. Of these, four out of ten citizens are living in regions belonging to the 15 "old" Member States while the other six are nationals of the 10 "new" Member States.
- Four million jobs will have to be created if the average level of employment in the 10 new Member States is to be aligned with that of the rest of the EU. Within the enlarged EU, appreciable employment gaps also persist according to age and gender.

Table 5: *Structural Funds and Cohesion Funds: Annual breakdown of commitment appropriations for 2007 to 2013 (referred to in Article 15) (Euro million, 2004 prices).*

2007	2008	2009	2010	2011	2012	2013
46 333	47 168	47 879	48 024	48 163	48 923	49 704

Source: *Commission of the European Communities, 2004.*

At the same time, the whole of the European Union faces challenges arising from a likely acceleration in economic restructuring as a result of globalization, trade opening, the technological revolution, the development of the knowledge economy and society, an ageing population and a growth in immigration. Finally, economic growth in the EU has slowed appreciably since 2001. As a result, unemployment has risen again in many parts of the Union with all the social implications which this entails. As a springboard to the future, the Union should fully exploit the opportunities provided by the current trend towards recovery.

6. Conclusions

European Union is run by all member countries. Those democratic states are voluntary joined together to face future's challenges. Their objectives are to promote European unity, to improve living and working conditions for citizens, to foster economic development, balanced trade and fair competition, to reduce

economic disparities between regions, to help developing countries and to preserve peace and freedom.

The institutions and bodies are the European Parliament, the Council, the Commission, the Court of Justice and the Court of Auditors. These institutions are supported by other bodies: the Economic and Social Committee and the Committee of Regions, the European Ombudsman, the European Investment Bank and the European Central Bank.

The integration of Europe was proposed as early as the fourteenth century. After the World War II situation in Europe was so bad that some Europeans started to think about idea of creating unified European state. Jean Monnet and Robert Schuman believed that France and Germany could forget their differences and join together for the better economic future.

In 1951 five countries signed the Treaty of Paris and the European Coal and Steel Community (ECSC) was established in August 1952. Several organizations were founded in during decades. The European Union was created on the 1st of November, 1993 with approval of the treaty of Maastricht.

The European Monetary System (EMS) was established in 1979 to create better price stability between EC currencies. At the beginning of 1999 the euro became the official currency of eleven member states of the European Union, with a fixed conversion rate into their national currencies. Euro notes and coins will appear until 1 January 2002, but the new currency may already be used by consumers, retailers, companies and public authorities in non-cash form.

The process of enlargement of the European Union is processing. Negotiations are held with the following twelve applicants: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia. The basic principle of the negotiations is that all the applicant countries must accept existing EU law.

Agenda 2000 is the name given to a series of reforms seeking to modernize Community policies such as agricultural policy and economic and social cohesion, and to give the European Union a new financial framework for 2000 – 2006.

Next six months, beginning on the 1st of January 2001, Sweden will hold the Presidency of the Council of the European Union. France has worked closely with the future Swedish Presidency to help prepare for the European Council in spring 2001, which will be devoted to economic and social questions.

The economic and social differences between the member states of European Union (E.U.) are enormous. Moreover, the structural problems of member states increasing the regional inequalities. In particular, there are still important differences of income not only between but also within the regions of members states in the European Union, as well as with big difficulties on the internal issues of employment which increasing the regional inequalities between member states

and consequently affecting the important differences in the levels of welfare and growth of member states.

The member states that accessed in EU (1995), namely Finland, Austria and Sweden, belong on the contrary in the countries with high standard of living despite that also they suffer certain structural problems. In the less favored regions that are lagging behind are included Greece, Portugal, big regions of Spain, Southern Italy and Sardinia, Ireland, Northern Ireland, the Corsica and the overseas French apartments as well as the new German Lander. The problem of regional delay in the European Union are moreover affected with particular difficulties in the former advanced regions, that currently they face the necessary process of reconstruction of all these industries, as for instance happens in the industry of steel, ship yards and textile industry. The relative problems that they face the three all new member states are considering from the Community opinion of more less importance.

More generally, the new directions of Regional Policy can be summarized in four basic principles:

- Looking the concentration on efforts of growth.
- Programming the partnership between the member states of E.U.
- Planning the national and Community actions
- Enforcing the supplementarity of resources from various sources of financing.

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HISTORICAL PROGRESS OF THE INTERNATIONAL FINANCIAL POLICY AND FOREIGN EXCHANGE RISK

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Abstract

In this paper we discuss issues of international loans and investments between countries in our present day when the world is becoming unified. In this article we begin with a short historical progress on loans. At this point I refer to the contribution of the International Monetary Fund and the World Bank which did not accomplish their goal in the end because of bad estimations on behalf of the government. The reasons for the above mentioned failure are to be found in the various political and economical disarrangements (for example over-armament because of threats), the erroneous policies of national governments, corruption and the national differences between regions. Then I refer to the subject of exchange and exchange rates presenting the significant relation between foreign exchange risk and international financing.

JEL classification: D92, G32, D81.

Keywords: International Financing, International Monetary Fund, Foreign Exchange Risk.

1. If we compare economy in the time period before the World War I and the time period after the World War II, we will notice great differences, and even greater when we compare the Economy of 1947 until 2007.

This difference is ascertained in the progress of the means of transport, the creation of national highways, the huge commercial ships that today cross the oceans transferring merchandise from one end of the world to the other, the progress of motive power, the new materials, the gigantic leaps in pharmaceutics, medicine, genetic and molecular biology, the nuclear fission which has both positive and negative aspects (applications of atomic energy in production and other human activities, as well as destruction by the atomic bomb even though till now it controls and establishes peace from big conflicts).

Despite the differences observed in various countries for geological,

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geographical, historical (historical tradition, development, etc.) reasons, the world tends to become unified (Berger, Dore, 1996).

The economy in the time period mentioned underwent great changes and even greater as time went by and new economic systems appeared, and this because both systems which mainly prevailed after the end of the World War II, Marxism and Keynesianism, proved to be unsatisfactory in the treatment of modern economic problems.

2. Economy is a web of small or big production units.

All these production and services units are connected with each other in a system of institutions and functions whose goal is to offer goods in abundance and within terms and conditions of stability, safety, freedom, as well as justice. Subsequently, when we talk about Economy we mean the system that governs these units.

We mentioned many and big historical changes, however we must mention the form of world economy as it evolves today, as well as the change in the reactions of society within which this process of evolution of Economy appears.

3. In our days, with the foundation of the International Monetary Fund and the World Bank, we have new forms of economy, new problems as well as new mechanisms for their treatment. Apart from all these, industrial countries as well as big population powers have sprung which participate in the international chess game of economies and political issues of the world.

Because of the peculiarities in various countries, there comes knowledge on the exchange of products, technology, labor and funds. What interests each country is to increase its per capita income, to develop its production capabilities and to be satisfied by its production and consumption. For this reason investments and increased per capita income is needed in order for the marginal consumer to be able to satisfy his needs on nutrition, health and entertainment. At the same time, in order to achieve investments, funds are needed, as well as will for investment. There are countries in the world that have accumulated wealth and others deprived of wealth, however this is not always funds, because funds are differentiated for their investments in various projects:

a) projects of equational form, that is, in investments of social interest with investments on behalf of the state, which is not interested in profits as long as there is no loss from its invested funds so that the cost of the project is met by its result,

b) projects of profitable form. These activities relate to the private company that moves based on its profit.

M. Boggs (International Trade Balance, 1927) followed by M. Bye (Course d'

Économie Politique, 1968–1969) differentiates countries into lenders and borrowers, just like L. Th. Houmanidis (1988):

a) Non capitalistic countries which don't borrow (China during the first half of the 19th century).
b) Countries that became borrowers (Turkey since the beginning of the World War I with passive balance of payments and active balance of funds).
c) Advanced in financing countries (U.S.A. from 1874 till 1917) whose surplus in exports makes them pay out their debts.
d) Lending countries (U.S.A., after 1919) with surplus in the balance of trade and the balance of payments.
e) Advanced lending countries (Great Britain and France until the end of the 19th century) with deficit balance of trade and surplus balance of payments.

4. Loans are useful either in kind, titles, bonds, money or property. In the modern age, loans are vastly for financial reasons of the borrowing country, because of the need to deal with amortizations from loans contracted for the purchase of armament, in order to support the balance of payments or even for various other reasons of necessity.

Banks played an important role in the financing fund characterizing the era of financing balance.

The Italian, Dutch, as well as English big merchants accumulated huge funds and their banks channeled their funds all over the world and got undoubted power in underdeveloped and developing countries even with interference in the political life of these countries.

Funds come from the households that are saving and these savings are channeled in the capital market and from there in enterprises. They in turn make over their savings in the capital market so that third parties – apart from the funds – can be paid thus leading the production. The intermediary bridge in the funds flow is the financial institutions (banks, insurance companies, securities).

Banks reinforce the money market and the money market in turn provides funds for the enterprises. Banks today are on top of the economic power pyramid and have acquired a form of absolute dominance since they lend to enterprises in and out of their country, as well as to governments. However, like every economic unit there are risks so we can learn from the economic history that we have big bank crises with world wide economic impact.

5. After the end of the Napoleonic Wars (1815), Great Britain started accumulating funds, founding private banks with the capability to finance all other countries of the world. Until the World War I broke out, Great Britain was

financing America, Asia and Australia by 65% of the total foreign grants. France and Germany granted funds with a preference to countries of central Europe and the Mediterranean Sea (L. Th. Houmanidis, 1990). France was reinforcing Russia at the same time, in order to reinforce it against Germany. In addition, other European countries, like Holland, Switzerland and Belgium, would also finance but in smaller range.

In Latin America, European funds penetrated mainly since the 19th century. Argentina was supplied funds, after its Independence (1824), by Great Britain, which in 1820 amounted to $425 millions and part of which was channeled to Brazil.

French and English investors entered Canada so that it would acquire infrastructures of a developed country with industries, railway and the exploitation of its natural wealth in minerals, wood and wheat. However, funds by the U.S.A., apart from the English and the French ones, were added, but investments of European investors were reduced by 60% (Woodruff, 1966, p. 118). In Asia, India absorbed $1,100 millions by the Europeans who invested in China's railways and heavy industry. In addition to the English, huge investments were made by the U.S.A. and the U.S.S.R. which continue till today.

The English, French and Russians entered China and other European countries followed in a smaller range. Indonesia, Malaysia, Siam, Indochina and Keyland were financed by the U.S.S.R. and mainly by the U.S.A. in a ratio of 1 : 3.

Before the 20th century, the countries supplying funds to Japan were England and France, however today the U.S.A. has outdone them.

The U.S.A., today's economic colossus, after the end of World War I (1919), started financing in loans and investments. England became a borrower of the U.S.A., instead of a lender as it was till then, and over $400 million was borrowed by the U.S.A., but Great Britain as well made investments with its funds in India with $500 million on railways, shipyards, plantations and various public works, enterprises and Banks. In 1950 Great Britain, as well as the U.S.S.R., financed India and in 1962 the U.S.A. invested in India $400 million. After the World War II, England granted loans to New Zealand and Australia and so mostly American funds entered this country, and less Russian and Chinese. In 1962 the English government granted New Zealand with $380 million in loans and $210 million in investments. In the reinforcement of Australia the U.S.A. and Canada played and still play the leading role.

6. Financing outside the dominion of a country is a phenomenon of the mature area of merchant capitalism but mainly of finance capitalism and the dominance in the economy of a country is a phenomenon of the finance monopoly capitalism. Within this time period two significant factors prevail: a) the risk of the exchange

rate between various currencies and, b) the risk of economic and political dependence on the financing country.

The exchange rate involves uncertainty and risk because there lay the threat of change in loans and debts. Every change in exchange means anguish for more changes and the danger by these changes becomes bigger when we lack monitoring of all that is happening with the exchange rates of other countries and of their decisions about the currency value.

7. For the stabilization of the exchange rate representatives of 44 countries, except the U.S.S.R. and its satellite countries, as well as China and Switzerland, met in Bretton Goods in 1944 (July 22nd). In that meeting they signed the agreement about the currency exchange rate and the International Monetary Fund was then founded.

With this agreement, it was decided to create a funds reserve of 888.671gr of gold with contribution ratio in gold 1/3 currency of dollar to gold in 1 dollar, while the fluctuation between two currencies was agreed not to be bigger than ±1%. This agreement was regarded as the main duty of the Central Banks.

In the beginning, the Bretton Goods system was running smoothly and the international commerce was favored, which was the main objective of the agreement, however with speculation and deficits in the balances of payments of most countries, the International Monetary Fund bankrupted after the collapse of Social Raining Rights (Stockholm, 1908) and then came the agreement of Washington (1971) to save the I.M.F.

The Bretton Goods agreement was necessary because we must not forget that, after the World War II, the public expenditure and the lack of various essential goods caused inflation which along with other structural warps in the system created stagflation.

The uneven wealth distribution, speculation and increase of military expenditures because of the Cold War, contributed even more to the weakness of the I.M.F. to achieve its goal. To these circumstances which were so difficult we must also add the incompetence of the I.M.F. to act correctly to maintain the currency stability. Unfortunately not only did the I.M.F. oppose many times to reformations for poor countries and poor masses, but it also couldn't reinforce with its policy these countries by means of consumer's goods in low prices.

At any rate, globalization helped stagflation to fall back, to tone up the policy of stable exchange rates and to increase in average the world income by 2.5% a year (Stiglitz, 2002). Globalization as well did not help particularly the countries with communistic governments. As a matter of fact, the laissez faire free market disappointed the people of their countries (Houmanidis, 1993- Niculescu and Adumitasesei, 2001).

We should not though misidentify the fact that globalization helped to improve the media and means of transport. Subsequently, we should acknowledge that the International Monetary Fund (I.M.F.), the World Bank and the World Trade Organization (W.T.O.) reinforced globalization up to a point. Along with these organizations, globalization was also helped by the International Labor Organization (I.L.O.), the World Health Organization (W.H.O.), the General Agreement of Tariffs and Trade (G.A.T.T.), etc.

Globalization, however, has not managed at least not till today to help poor countries. On the contrary. These countries were driven to bigger poverty because developed countries aimed at their own prosperity.

The banks of rich counties benefited from globalization through loaning in mainly speculative respect and in many cases in the interior of each country in the form of loan sharking. Throughout this whole situation, the International Monetary Fund and the World Bank accumulated their mistakes to create today's situation.

The problem becomes more and more intense as inflation rises and people get poorer, with many populations in the third world living on an income of $1 per day. Moreover, as the environmental conditions and the technology progress advances, the number of unemployed people in world scale increases. Of course, immigration relieves unemployment up to a point in various countries suffering from this disease; however there are many more problems created that torment these countries with hungry populations, populations of low labor specialization, etc. For this reason, Stiglitz is disappointed by the role of the two world organizations we mentioned (I.M.F. and World Bank). Finally, another phenomenon of destruction of a country's economy is also the probable sudden rise of spreads of public bonds by the world speculators.

We will close this article analyzing the danger of financing from the perspective of foreign exchange risk.

8. Based on what we have mentioned, we would like to point out that one of the problems, which an economy is interested in, is also, apart from the spreads levels of its loaning from money markets, the levels of the price of foreign exchange, that is, the relationship between the currencies of two and more countries. For this reason, the foreign exchange price in one country is formed in relation to the purchasing power of the currency of the foreign country. In the transaction of foreign exchange purchase the parity of purchasing power of every currency inland and abroad is also taking place, that is, it expresses the relationship in the purchasing power between the official currency of a country and the official currency of another country.

The balance of the various financial transactions relates to the movement of capital and goods in total bulk.

That includes: a) direct investments, b) investment stock and other investments, and c) changes in the currency of a country. And these availabilities of exchange relate to the available exchange provided by the Central Bank and in amounts offered by the International Monetary Fund.

The rights offered by the I.M.F. depend on the level of rights granted by the I.M.F. The exchange stocks do not include demands in zones outside the Euro. Moreover, they do not include the participation of the Bank in funds and exchange stocks of the European Central Bank (Leventakis, 2003).

The balance of payments of a country must be separate from the balance of accounts and this because the balance of payments is compensated by the general sum of the various accounts of balance of payments, that is, each account covers the other. That does not happen with the balance of accounts, though. If, however, the algebraic sum of transactions that are independent, that is, transactions that take place independently from the condition of the balance of payments, is negative, then we have a deficit in the balance of payments.

Of course, the parity started under the prerequisite that there is stability in the exchange price, so every deviation from this price in a free exchange market would be temporary.

However, this theory firstly expressed by Lassel cannot be accepted in our opinion. Furthermore, we must add that the same theory has not taken into account quantity and quality factors. People speculate in the exchange market and with unfavorable for the taxpayers management in the tax system a country manages to pay off previous debts. If we take into account the law of scarcity, the more exchange offered in the exchange market, the more its price is reduced. And vice versa.

Subsequently, there must be a balance between the offer and demand of exchange and the balance point between the curves of offer and demand of exchange will equate its offered and demanded quantity in some prices. With this hypothesis the theory of exchange value arises based on the balance of payments. According to this theory, balance in an exchange market is not accomplished through the offer and demand of exchange. Since the offer and demand of exchange depends of the balance and the international demands and debts between two countries, the insuperable wall of determining their balance of accounts appears. As a matter of fact, it was observed that while in a country there was a reduction of exchange, there was however an improvement in its balance of payments.

Based on what we have mentioned in the exchange market we should take into consideration: a) the balance of accounts, b) the speculation on the exchange, and c) the movement of capital, since there is a relationship between the balance of accounts and the balance of payments which is always in balance, whereas the balance of accounts is always in imbalance.

Furthermore, in the utility which affects the balance of the curves of exchange offer and demand we must also take into account the quality of money circulating the country, its budget and in which condition its treasury is. We must also have data of the financial policy of the countries, the balances of payments and of accounts, the psychological reactions of the citizens of each country to the various fluctuations of the exchange in the movement of capital and the loans, as well as the policy stability in each country.

The more general factors that affect the exchange price could be restricted to the balance of accounts, the comparison of discounting interests, the predictions on the stability of the price of currencies.

Many times, the exchange (quantity) fluctuations are also due to the government of a country, which decides to depreciate or revaluate its currency. This policy is a consequence of the problems a country faces because of inflation, unemployment, deficit in the balance of foreign transactions and its balance of trade.

However, the policy of depreciation is not a panacea because during the depreciation time or even sooner another country may also depreciate its currency. In that case, the country that had the depreciation must depreciate again which will be devastating for its economy. An example from the field of medicine comes from the case of a nephritic colic where we give morphine to the patience to soothe the pain, which with the injection is totally alleviated. However, the calculus in the kidney causing the colic remains and after 3-4 days it reappears, then the colic must be stopped again by morphine. Our patient with this frequent symptomatic therapy is solaced from the pain, however after time he becomes a morphine addict.

The depreciation of the hard currency of a big country also has consequences in the international market of parity of currencies and similar results as depreciation.

The revaluation of the currency of a country has negative results many times, like the depreciation. However, the countries resort to the policy of revaluation to compensate their balance of transactions (P. Kiohos and G. Papanikolaou, 1997). The countries, however, in order to compensate their balance of transactions resort to foreign financing which is basically an unreal image of the real situation of the balance of transactions of this country. This policy has prevailed in Greece for decades. Of course, all these have very unpleasant results interwoven with I.M.F. The I.M.F. and the World Bank had as their goal the facilitation of transactions between various countries and the stability of exchange rate of various national currencies which are objects of purchase and sale in international currency markets where the Central and Commercial Banks negotiate. However, Banks lend and borrow exchange to each other at prices of current transactions or in forward and short-term dealings which causes upheavals in liquidity as well.

All the above can be more or less dealt with through the integration of the economies of various countries, as it happened and continues to happen with the

Euro and the expansion of the European Union, without however being sure that the Euro structure will not collapse because of possible financial deficits of some members belonging to the Euro zone.

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SPATIAL INTERACTIONS AND REGIONAL GROWTH TRAJECTORY IN GREECE. DOES SPACE MATTER?

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Abstract

In the last thirty years the literature on economic growth has been paid much attention to convergence versus divergence antithesis in productivity, income or in living standards, as measured by GDP per capita, that is whether and to what extent growth patterns have led countries or regions in economic terms nearer to each other or apart. Initially, the main conclusion seemed to favouring convergence which has been the dominant feature among the OECD countries, though, when the sample of countries was enlarged, divergence rather than convergence appeared to be the dominant effect. Regional growth and convergence are issues of profound research since the early 1990s, initiated at least partly by the development of New Growth Theory and New Economic Geography (NEG).

The theoretical and empirical considerations of both theories are considered as the cornerstone of regional growth, aside from their influence in the explanation of regional disparities' evolution. Although considerable progress in the empirical context has been made, still nowadays new aspects alter the way we figure out the economic relations within space. Some developments incorporate endogenous growth in the New Economic Geography framework while others allow for interesting insights on the relationship between agglomeration, productivity[1] and growth, favouring the idea that increasing regional disparities might be a source of higher growth at the national level. By the same token, there is a growing interest in the theoretical and empirical disciplines of regional and growth economics in the spatial dimension of growth and convergence. These new theories underpin the importance of spillover effects, whereas the relation between space and growth is being constantly under the light of growing awareness. Thus, spatial effects are increasingly recognised as an important feature of regional growth process with a basis in economic theory, whilst spatial econometric methods are capable to analyse the implication of new theoretical approaches in this respect.

JEL classification: C21, C23, R11.

Keywords: convergence, neoclassical growth endogenous theory, agglomeration economies, social capital, spillover effects, autocorrelation, spatial error, spatial lag.

1. Theoretical consideration

Focusing on the recent evolution of the economic thought, with the possible exception of Mincerian regressions in the 1970's, by no means other subjects in the

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discipline of applied economics have drawn so much attention as the convergence hypothesis rooted in the neoclassical theory of Solow (1956), Cass (1956), Swan (1956) and Meade (1957). Researchers from different disciplines within the economics discipline suggested various and mostly contrasting explanations why countries or regions grow at different rates, and if convergence occurs, what is the influence from systemically interacting regions[2] on growth. Traditionally, two opposing views about the expected long-term growth of regional development, have been dominated the study of space economy. The first, embarking from the neoclassical tenet, supports the catch up idea, that is the creation of dynamic forces leading to convergence of regional income or productivity, provided there will be no major barriers to the operation of market forces in an integrated national space economy. On the other hand, the second view embarks from endogenous models, in the late 1980's as a contradictory approach that there are no compelling reasons favouring regional growth convergence, even in the long run. The endogenous perspective of the latter according to which long run growth can be determined endogenously with increasing returns and endogenous technological progress was the answer to the conventional neoclassical tenet of decreasing returns and exogenous technological progress.

The pioneering classic study of the open-economy version of the traditional neoclassical model, concerned with regional development in the USA and developed by Borts & Stein (1964) along with the analysis of regional income disparities in advanced industrialised economies (Williamson 1965) within the Solow-Swan framework, both underpin the transitory nature of regional disparities. However, it is very unlikely to maintain their persistent character, since the presence of such disparities will bring into play self-correcting adaptations in every aspect of the market which in turn will raise a strong tendency toward regional convergence.

The paper is organised as follows. Section one deals with theoretical considerations concerning with growth and the convergence versus divergence hypothesis as it is depicted by the neoclassical and the endogenous growth theories; literature within the same context is also reviewed. Section two introduces the idea that growth appears to be clustered in nature in the sense that relatively low or high income regions tend to be adjacent other low or high income regions. Spatial interactions may be recognised either as positive or negative spatial autocorrelation. Finally this section deals with the spatial error and spatial lag models that are appropriate if lack of stochastic independence, either between spatial observations or spatial correlation in the dependent variable, is spotted. The next section manipulates data for 51 Greek prefectures NUTS-3 (1971-2005) separated in two periods to avoid possible bias selection and to allow for a possible trend break. The neoclassical convergence hypothesis of unconditional

convergence in Greece subject to spatial dependence is sought. Furthermore, the former hypothesis is tested against a separated category of those prefectures are lagging behind so that the neoclassical catch up hypothesis to be tested. Section four concludes.

1.1. Convergence in neoclassical growth theory

A fundamental assumption in neoclassical growth theory is constant returns to scale (or diminishing returns to capital) along with the exogenously given spatially common technology. Assuming two regions within a country beyond equilibrium due to their resources misallocation, their capital-labour ratios are also out of equilibrium. The region off its equilibrium path with a smaller capital-labour ratio maintains faster productivity or income growth due to the law of diminishing returns to capital. On the other hand, the other region with a higher capital-labour ratio, will grow at a slower rate, thereby the difference in the rates of growth will produce a transitory catch up process that holds until both regions move to a common steady state. Hence, in the simplest version of neoclassical growth theory, the elimination of differences between capital-labour ratios, income and productivity levels will be anticipated as regions are converging to a single equilibrium. Yet, at the equalising level, income and productivity in each region's economy grow at the same rate, which is equal to the exogenously given rate of technological progress.

Within the framework of convergence measures, particular attention has been paid on the two main concepts of convergence. The first, β-convergence, accounts for the speed of convergence and springs into life among countries or regions if the β coefficient, that is the growth rate of the variable under consideration (income or productivity) over a certain period on the level of the same variable at the beginning of this period, is negative. However, several researchers (Friedman 1992; Quah1993b; Bliss 1999) emphasise the analogy between regressions of growth rates over initial levels and Galton's fallacy of regression toward the mean. Put differently, they claimed if β is negative, that is if found β-convergence, the relationship between growth rate and initial value does not indicate necessarily a reduction in the cross-sectional variance and, most importantly, it deemed also plausible, a diverging cross-section distribution even in the case of such a negative relationship[3], to be addressed. Similar to but not identical with β-convergence is the second measure of σ-convergence which belongs to a broader category of the so-called dispersion measures. If the income or productivity variance of certain territorial units under examination tends to decrease (increase) over time then σ-convergence (σ-divergence) is said that takes place. Both measures are closely related in the sense that if the mean reversion reports negative β (β-convergence) this means also a narrowing dispersion which is the meaning of σ-convergence.

However, since the latter also depends on the variance of the error term or "transitory shocks" in the growth regression, albeit the long term dispersion falls with β, the variance of the disturbance term shifts σ-convergence upwards. Thus, the existence of β-convergence is a necessary but not sufficient condition for σ-convergence.

1.2. Literature review

As the array of researchers in the discipline of economic growth has been growing, the idea of a uni-modal convergence process to a single steady state along the ensuing empirical evidence was not clear cut, neither for the global economy, nor for certain territorial units like the regions of the European Union. Meanwhile, the empirically sought growth process becomes even more complex if it is also accepted the view, prevalent in the economic history literature, that the post-war era can be divided into two distinct chronological periods, with possibly distinct economic characteristics: 1950–1973, known as the Golden Age, and 1973 afterwards, termed the post-Golden Age (Maddison 1995; Broadberry 1996; Temin 1997, 2002; Toniolo 1998; López-Bazo, Vayá, Mora & Suriñach 1999; Mills & Crafts 2000; Carrington 2003; Epstein, Howlett & Schulze 2003; López-Bazo, Vayá & Artis 2004; Miller & Genk 2005; Ramajo, Márquez, Hewings, Salinas 2005; Ertur, Le Gallo & Baumont 2006; O'Rourke, de la Escosura & Daudin 2008).

In an effort to reconcile the theoretical considerations with empirical reality, the simple formation of neoclassical theory has been reformulated by Barro (1991, 1997) and Barro & Sala-i-Martin (1992a, b, 1995, 1997, 2004) who developed the reduced forms of the previously used single equations. The new formation, albeit retained the neoclassical diminishing returns to capital convergence mechanism, allowed for different growth paths, hence countries and regions with different starting points and structural characteristics might reach different steady states. Empirical results of this type of analyses are abundant within a regional context like the aforementioned works of Barro & Sala-i-Martin and Sala-i-Martin who found evidence of unconditional convergence across US and the Japanese prefectures. At the same time, Shioji (1996) confirms earlier results for Japan, whereas Holz-Eakin (1993), Garofalo & Yamarik (2002), Vohra (1996), although using a human capital augmented version of the neoclassical growth model (Mankiw, Romer & Weil 1992; Tomljanovic & Vogelsang 2001; Levin, Lin & Chou 2002; Lim 2003; Miller & Genk 2005) report evidence of convergence within the USA, and Cashin (1995) underpins the findings of β-convergence across the states of Australia.

Similarly, a number of empirical studies confirm the findings by Coulombe & Lee (1993) who supported the idea of unconditional convergence across Canadian

provinces (Coulombe & Lee 1995; Lee & Coulombe 1995; Coulombe & Day 1999; Coulombe & Tremblay 2001). Leaving aside the significant number of empirical studies, reporting unconditional or conditional β-convergence across groups of regional economies worldwide, the interest of the convergence behaviour has been shifted to the regions of the EU: Chatterji & Dewhurst 1996; McGuines & Sheehan 1998 (United Kingdom), Paci & Pigliaru 1995, 1997; Fabiani & Pellegrini 1997; Carmecci & Mauro 2002; Arbia & Piras 2005; Aiello & Scopa 2006; Loddo 2006 (Italy), Niebuhr 2001, Funke & Strulik 1999; Fleissig & Strauss 2001; Hall & Ludwig 2006 (Germany), de la Fuente 1996; Couadrado-Roura, Mancha-Navaro & Garrido-Yserte 2000; López-Bazo, Vayá & Artis 2004; Villaverde 2006 (Spain), Siriopoulos & Asteriou 1998; Tsionas 2002; Michelis, Papadopoulos & Papanikos 2004; Fotopoulos 2006; Benos & Karagiannis 2008; Kafousias 2009 (Greece), to recall some of them.

However, a significant number of empirical analyses have been addressing repeatedly slow rates of convergence (around 2%), much less than it would be expected from the standard neoclassical view of the regional growth process. Therefore, these results raise fundamental questions about the validity of neoclassical growth theory. In this context, the significant spatial clustering of regions with similar growth rates found by other researchers suggests that spillover effects (of labour, capital, technology, and other influences on growth) are geographically localized, which also runs counter to neoclassical growth theory. Among the different structural characteristics, the so-called Barro-style regressions comprise the initial levels of GDP per capita, Government consumptions as a share of GDP, and human capital. The lower the initial level of per capita GDP and Government consumptions the faster is the growth, whilst, in the other side of the spectrum, the scarce of human capital might contribute to the other way round. Furthermore, other ad-hoc variables such as democracy, trade openness[4] and inflation rates seemed to relate with persistent differences among countries and regions which allow for different growth paths and individual steady states. Although it has been proved that certain parameters are favouring convergence, the empirical analysis found evidence that convergence fluctuates with the economic cycle, being greater in expansion periods than during recessionary phases, and that β-convergence both in the USA and the EU faced considerable depletion after the eighties (Quach 1993; Canova & Marcet 1995; Barro & Sala-i-Martin 1997, 2004; Ertur, Le Gallo & Baumont 2006).

1.3. Divergence and NEG theories

Although, the convergence vision foreseen by the neoclassical doctrine is the first, rather optimistic scenario, as far as growth is concerned, a contradictory

approach holds that there are no compelling reasons why regional growth, productivity and income levels should converge, even in the long run. Within this pessimistic framework regional divergence is more likely to occur and lagging regions might perpetuate their low rates of growth, incapable of escaping from their vicious circle of poverty. This alternative view has been elaborated by Perroux (1950, 1955) Myrdal (1957) and Kaldor (1970, 1981) who claimed that market forces are spatially misallocated; hence capital, labour and output is cumulatively attracted in certain regions by the formation of agglomeration economies in conjunction with economies of scale which are highly selective. However, this cumulative process, becomes the main cause of certain region's prosperity at the expense of others, despite the bearing of countervailing forces (congestion diseconomies, "trickle-down" effects, and governmental fiscal transfers) that militate against or balance the benefitted regions' growth.

In the late 1980's growth theory revitalised with the endogenous perspective in which long run growth can be determined endogenously with increasing returns which was the answer to the shortcomings of the conventional neoclassical tenet. Within the context of endogenous growth theory, four different approaches come into play. The AK approach (Rebelo 1991), the learning by doing approach, (Romer 1986), the human capital approach (Lucas 1988) and the Schumpeterian approach (Aghion & Howitt 1998). The endogenous broad capital model modified the conventional neoclassical production function to include externalities to investment. Romer (1986), for instance, pointed out that investments in capital stock generate a "learning by doing" process along with the ensuing "spillovers" of knowledge, whereas these externalities transform technology into a "public good[5]" . On the other hand, if this holds, technological progress becomes endogenous to the national or regional growth process. One implication of this approach is that investment in physical capital equipment is strongly correlated with, and causally related to, growth. Although these models gave way to a different growth pattern perspective, soon they came under the heavy fire of criticism; firstly because high rates of fixed capital accumulation appear to follow, rather than precede, periods of rapid growth, and secondly, technological change is being addressed as the "by-product" of other activities rather than the result of deliberate choices and actions by economic agents (Romer 1994; Crafts 1995; Blomstrom, Lipsey, & Zejan 1996).

The second array of endogenous models introduces human capital into the production function and recons technical progress as the outcome, mainly attributed to intentional research and education. This new concept within the framework of endogenous models underpins the idea of spillover effects, emanated from investments in human capital, which in turn, raise the productivity of both physical capital and the labour force. Apart from the aforementioned process put

forth by Romer (1988), another thread asserts that external increasing returns from human capital acquired from the so-called "learning by doing[6]" (on-the-job training in employment) process (Lucas 1988). The model implies that because of national differences in investment in intentional research and education, income or productivity differentials between countries or regions may persist in the long run. Grossman & Helpman (1995), who contribute to developing the theory of the international flow of knowledge, found that a country's productivity depends, in the long run, on the structure of demand between the knowledge development sectors, the traditional sectors, and the initial stock of knowledge. A typical economy gains control over knowledge through the process of "learning by doing" which may spill over from abroad through international trade relationships. In this case, the question of whether the "learning by doing" is at the national or the international level is important. Krugman (1987) stressed that if "learning by doing" is national in scope, growth rates of income per capita do not converge (Razin 2007).

2. Regional development, increasing returns and spatial dependence

It is a matter of great interest the adaptation of new growth theory to a regional context insofar as such a development reopens and further extends the Myrdal's principle of cumulative causation in the framework of regional development. The relative inability of the simple neoclassical model to confirm a clear cut convergence within the broad spectrum of empirical analyses gives rise to alternative approaches capable of explaining either the slow rate of regional convergence, or the tendency to find spatial clusters of different growth rate regions. The backbone idea of these alternatives is that growth process, highlighted by the new growth theories, either operates differentially over space or produces uneven development as part of its routine operation. As a matter of fact, the existence, for instance, of convergence clubs found by early empirical studies in conditional β-convergence, imply that structural formations, either as part of some regions' inheritance or as cumulative advantage acquired during their development process, are giving impetus to different growth paths and steady states (Petrucci, Salvati & Seghieri 2003; Minot, Baulch & Epprecht 2006; Okawi, Ngeng'e, Kristjanson, Arunga, Notenbaert, Omolo, Henninger, Beson, Kariuki & Owuor 2007). Within this new framework of increasing returns, the spatial dimension of growth has to be considered by facing the significance and the spatial implications of increasing returns and spatial externalities. If positive externalities and human capital along with technology innovation and technology transfer come into play,

then the formation of certain regions' competitive advantage might be the by-product of such specialization. The main idea of endogenous theory is that regional development is highly path dependent as long as temporary conditions and transitory shocks may have permanent effects and patterns of specialization, of leading regions or lagging ones, become "locked in" through external and self-reinforcing effects.

As a corollary, a great deal of contemporary empirical studies underpins the spatial dimension of growth and convergence. As seen in the preceding analysis, the new theories reveal the significance of spillover effects[7] and the growing awareness that space matters for growth. For example López-Bazo et. al (1999), Carrington (2003), Le Gallo & Ertur (2003), Fischer and Stirböck (2004), Magrini (2004), Juessen (2007) have shown that EU regions were polarized in the well known North-South division into two separate groups; rich regions situated in the North and poor in the South. This observation can be linked to several results of the NEG theory (Krugman 1991), that favours the existence of agglomeration and cumulative processes, which spatially determine locations of economic activities.

Not surprisingly, if a region is surrounded by rich regions, its probability of better economic achievement is remarkably higher as opposed to a poor region being surrounded by other poor regions. From the estimation of a variety of cross-country and sub-national models referring to spatial interactions the literature has generally concluded that a country's or a region's growth might substantially depend on other countries' or regions' growth (or lack thereof) (Garrett, Wagner & Wheelock 2005). Fingleton (2003) argued that spillovers might give rise to spatial dependence of regional growth, whereas a different strand of literature considers spatial heterogeneity in connection with regional convergence. Studies by Anselin, Varga & Acs (1997), Bottazzi & Peri (2003), and Funke & Niebuhr (2005) shifted their focus to the influence of spatial spillover effects on innovation, growth and regional disparities, whereas other studies shifted to the spatial dimension within the regional context. For instance, Ertur & Koch (2006) sought the spatial distribution of the European regions and Fischer & Stirböck (2005), focused on the convergence processes among the enlarged EU-25 regions. In the 1990's Quah (1996b) tested whether income growth of EU regions was correlated with the formation of convergence clubs, whereas Fischer & Stirböck (2004) made clear that this formation follows the broad divide between Northwest and Southeast.

Spatial effects thus, are soon recognised as a specific factor of regional growth with a plausible theoretical basis in economics and regression techniques used to conduct empirical applications. It is then rather peculiar the relative tardiness of the scientists in economics to address the fact of spatial influence within the context of growth and development. The reason behind this fact lies firstly, in the

partitioning of disciplines which omitted space, insofar as it was mostly studied by regional and geographical scientists. Secondly, incorporating space and capturing possible spatial autocorrelation within regression models generated unavoidable difficulties which, eventually, have dealt with by the aptly developed regression tools, required to capture the spatial dimension in the econometric regressions. For instance, in an open-economy version of the neoclassical growth model and the technological diffusion models, the speed at which the lagging regions catch up with the leadings (or the region's convergence rate to its own steady state, in case of monotonic convergence), has been proved faster than the speed of convergence in the closed-economy version. Interregional flows of labour, technology and capital are the main contributors, influencing the speed of convergence in the open-economy; thereby they should be included in the relevant econometric analyses. In fact, in spite the fact that, direct access to these data is rather optimistic, spatial dependence models (spatial autoregressive and spatial error) developed as the indirect answer, so that spatial interaction effects on growth and convergence can be captured.

Almost thirty years after the Tobler's words (1970) that *"(...) everything is related to everything else, but near things are more related than distant things"*, Anselin & Bera (1998) claim that *"(...) spatial autocorrelation can be loosely defined as the coincidence of value similarity with locational similarity"*. Put differently, the existence of a random variable in a certain location (region) is partly determined by the existence of the same variable in neighbouring locations. Another approach has been put forth by Anselin, Le Gallo & Jayet (2008) who claimed that the structure of spatial dependence can be related to location and distance, both in a geographic space and a more general economic or social network space. Finally, when spatial interaction, spatial spillovers or spatial hierarchies produce spatial dependence in the endogenous variable of a regression model, the spatial autoregressive model has been frequently mentioned as the solution in the literature (Florax, Folmer & Ray 2003). In case of spatial interactions, two forms of spatial dependence can be recognised. Positive spatial autocorrelation is the first form and applies if similar values of a random variable are traced in similar locations. The second form, called negative spatial autocorrelation, takes place if unconnected and dissimilar values of the variable under investigation are found in similar locations. If, on the other hand, the spatial distribution of the variable under investigation is randomly distributed, no spatial autocorrelation within locations of economic interest exists. Within this context, testing the existence of spatial autocorrelation calls for the exploratory data analysis, as a first step, therefore the hypothesis of similar observations that clustered systematically has to be confirmed or rejected. Moran (1948), Geary (1954), Cliff & Ord (1973, 1981) developed the Moran-*I* and Geary-*C* global tests

for spatial autocorrelation, taking into consideration the entire data pattern as opposed to Getis & Ord (1992), Anselin (1995), Ord & Getis (1995, 2001) who elaborated local spatial autocorrelation tests in order to capture more deliberately the missing information about the prevailing pattern. More specifically, the local version of Moran's-*I* for every region *i* and for every year *t* is defined as:

$$I_{i,t} = y_{i,t}/\delta_0 \sum_i w_{ij} y_{j,t} \quad \text{with} \quad \delta_0 = \sum_i y^2_{i,t}/N \tag{1}$$

where, $y_{i,t}$ and $y_{j,t}$ are observations (mean deviation) of regions *i, j* at the year *t*. The summation over *j* ensures that only adjacent values of *i* are included.

If, on the empirical basis the H_0 hypothesis (that there is no spatial autocorrelation) is rejected, there are two crucial problems, emerging from the very nature of spatial dependence, to bring about. The first, discussed in detail in Cliff & Ord (1972, 1973), deals with the lack of stochastic independence between observations which, if left unattained, leads to inefficient estimations. This anomaly can be treated within the spatial error model (SEM) which splits the error term in two parts, along with the weighting purpose of the spatial weights matrix. In this model, though, it is not possible the causes of the inherent spatial dependence (i.e. common shocks, institutions, national effects) to be distinguished (Rey & Montouri 1999; Abreu, De Groot & Florax 2005). The second problem emerges as spatial correlation between observations in the dependent variable (Anselin 1988); in other words, the evolution of certain observations correlates (positively or negatively) with the evolution of observations in adjacent locations and vice versa. If unsolved, estimations suffer from bias and inefficacy. The spatial autocorrelation problem can be solved by including the dependent variable of the rest observations on the right hand side of the equation lagged by a spatial weights matrix. This procedure is known as the spatial lag model (SLM). Undoubtedly, the significance of the weights matrix in the spatial dependence issue is a matter of a great interest; therefore it is crucial to shed some light on its formation along with the various methods trying to access spatial dependence.

The linear equation: $y = \mathbf{\Omega}\,\beta + u \qquad u \sim \text{iid}\,(0, \sigma^2, I_K)$ (2)

in matrix form, is the starting point to deal with spatial specifications, where *y* is the vector [*K*, 1] of observations of **Ω** independent explanatory variables, *β* is the vector [*Ω*,1] of regression coefficients to be estimated and *u* the vector [*K*, 1] of the stochastic errors complying with the OLS classical assumptions. The error *u* is assumed to be independent, with independent and identically distributed elements of mean zero and variance σ^2_u.

After inserting the endogenous spatial lag $\mathbf{W}_y$ into [*K*, 1], equation (2) takes the form:

$$\mathbf{y} = \varrho \mathbf{W}_y + \mathbf{\Omega}\,\beta + u \tag{3}$$

Equation (3) corresponds to the SLM with $\mathbf{W}_y$ the spatial lag and ϱ the autoregressive (spatial interaction) parameter, expressing the average strength of dependence among the observed values of the dependent variable. On the other hand, the SEM suggested by Kelejian & Robinson (1995) takes the form of equation (4):

$$\mathbf{y} = \mathbf{\Omega}\beta + u \quad \text{where} \quad u = \lambda\, Wu + \varepsilon \qquad u, \varepsilon \sim iid\,(0, \sigma^2\, I_K) \tag{4}$$

where *u* defines the spatially correlated error component, λ is the coefficient of the spatial autoregressive error, and *W* corresponds to the spatial weight matrix. The error components *u* and *e* are assumed to be independent, with independent and identically distributed elements of mean zero and variance σ_u^2 and σ_ε^2 respectively.

Within the framework of maximum likelihood (ML), firstly introduced by Ord (1975), both the SLM and the SEM models can be estimated. For the SLM and SEM the log-likelihood functions deploy as in equations (5) and (6) respectively:

equation (5):

$$\ln L = -\frac{N}{2}\ln(2\pi) - \frac{N}{2}\ln\sigma^2 + \ln\left|\mathbf{I} - \varrho\boldsymbol{W}\right| - \frac{1}{2\sigma^2}[(\boldsymbol{y} - \varrho\boldsymbol{W}y - \boldsymbol{\Omega}\beta)'\,(\boldsymbol{y} - \varrho\boldsymbol{W}y - \boldsymbol{\Omega}\beta)$$

equation (6):

$$\beta_{SLM} = (\mathbf{\Omega}'\mathbf{\Omega})^{-1}\,\mathbf{\Omega}'(\mathbf{y} - \varrho\mathbf{W}_y),\ \varrho \text{ is the maximum likelihood estimation.}$$

equation (7):

$$\ln L = -\frac{N}{2}\ln(2\pi) - \frac{N}{2}\ln\sigma^2 + \ln\left|\mathbf{I} - \lambda\mathbf{W}\right| - \frac{1}{2\sigma^2}[(y - \Omega\beta)'(\mathbf{I} - \lambda\mathbf{W})'(\mathbf{I} - \lambda\mathbf{W})\,(\mathbf{y} - \mathbf{\Omega}\beta)]$$

equation (8):

$$\beta_{SEM} = (\mathbf{\Omega}', \mathbf{\Omega})^{-1}\,\mathbf{\Omega}'(\mathbf{I} - \lambda\boldsymbol{W})\boldsymbol{y},\ \lambda \text{ is the maximum likelihood estimation.}$$

In equations (6) and (8) $\mathbf{\Omega}$, **y** are the matrixes of the initial level and the growth rate of per capita GDP respectively and W is the estimated spatial weights matrix.

As seen in equations (2)-(8) the weight matrix ***W*** underlies a great significance as it captures the unexplained spatial relationships between the object of investigation. Therefore, this is a matter of special treatment and should be analyzed in more details before proceeding. In spatial econometrics, the matrix ***W*** with elements $\boldsymbol{W}_{i,j}$ has a vital role to play insofar as the information, for the intensity of spatial interactions of the dependent variable under consideration, is concerned. Each autonomous cell $\boldsymbol{W}_{i,j}$ of ***W*** accounts for the intensity of spatial interactions between different locations *i, j.* Put differently, if the normal assumption of zero influence between locations *i,j* is violated, then a variable met

in location *i* influences to some extent other variable met in location *j*. The exogenous matrix $\boldsymbol{W}$ can be defined by various criteria, although, the main idea relies on geographical proximity which takes the form of a binary variable [0, 1] with [1] if *i,j* share common border and [0] otherwise. Although this approach fulfills the main scope of the weight matrix, it is not possible weaker forms of spatial dependence to be captured. Thereby, $\boldsymbol{W}_{i,j}$ can be alternatively defined as the geographical distance $d_{i,j}$, that is the distance between locations *i, j.* Thus, the distance matrix takes the form $\boldsymbol{W}_{i,j}$ with the first derivative being negative $[\boldsymbol{W}_{i,j}(d_{i,j})]' < 0$.

By the same token, it is possible other forms of spatial proximities to be used (i.e. interregional trade flows, income disparities, labor productivity, exchange of intermediate or capital goods etc.) towards the formation of the most appropriate weights matrix. For instance, a distance weights matrix cal also refer to the "economic distance" between regions such as technological proximity or disparities in absorptive capacity (Parent & LeSage 2008). As long as the choice of spatial weights matrix is frequently arbitrary, there is substantial uncertainty regarding the option, not to mention the various results influenced by the choice of a particular weights matrix. Obviously, there is no particular rule concerning the formation of the spatial weights matrix and the issue still remains a matter of subjectivity[8]; therefore the chosen criteria remain somewhat arbitrary (Anselin, Florax & Rey 2004; Paelink, Mur, & Trívez 2004).

3. Empirical results

In the empirical section of this paper the regional growth pattern of Greece along with the possible spatial dependences will be sought. In fact, the issue under consideration is the neoclassical type convergence hypothesis subject to spatial dependence. If the relevant test statistic reveals whatever short of spatial relations, a set of mutually interacting tools will come into play. The final conclusion depends on whether convergence takes place in Greece and to what extent its pattern of growth follows spatial path. GDP per capita has been chosen as the necessarily material for our analysis. Data for 51 prefectures of Greece (NUTS-3) during 1975-2005 retrieved from Eurostat (DS-070716-Gross Domestic Product at NUTS level-3). Technically, two periods within the thirty-year time span were separated. The first (1975-2005) traces the convergence hypothesis under the influence of spatial effects throughout the overall period. By the same token, the performance of Greek prefectures lagged behind the average growth rate in 2005, was taking into account. The second period, in fact the sub-period 1990-2005,

follows the previous analysis and it has been selected firstly to counter balance the first period possible bias selection and secondly to allow for a possible trend break.

As a first step data from both periods are initially examined for spatial autocorrelation by the Moran-*I* test statistic (Moran 1948). Secondly, we employ a cross regressive OLS model in order to investigate if, and to what extent in every period under investigation, spatial dependence (autocorrelation) has been internalized by the estimators. If spatial dependence is at hand the cross regressive model still suggests the appropriate subsequent decisions to be made. Moran's-*I*, as explained at a previous point, heavily depends on the spatial weight matrix which captures the unexplained spatial autocorrelation among the variables of our interest and various locations in space. As the scope of the weight matrix is to set adjacency relations to each region, the criteria used to define such a scope may serve different natures (i.e. contiguity, k-nearest neighbours, decreasing functions of distance, volume of trade, transport times, etc.). In this paper, every period of our analysis employs four specifications of the k-nearest neighbours weight matrix based on proximity among the 51 prefectures of Greece. Finally, each one of the computed spatial weights matrixes has been standardized by dividing each element with its row sum in order to compare the spatial parameters and the interpretation of spatially lagged variables. To begin with, the spatial dependence, as tested by Moran-*I* test[9] (Anselin & Ray 1991) for spatial autocorrelation for both periods, is presented in table-1.

Table 1: *Moran's-I test for spatial autocorrelation* 1975-2005, 1990-2005.*

Variable	**$linc_{75}$**				**$linc_{90}$**			
Weights matrix	Wk(2)	Wk(3)	Wk(4)	Wk(5)	Wk(2)	Wk(3)	Wk(4)	Wk(5)
sd (I)	0.5095	0.4775	0.4469	0.4138	0.5094	0.3900	0.3401	0.3295
Mean	−0.0188	−0.0201	−0.0228	−0.0182	−0.0170	−0.0253	−0.0142	−0.0173
St. dev.	0.1215	0.0982	0.0851	0.0783	0.1259	0.1069	0.0894	0.0817
p-value *(1-tail test)*	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010

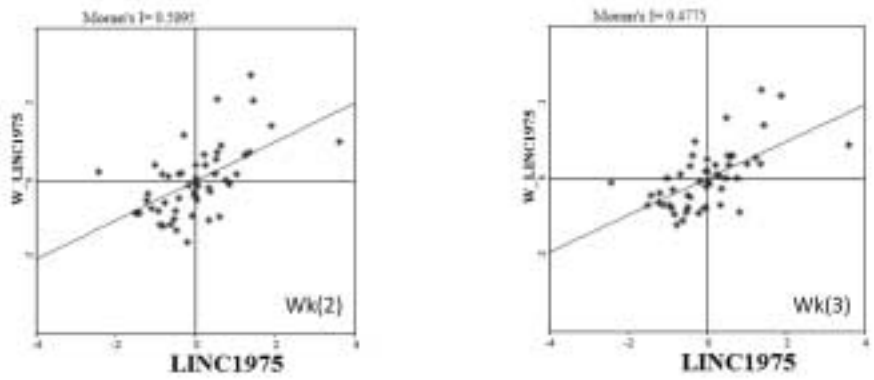
* *empirical pseudo significance based on 999 random permutations.*

In table-1 the dependent variables of GDP per head $linc_{75}$ and $linc_{90}$ account for four different values of spatial dependence, following the specification of the weights matrixes Wk(2)-Wk(5). Strong positive spatial autocorrelation is revealed at 0.1% level for all eight cases employed. Positive spatial autocorrelation means that adjacent located observations tend to exhibit similarities in the amount of GDP per head than would be expected by chance. For the first and the second period, the relevant criterion of spatial autocorrelation takes the highest value

(0.51) when Wk(2) and narrows to the lowest value (0.41) and (0.33) when Wk(5) respectively. The preliminary impression of the Moran's-*I* evolution might contradict the spatial lag idea as the corresponding Moran's-*I* values decrease with the increased bandwidth Wk. On the other hand, this would be rather expected if the distance weights matrixes had been selected; albeit this first impression is being left for further investigation for both periods when the appropriate tools of spatial analysis are introduced.

Local spatial instability is traced by the mean of the Moran's-*I* scatterplot (Anselin 1996). On the horizontal axis the vector *y*, in our case the standardized GDP per capita for each region, is displayed against the spatial lag vector W_y that is the standardized spatial weighted of the neighbours patent applications on the vertical axis. Moran scatterplot is divided into four quadrants corresponding to the four types of local spatial association between a region and its neighbours. The upper right (HH) quadrants show regions with high GDP per capita surrounded by regions with high GDP per capita. In the lower left (LL) quadrants, regions with low GDP per capita values are surrounded by regions with low values. In the upper left (LH) quadrants, regions with low GDP per capita values are surrounded by regions with high values. Lastly, regions belonging to the lower right (HL) quadrants with high GDP per capita values are surrounded by regions with low values. Spatial clustering of similar GDP per capita values is captured by HH and LL quadrants, hence positive spatial autocorrelation. Unlikely, the upper left (LH) and lower right (HL) quadrants correspond to negative spatial autocorrelation that is spatial clustering of dissimilar values. Finally, global spatial autocorrelation may also be visualized on these graphs since the Moran's-*I* statistics is formally equal to the slope coefficient of the linear regression of W_y on *y*.

Figure 1. *First period LISA according to different specifications 1975-2005.*



One of the drawbacks of Moran's-*I* scatterplot, however, is that it does not inform about the significant spatial clustering put in evidence. In order to avoid this pitfall, it is crucial, particular indicators to be calculated. These indicators are used, at the same time, for the detection of significant spatial clusters, significant regimes or outliers. According to Anselin (1995), LISA (Local Index of Spatial Autocorrelation) statistics gives for each observation (in our case GDP per capita) an indication of significant spatial clustering of similar values around that observation, whereas the sum of LISA is proportional to a global indicator of spatial association. The following set of figure-1 and figure-2 delineates local indexes of spatial autocorrelation over the first and the second period respectively, as figured out in table-1.

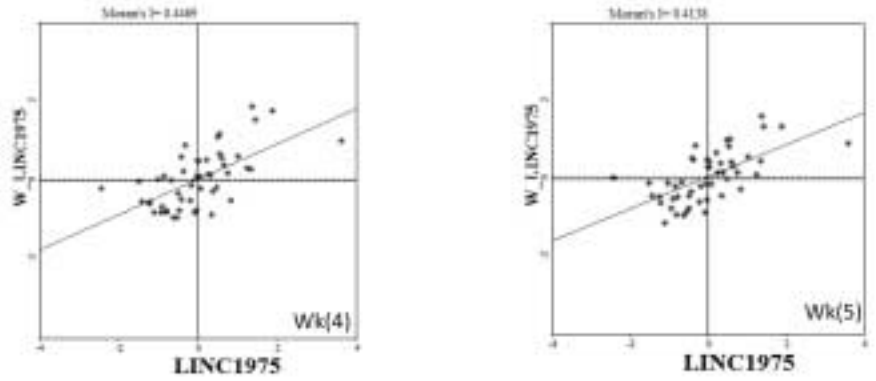
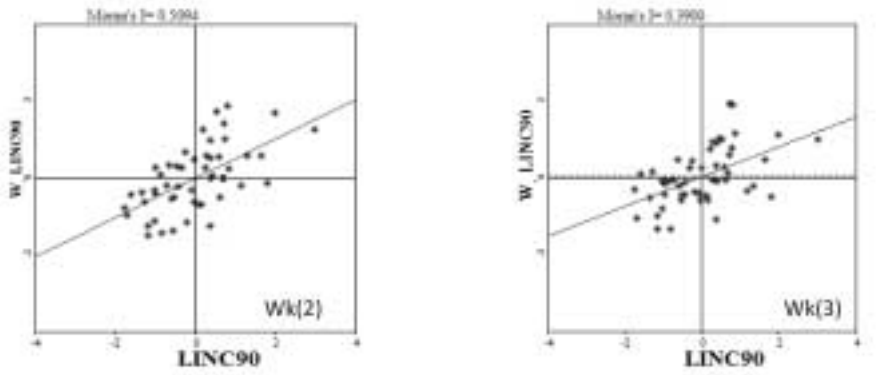
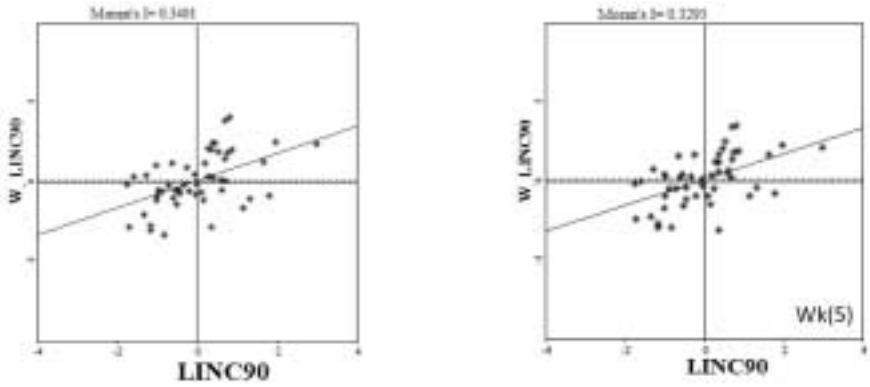


Figure 2. *Second period LISA according to different specifications 1990-2005.*





Next, we employ the OLS regression as set in equation-1. Despite the prevalent common view of so many flaws attributed to the mean reversion, this method is suitable for testing the convergence hypothesis under spatial dependence and the common steady state analysis set by definition. Furthermore, OLS estimators along with other parameters are useful starting points for comparison with most appropriate techniques which will be applied at a later stage. Based on the OLS residuals, two Lagrange Multiplier tests are then used to identify the remaining spatial dependence and how to solve it. The test results for the first period of our analysis are presented in Table-2 for all four specifications employed by the equivalent number of spatial weights matrices.

Taking a closer look at the cross regressive OLS model first, the overall fit (8.7%) is rather poor and the joint probability of both variables being zero can be safely rejected. On the other hand, the negative and statistically significant ($p < 0.05$) log of initial GDP per capita implies convergence at a mean annual rate of 1.01% among the 51 prefectures of Greece during 1975-2005. The binary variable *dpoo*, albeit negative, fails to reject the null so that it gives solely a "sign" idea of convergence among the lagging Greek regions. However, it is accepted that OLS in the presence of spatial dependence (SEM form) might be misleading as it yields a biased estimate for the parameter's variance and unbiased estimates for the convergence and the intercept parameter. The presence of spatial autocorrelation, as figured out in table-1 and figure-1, imposes the solution of Lagrange Multiplier tests based on the OLS residuals towards identifying the remaining spatial dependence. The four specifications, employed by the four weights matrixes can be seen in table-2. To begin with, the Wk(2) specification, despite the Moran-*I* significance, failed to reject the null hypothesis for both SLM and SEM test statistics and would call for the OLS regression results if no alternatives were into existence. On the other hand, the aforementioned test statistics are significant for the remaining specifications, thereby clearly suggesting that further investigation

through their robust forms should be undertaken (Anselin & Rey 1991). Furthermore, the spatially adjusted Breusch-Pagan test for heteroscedasticity rejects the null for Wk(2) unlikely to any specification between Wk(3) and Wk(4), thus we limit attention to the SEM and omit further consideration of the spatial heterogeneity models.

Table 2. *β-convergence estimation 1975-2005 (NUTS-3).*

Variables	OLS	OLS–Wk(2)	OLS–Wk(3) SEM	OLS–Wk(4) SEM	OLS–Wk(5) SEM
constant	0.1221*** (0.0363)	0.1221*** (0.0363)	0.1342*** (0.0376)	0.1251*** (0.0375)	0.2304** (0.1168)
$linc_{75}$	−0.0101** (0.0043)	-0.0101** (0.0043)	−0.0115*** (0.0044)	−0.0104** (0.0044)	−0.0175 (0.0134)
dpoo	−0.0023 (0.0020)	−0.0023 (0.0020)	−0.0035* (0.0019)	−0.0033* (0.0019)	−0.007 (0.0055)
lambda			0.3352** (0.1413)	0.3538** (0.1579)	0.2713 (0.1882)

Diagnostics	**STATISTICS CONTROL**				
F (3, 48)	3.40**	3.40**			
Breusch-Pagan	3.389	3.389	3.866	3.203	4.924*
Jarque-Bera	0.859	0.859			
$\bar{R}^2$	0.087	0.087	0.250[10]	0.251[10]	0.114[10]
LL	182.4	182.4	185.9	185.5	130.5
AIC	−368.9	−368.9	−364.7	−365.0	−255.1
SC	−363.1	−363.1	−358.9	−359.2	−249.3
Obs.	51	51	51	51	51

Spatial diagn.	**DIAGNOSTICS FOR SPATIAL DEPENDENCE**				
Moran-*I*		2.193**	3.139***	3.704***	4.123***
SLM		1.752	3.595*	5.670**	6.298**
SLM-Ro		1.129	2.625	1.512	2.240
SEM		0.100	5.676**	7.541***	9.198***
SEM-Ro		2.079	4.706**	3.383*	5.140**
LRT			5.701**	6.164**	2.110

Std. errors in parentheses. One, two, or three asterisks indicate significance at < 0.1, < 0.05, and < 0.01 respectively. LL, AIC, SC, SLM, SLM-Ro, SEM, SEM-Ro, LRT correspond to Log likelihood, Akaike info criterion, Schwarz criterion, Spatial lag, Robust spatial lag, Spatial error, Robust spatial error models and the Likelihood ratio test respectively.

Comparing the information provided by the LL, AIC and SC, specification Wk(3) is superior as opposed to the basic unconditional cross regressive model. To begin with, the comparison between the OLS log likelihood, AIC, SC criteria and the SE model favors the latter which implies; firstly that misspecification, due to omitted spatial dependence of the unconditional cross regressive model, is at hand and secondly, spatial autocorrelation found in growth rates is not entirely explained by the convergence hypothesis armed with the spatial dependence of initial income levels. According to specification Wk(3), unconditional convergence, among the Greek prefectures (NUTS-3) during the first period of our analysis, takes place at an annual mean rate of 1.2%. The overall fit of spatial regression is not reported as the relevant value (25%) is not a real R^2 but a so-called pseudo R^2 which cannot be directly compared with the measure given by cross regressive models. Despite the minor difference in convergence rates between the basic and the spatial error model, the binary variable (*dpoo*) in the SE model became statistically significant implying that the lagging prefectures of Greece *ceteris paribus* really converged at an annual mean rate of 0.4%. Recall that convergence of the lagging prefectures, albeit present, was not statistically significant in the basic cross regressive model. Specification Wk(4) retains the statistical significance of every estimator embodied as the previously examined specification Wk(3) did. More specifically, the strength of spatial autocorrelation implied by the Moran's-*I* statistic appears even better (3.70) compared to 3.14 of the Wk(3) specification. However, when comparing the information provided by the LL, AIC and SC, specification Wk(3) still prevails against the rest of specifications.

Table 3. *β-convergence estimation 1990-2005 (NUTS-3).*

Variables	OLS	OLS–Wk(2)	OLS–Wk(3) SEM	OLS–Wk(4) SEM	OLS–Wk(5) SEM
constant	0.1698** (0.0735)	0.1768** (0.0752)	0.2019*** (0.0737)	0.1935*** (0.0734)	0.1912** (0.0744)
$linc_{75}$	−0.0145* (0.0084)	-0.0153* (0.0086)	−0.0181** (0.0084)	−0.0172** (0.0084)	−0.0169** (0.0085)
dpoo	−0.0068* (0.0037)	−0.0076** (0.0037)	−0.0080** (0.0036)	−0.0076** (0.0036)	−0.079** (0.0035)
lambda		0.1975 (0.1317)	0.3192** (0.1433)	0.3505** (0.1613)	0.3498** (0.1760)

Diagnostics	**STATISTICS CONTROL**				
F (3, 48)	3.33**				
Breusch-Pagan	2.046	2.386	3.527	3.324	3.356*
Jarque-Bera	1.380				
$\bar{R}^2$	0.085	0.191	0.242	0.232	0.216
LL	149.9	152.5	158.7	154.5	155.8
AIC	−299.7	−291.0	−285.5	−289.1	−291.2
SC	−294.1	−290.2	−280.7	−283.3	−289.1
Obs.	51	51	51	51	51

Spatial diagn.	**DIAGNOSTICS FOR SPATIAL DEPENDENCE**				
Moran-*I*		2.397**	3.234***	3.405***	3.194***
SLM		2.656	4.139**	4.644**	3.573*
SLM-Ro		0.384	2.082	1.343	1.927
SEM		3.362*	6.139**	6.279**	5.107**
SEM-Ro		0.989	4.081**	2.978*	3.462*
LRT		3.115*	5.615**	5.193**	4.312**

Std. errors in parentheses. One, two, or three asterisks indicate significance at <0.1, <0.05 and <0.01 respectively. LL, AIC, SC, SLM, SLM-Ro, SEM, SEM-Ro, LRT correspond to Log likelihood, Akaike info criterion, Schwarz criterion, Spatial lag, Robust spatial lag, Spatial error, Robust spatial error models and the Likelihood ratio test respectively.

Shifting the focus to the next period 1971-1994 (table-3) the joint probability of both regressor being zero in the unconditional cross regressive model can be safely rejected ($p < 0.05$). Convergence is still apparent and it has been estimated 1.5% which is slightly higher than 1.01% estimated during the period 1975-2005. The comparison of the overall fit between the cross regressive models reveals almost identical values which are 8.5% for the second period against 8.7% for the first.

The selection of the appropriate Wk specification depends on the LL, AIC and SC criteria. Table-3 reports the relevant diagnostics which control for the most appropriate specification. If the LL, AIC and SC criteria from the cross regressive OLS model compared with the four Wk specifications it is revealed that spatial dependence regressions prevail. More specifically, The OLS Log likelihood (149.9) is lower than every LL value reported by the spatial dependence regressions, the highest value (158.7) being reported by specification Wk(3). Likewise, Akaike information criterion is much lower in spatial dependence regressions than in OLS (285.5 against 299.7). Finally, the Schwartz criterion performs better in spatial dependence regressions (280.7) as opposed to 294.1 of the OLS. The implication

of such differences between the traditional model and the spatial dependence one clearly implies that the former, which is the cornerstone among a vast number of relevant Barro-type growth models, suffers from misspecification due to omitted spatial dependence. More significantly, it also suggests that convergence hypothesis cannot be explained solely by the level of initial GDP per capita and its subsequent growth. Yet, the comparison among the relevant values of the four specifications clearly proclaims that Wk(3) dominates the rest of specifications in terms of the aforementioned criteria.

The values estimated in specification Wk(3) of table-3 call for further investigation. First of all, the Moran-*I* statistic is positive and statistically significant ($p < 0.000$) suggesting thus that spatial autocorrelation is present. As a matter of fact, spatial dependence is at hand not only in specification Wk(3) but in every specification employed in our model. Following the strategy suggested by Anselin & Ray (1991) the robust tests, reported in the diagnostics for spatial dependence section of table-3, stress the presence of spatial error autocorrelation rather than the spatial lag, therefore favor the SLE model. Since both samples reject the spatially adjusted Breusch-Pagan test for heteroscedasticity, much attention has to be paid on spatial dependence rather than on the spatial heterogeneity models. Specification Wk(3) reports clear evidence of convergence at an annual mean rate 1.8% which is slightly higher than convergence estimated by the cross regressive OLS model (1.5%). Again, the binary *dpoo* variable is negative and statistically significant ($p < 0.05$) suggesting that the poor prefectures of Greece throughout the period under investigation managed to converge.

4. Conclusions

In this paper two complementary models to control for the unconditional convergence hypothesis among the 51 Greek prefectures (NUTS-3) during the period 1975-2005 were employed. According to neoclassical theory which was confirmed by a various empirical studies, conditional convergence deemed plausible within the regions of the same country rather than among regions of different countries. If it is assumed common initial characteristics, institutions, technology, population growth and tastes, which seems not a vexed assumption within the regions of the same country, then convergence towards a single steady state is a viable hypothesis. The first model derives its impetus from the hard core of the neoclassical synthesis and reports its convergence estimates according to initial and final level of GDP per capita. The last few decades, however, the importance of spatial interactions has been recognized in the economics discipline

and the spatial variable soon has come into play. The new models, emanated from the traditional neoclassical growth theory, are taking into account the Tobler's words that *everything is related to everything else, but near things are more related than distant things*, so that, even for economists, the growth nature seems to be not only selective but exhibits positive or negative similarities between adjacent locations. Our empirical strategy was based on recent developments in exploratory spatial data analysis along with the traditional cross convergence econometric perspective. Our findings provide new evidence on the role of spatial effects in the regional context of income growth and convergence. The application of exploratory spatial data analysis methods reported strong but similar values of spatial autocorrelation in the level of 51 NUTS-3 Greek prefectures over both periods. Taking into account that GDP per capita converges at an annual mean rate 1.2% over the period 1975-2005 and 1.8% over the period 1990-2005 in conjunction with strong spatial autocorrelation, it has to be suggested that while prefectures converge in relative levels, they might move towards a steady state not independently but rather tend to co-produce convergence paths similar to their regional neighbors.

Although the traditional Barro-type specification has been employed as the basis for comparison, our confirmatory analysis reports that this model suffers from misspecification because strong spatial error dependence at the same time was spotted. As a matter of fact, the difference in convergence rates between the traditional and the SEM-Ro model, albeit at hand, does not fully support the previously mentioned misspecification. However, had more independent variables been included in the model, which would have controlled for different steady states, the convergence rates would have reported significantly different. On the other hand, insofar as spatial dependence is present, probable random shocks to individual prefectures might not only derail this prefecture from its way towards the steady state equilibrium but to propagate as well throughout the system of prefectures, hence complicating the trajectory process of convergence dynamics.

NOTES

1. Productivity here does not comply with the classical meaning attributed so far. While it deemed plausible that agglomeration economies raise productivity (i.e., large conurbations promote interactions favouring productivity),

recently the theory of "firm selection" underpins that the strengthening of competition within large cities or conurbations allows only the most productive firms to survive (Baldwin & Okubo 2006; Mellitz & Ottaviano 2008; Combes, Duranton, Gobillon, Puga & Roux 2009).

2. For detailed reviews of the literature in the relevant issue see Sala-i-Martin 1996; Durlauf & Quah 1999; de la Fuente 2000; Barro & Sala-i-Martin 2003; Durlauf, Johnson & Temple 2005; Magrini 2007).
3. The fact that a negative coefficient β is a necessary but not a sufficient condition for a reduction in the cross-sectional dispersion is acknowledged by the proponents of the cross-sectional regression approach. A negative value for β can be regarded as indicating the existence of forces reducing the cross-sectional distribution while ongoing disturbances are seen as forces towards expansion. The practical value of this interpretation though is somewhat a vexed question since even if information about these shocks were used in a cross-sectional regression, still a negative value for β would not affirm that the cross-sectional distribution is shrinking.
4. There is no concordance as to what measure can be used toward openness observation, not to mention the lack of theoretical agreement about how to measure trade openness. Based upon the previous work of Baldwin (1989) and Pritchett (1996), Proudman, Redding & Bianchi (1997) distinguish three main approaches in the literature and claim that two problems of endogeneity come into play. The first relates growth to ex-post measures of openness, whereas the second is outcome-based and seeks the outcome in the case of trade barriers absence, using price distortion measures. Finally, as far as the economies' classification to "open" or "closed" is concerned, Proudman, Redding & Bianchi distinguish an incidence-based approach that relies on the direct observation of trade restrictions (i.e. average tari_ rates, non-tari_ barriers, black market exchange rates, central planning or state monopolies) in major exports.
5. Theories that explain endogenous technological change were known as early as the 1960s, Arrow (1962) model of learning by doing, Uzawa (1965) model of human-capital-driven productivity improvements, and Shell (1967) model of inventive technological activity. These models are part of the "First Wave" of the literature on economic growth.
6. This notion can be found in the late eighteenth century in the writings of Adam Smith and was developed further in the early twentieth century by Young (1928).
7. For evidence and detailed analysis on spillover effects being spatially bounded, see Bottazzi & Peri (2003); Henderson (2003); Thorton & Flynne (2003); Baldwin, Beckstead, Brown & Rigby (2008).

8. The importance of weights matrix is being recognised in the literature. Bhattacharjee & Jensen–Butler (2006) pointed out that *"the choice of weights is frequently arbitrary, there is substantial uncertainty regarding the choice and the results from studies vary considerably according to the choice of spatial weights". LeSage & Fischer (2008) pointed out that "(...) competing specifications are usually non-nested alternatives so that conventional statistical procedures such as the likelihood ratio tests are inappropriate".*

9. The test statistic is compared with its theoretical mean, $I = -\frac{1}{n-1}$ and $I \to 0$ as $n \to \infty$. The null hypothesis $H_0: I = -\frac{1}{n-1}$ is tested against $H_\alpha: I \neq -\frac{1}{n-1}$. If H_0 is rejected and $I > -\frac{1}{n-1}$, this is a signal of positive spatial autocorrelation. On the other hand, if H_0 is rejected but $I < -\frac{1}{n-1}$, negative spatial autocorrelation prevails.

10. Traditional measures of fit are meaningless for the spatial models. Instead pseudo measures should be used. However, pseudo measures cannot accurately be compared with these from the OLS regressions. The R^2, in the spatial cases, is the ratio of the predicted values over the variance of the observed values for the dependent variable.

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INSTITUTIONAL APPROACH OF CONFLICTS AND THE CRISIS MANAGEMENT IN THE BUSINESS ENVIRONMENT

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Abstract

The ability to manage a crisis calmly requires perpetual and vigilant crisis management planning. When a major disaster strikes, businesses that had failed to adequately make provisions for potential crisis situations tend to be unable to react and cope with the sudden impact of the event. As is seen every day, issues or crises played out in the public domain are unpredictable, demanding and fast-moving. The attendant pressures have always put senior management in a danger zone where every action or response carries the potential to define or destroy the future of products, reputations, strategies and well-laid plans. Under the scary spotlight of public, regulatory, political and media scrutiny, crisis situations become all absorbing of management time and attention. But unless properly handled, experience shows that crisis management can become no more than a series of despairing attempts at damage limitation or mere survival. Experience of working alongside corporate management in crisis has shown that turning around these complex situations is most successfully achieved by well-prepared, trained and drilled management groups. Each and every team player needs to appreciate the dangers of the situations they face, while at the same time looking for every chance to leverage opportunities – however fleeting. At a time of crisis, the ultimate challenge for senior management teams becomes how to win back trust and credibility, both of which will have been undermined, damaged or destroyed. Over and above the corporate and financial stakes, the corporate team must consider how best to defend and bolster the reputations of the company, products and services – even management itself – all of which will have come under fire. Finally as far as the conflicts in the business environment are concerned with the large number of people each employee must work around and see daily, and the wide spectrum of backgrounds, it is almost a sure bet that conflicts will occasionally arise. There may be personality clashes, misunderstandings, miscommunications, disagreements, or just plain dislikes. Whatever the reason, every employee, sooner or later, must learn how to cope with, or handle, conflicts.

JEL classification: J50, M12.

Keywords: crisis, crisis management, conflicts, business environment, crisis management planning, corporate management.

1. Introduction

Today's demands prompt the need for careful examination of a company's readiness in dealing with the unexpected and undetected.

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Knowing what to do in a crisis helps prevent or minimize harm or damage to our employees, the environment, the communities in which we operate, our reputation and our profitability. Being prepared helps shorten the time it takes to mobilize and manage an effective response. It also helps maintain our relationships with all our customers and shareholders, enabling us to return to normal business operations more quickly. Crisis management also enables us to learn from each incident and to develop preventive measures in a process of continuous improvement.

The following items have been identified as priorities for crisis management: clarifying our goals and philosophies, defining the roles and responsibilities of various individuals involved in crisis management, and putting together a communications process for quickly notifying people in the event of a crisis.

Conflicts in the business environment are also a worth mentioned phenomenon. Managers need to know how to handle conflicts because unresolved conflicts tend to grow into bigger conflicts, begin to generate other problems, and have a negative effect on performance. Also, rewards are often withheld from those people with several unresolved conflicts. Conflicts should be handled as soon as the opportunity presents itself, but two criteria must be met: both people must be in a mental, physical, and emotional state suitable to resolving the conflict, and both people must have adequate uninterrupted time to handle the conflict.

2. Historical report

"Get public relations to deal with it" was the typical mantra for corporate executives attempting to get out of a crisis situation. That was a decade ago. Crises like plane crashes or product recalls could be handled by smart communications. Getting clever messages lined up and the spokesperson geared up were the prime considerations.

As we enter the 21st century, we witness continuous emergence of unheard of occurrences, previously unthinkable. Events such as September 11, SARS, or misappropriation of company assets, have opened a Pandora's Box of management behavioural issues. Clearly, today's complete crisis response plan must have an ethical code of conduct as its basic guideline. The changing environment also requires companies to prepare for threats that not only challenge their business operations, but also those that affect the organisation and its stakeholders. Current business challenges are expansive, which include corporate governance, the dismissal of CEOs, continuing employee layoffs, terrorist threats and biological threats that could disrupt operations.[1]

Following the September 11 incident, many companies had concluded that no cost was too great to be adequately prepared for a catastrophic event. Though with the passing of time and an uncertain economy, companies will be inclined to postpone or cancel expenditures for getting crisis management plans in place. Vulnerability reviews may even be conducted, in order to gain assurance that there are reasonable measures in place to mitigate risk.

Apart from crisis in the businesses, workplace conflict is increasing. Between 1976 and 1996, the amount of time that a "typical" manager spent in conflict situations rose from 30% to 42% (Thomas & Schmidt, 1976; Watson & Hoffman, 1996). In 2004, one search engine indicated that there were 843,000 links to the key words "workplace conflict" (Google, January 29, 2004).[2] These evidence show that the complexity of nowadays' society has an impact on businesses, as conflicts are a social phenomenon.

3. Crisis management

Crisis management is the umbrella term that encompasses all activities involved when an organization prepares for and responds to a significant critical incident. An effective crisis management program should be consistent with the organization's mission and integrate plans such as Emergency Response, Business Continuity, Crisis Communications, Disaster Recovery, Humanitarian Assistance, etc.

3.1. Definitions on Crisis

A Crisis is defined as any rapidly occurring unplanned event, real or perceived, that can negatively impact:

- The health or safety of our employees, customers or members of the community where we operate
- Our reputation, stability or ability to operate our business
- Our Shareholders
- Our Customers.

A crisis has the potential to impact our employees, customers, business and stakeholders on a national or international level. Examples include:

- Acts of terrorism, war, biochemical attacks or natural disasters
- Threats of takeovers, acquisitions or mergers
- Potential threats to reputation or lines of business
- Systems shut downs or security breeches that prevent our ability to operate our business.

3.2. Goals of crisis management

Being prepared to act in a crisis situation will help the company to meet its goals of:

1. Limiting harm to people, property, profits and the environment
2. Providing factual and timely communication to all stakeholders and responding to their concerns
3. Facilitating overall management of a crisis to minimize adverse impact on maintaining corporate and individual credibility, and controlling and strengthening company's reputation with the public, our customers, our employees, our communities and our shareholders.

3.3. Crisis management policy

In all of its endeavours, crisis management places primary importance on integrity, evidenced by truth telling, respect for the individual, fairness and promise keeping. When managing a crisis, these values should remain foremost. In keeping with these values the following objectives should be adhered to and should be accomplished in the following order of importance and handled without regard to any other considerations.

1. Damage or danger to individuals should be contained first.
2. Damage, disruption or danger to property and ongoing business should be contained second.

3.4. The Need for Crisis Management

A crisis management effort reduces business risk in three important ways. First, it reduces the number and magnitude of disruptions to business operations. With fewer and shorter interruptions, there is less impact on employees, customers and suppliers, and, therefore, on profitability. Second, crisis management saves money. Through quick and early problem detection and resolution, the cost and impact of unavoidable problems is lessened. Further, by coordinating the resolution of common problems, crisis management efforts reduce per problem handling costs. Lastly, crisis management efforts reduce business risk by enhancing legal protection. If problems are responded to quickly, fewer people are affected and damages are minimized, both of which result in fewer legal claims. A formalized crisis management process will also produce invaluable backup documentation and audit trails to strengthen legal due diligence defences.[3]

To achieve these business benefits, a crisis management effort must perform several key functions. These include the ability to:

Quickly respond to issues. Timely response to and resolution of problems

reduces their cost and minimizes their impact. If problems compound or are allowed to fester, dependent or downstream operations may become contaminated, operations may grind to a halt, employees may be idled and customers may incur losses.

Prioritise responses to maximize business benefits. From a business perspective, not all problems are equal. Some are mere annoyances while others have the potential to seriously damage or disrupt business operations. With a large number of simultaneous problems expected, not all problems can be addressed at the same time or with equal attentiveness. To ensure that the most business critical issues are addressed first, a crisis management effort will identify and prioritize issues according to their business criticality, and will then deploy resources to effectively execute the prioritized tasks.

Facilitate orderly reporting and resolution of problems. With a large number of simultaneous problems, failures and outages, and an even larger number of affected users, customers and suppliers, it is essential to designate a central point of handling support requests and streamline resolution of shared problems. A crisis management effort provides a uniform way to log problems, to assign resources and to resolve problems, and to assist affected persons in self-determination and self-resolution of common problems.

Manage completeness of responses. To deal with the deluge of problems and ensure that none are mishandled, lost, unassigned or ignored, and to trigger contingencies when required, follow through is essential. A crisis management effort designates an organization, and individuals, responsible for capturing, tracking and assigning problems for resolution, and for triggering and monitoring the execution of contingencies.

Collect data about actions. During the crisis period, a company will need to keep a record of its actions to prove that it was responsive to reported problems. A formal crisis management effort will produce, as a by-product, a written record that will serve to demonstrate reasonable levels of responsiveness in the event of litigation.

Provide central point of contact for status information. Business executives, internal entities and external stakeholders will all want current status throughout the transition period. A crisis management effort meets this need by functioning as a central repository for all relevant project information and by reporting project status in a consistent way.

3.5. The 7 steps of managing a crisis

These are the essential steps for managing a crisis:

Step 1: Gather information. Learn as much about the situation as you can. Then develop two charts. On one chart list what you know about the crisis. On the other

chart, list those things and/or information you do not know, such as the suspected cause, potential internal and external impacts, sort term prognosis, and potential outcome. The second chart is normally a much longer list than the first chart. When the list of what you know becomes longer than what you do not know, you can start getting a real grasp of the situation.

Step 2: Alert your crisis team. When you realize you have a potential crisis, start contacting key members of your crisis team and tell then what you know. The key to this step is to know who to notify and how to reach them. The people who need to be contacted will depend on the specific crisis: in some situations, you may need the services of a health and safety specialist much more than your chief financial officer. Regardless of the particulars of your crisis, there should be several core team members you call every time. It may be just three, four or five individuals, and their titles will vary from company to company, but they ultimately become the heart of your crisis team.

Step 3: Assign tasks and continue fact-finding. You can't manage a crisis if you don't know what the crisis is. Make sure you examine the situation from all angles. One person can't do that. The tasks need to be delegated. And throughout the process questions can be asked.

Step 4: Develop possible solutions. Identify various potential solutions. Listen everyone's idea and find the best solution.

Step 5: Implement your solution. This is the hard part, where you have to actually do what you said you would do. This takes people, money and time, so you'll need to allocate sufficient resources to accomplish the task.

Step 6: Communicate what you are doing. If this is a public crisis playing out in the news media, you need to tell people what you are doing and why. This should not be treated lightly. It may not be enough to do the right thing if no one knows what you did it. If there is a communications vacuum, it may be filled with fear and rumors, but rest assured, it will be filled.

Step 7: Review what happened. Evaluate the actions, messages and ultimate outcome. Think of what went right or wrong, how could we had handled the situation better, or what follow up actions will be necessary.[4]

4. Conflicts in organization

We can define as conflict the situation in which the behavior of a person or a team pursues the obstruction of another person's or another team's goal-achievement, in purpose.[5]

4.1. Variations of conflicts

Conflicts are divided in 2 basic categories: a) interpersonal conflicts between individuals and b) group conflicts between groups. Furthermore, in an organizing point of view conflicts are classified in certain categories such as: 1) hierarchical conflicts between different hierarchical levels 2) functional conflicts between numerous functions or departments of the same enterprise 3) conflicts between linear and "of the staff" executives, and 4) conflicts between typical and non-typical organization. The interpersonal conflicts differ in the way they are handled, because different procedures and techniques are used.

4.2. Perceptions

There are two perceptions concerning the conflicts, the traditional one and the modern one which were created by the evolution of social sciences.[6]

The traditional perception believes that conflicts must be avoided. They come from the individuals' personality problems and from the inefficient leadership. They also cause malfunctions and negative consequences in organization but they can be dissolved by the withdrawal of the opposing sides.

On the other hand the modern perception believes that conflicts are unavoidable, that they are neither good nor bad and that they are caused by the complexity of the organizational structures and procedures. Also they can be controlled with the erasure of the causes and with the solution of the problems. Apart from the negative consequences, there can be positive ones such as the activation of individuals for a greater action and it can be a motivating force of changes in organization. Finally it can be an experience of development.

4.3. Sources and causes of the conflicts

The main sources of conflicts are: 1) the contradictory targets, when the accomplishment of one target obstructs the accomplishment of another one. What's important in this cause is the way that each employee perceives its target as opposed to another target. 2) Limited resources. Usually, each employee wants the biggest part of the distribution of the resources for himself. 3) Different perceptions/values of the individuals as the targets, the means, the techniques and the system are concerned. 4) Organizational weaknesses lead to conflicts. Those weaknesses are obscure definition of roles, lack of coordination and information and the obscurity of organizations of the sum of the objectives. 5) The insufficient communication like lack of information, bad imparting and message translation lead to misunderstandings and conflicts. 6) Finally the vital environment is another source of conflicts because when a person feels that it is violated by someone else reacts.

4.4. Conflicts manipulation

The ways of manipulating conflicts can be divided in 3 categories which express 3 different confronting strategies.[7]

The first strategy is the "loss-loss" whose solution has a negative effect to both opposing sides. Basic methods are: settlement which forces the opposing sides to find a solution accepted by both sides, arbitration that differences are solved by "giving and taking". The avoidance is succeeded by the redundancy of operational relationships in the field of working. And "bribing" where one side is awarded in order to change its behavior.

The second strategy is "profit-loss" which expresses competition. This logic has certain advantages like the motives that competition creates at people and the increase in cohesion for the team that is in the conflict. What's more it creates disadvantages like the loss in one of the sides which creates, secrecy between opposing people, bluffs take place in order to create disorientation.

The third strategy is "profit-profit" and it is further efficient for the solution of conflicts. The way that this strategy utilizes is the comparison of the opposing sides in order to develop communication and understand the common objectives and the interdependence of the sides, to eradicate the misunderstandings and finally to localize the possibilities of simultaneous satisfaction of needs and objectives of the opposing sides.

5. Crisis in international business environment

The start of the 21st century has brought with it a broad range of crises, including a major terrorist attack against the World Trade Center and a follow-on War Against Terrorism, threats of biological warfare and an actual outbreak of the mysteriously lethal SARS virus. Corporations have been hit by natural disasters including powerfully destructive tornadoes and hurricanes, the Iraq War with its troubling and risk-filled aftermath, and a man-made disaster in the form of the worst regional electrical blackout in more than 20 years. This crisis rich environment is not a transient phenomena but a reality that corporations will encounter well into the future.

Firms involved in international business are affected by many crisis and crisis-like events not generally associated with normal operations. Crisis management provides a business firm with a systematic, orderly response to crisis situations. Many crises can be prevented – or at least coped with more effectively – through early detection. The real challenge is not just to recognize crises, but to recognize them in a timely fashion and with a will to address the issues they represent.

5.1 Types of enterprises which are vulnerable during a crisis

Many enterprises have crisis experience but are also others which are more vulnerable in such situations. The enterprises which are vulnerable are those who have recently dealt with a crisis and they are supposed to be prepared for a similar situation in the future, but the statistics show that it is more possible to deal with another crisis while other enterprises that didn't have such experiences recently, are not. Furthermore enterprises that are part of the high arranging industry can be also vulnerable since the more rules the company has to follow, the most the consequences for the transgressors are.

Companies with financial problems have difficulty in dealing a crisis because they have other problems to solve. Public organizations are more vulnerable because are high arranged, are threatened by the media, and have a greater number of collaborators to satisfy. Also enterprises that are in quick development can be vulnerable to a crisis because they hire employees with no sufficient experience.

Hatching companies deal with great challenges during their first operating months or years, which can affect negatively their marketing, their economy and their future health. Finally companies whose owners are in other countries can be extremely vulnerable as they can't face the crisis quickly and sufficiently enough.

6. Conclusions

With new and unexpected crisis situations appearing, there is definitely more to crisis management now than we had ever experienced in even the most severe crises of the past. The dimensions and stakes are now greater than ever.

We know that the problem is real. We may not know exactly how bad it will be, but we know there will be failures, interruptions, disruptions and inconveniences in virtually every area at the same time. Knowing this, how can we justify not being prepared? The simple answer is, we can't. When faced with a known crisis, the only reasonable course of action is to prepare.

New thinking must go far beyond traditional business continuity plans and crisis communications planning. No company can feel secure following the paths of the past. Critical areas like security, human considerations and business continuity must be included in today's complete response plan.

Crisis Management can help a company cope with the onslaught of problems and minimize the cost and impact of inevitable failures. By creating a crisis response organization before problems occur, and empowering it with processes and tools to do its job, a company will be poised to quickly neutralize problems before they spiral out of control. Considering the downside, it's a small price to pay.

Finally, is worth of mentioned a study of Oxford that states, "Although all catastrophes have an initial negative impact, paradoxically they offer an opportunity for management to demonstrate their talent in dealing with difficult circumstances."[8]

Conflicts can not be avoided in the business environment and sometimes they are a common daily fact. Managers need to be experienced and they must know how to deal with the danger of losing the inner harmony of the employee. Dealing with the conflicts is not the most important thing. Prevention on the other hand is. Many companies create a cooperative environment that leads to the identification of the conflict, the needs and the alternative solutions.

NOTES

1. John Ho Chi, (2000), The art of crisis management: A technology enabled approach, p.18.
2. Arthur Jeffery, Bruce Blitman, Jeanne D. Maes, and Robert A. Shearer, (2003), Using Collaborative Modeling to Mediate Workplace Conflicts, p. 25.
3. Ian S. Hayes, William M. Ulrich, (2003), Six Steps to Crisis Management, p. 6.
4. Steve Wilson, (2003), Develop an effective crisis management plan, p. 58-59.
5. D. Mpouradas, (2002), Management, Athens, p. 419.
6. D. Mpouradas, (2002), Management, Athens, p. 420.
7 D. Mpouradas, (2002), Management, Athens, p. 423.
8. John Ho Chi, (2000), The art of crisis management: A technology enabled approach, p. 20.

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IFRS ADOPTION AND IMPLEMENTATION IN COMPANIES: UTOPIA OR REALITY?

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Abstract

Purpose: The aim of this paper is to examine the impact the International Financial Reporting Standards (IFRS) have on accounting quality in an attempt to investigate whether "Reporting under the IFRS regime adds value to accounting information quality" .

Design/methodology/approach: Our analysis is based on data obtained from the DJ Stoxx 600 index. We report here on observations within an indicative code law (France) and common law (UK) national setting of 1,470 firm year observations from 2002 to 2007.

Findings: Our results suggest that an increase in accounting quality followed the introduction of IFRS. However it is not undisputedly proved that IFRS actually produced this.

Research Limitations/implications: Further research needs to be conducted in order to determine what type of data should be measured over longer periods and in larger samples of various industries.

JEL classification: M42, M16.

Keywords: Accounting quality, International Financial reporting standards, Earnings management, Value relevance, Accrual quality.

1. Introduction

Galhofer and Haslam (2006) note the many challenges globalisation has brought in the accounting discipline. Support for a regime of global accounting standards is often advocated. Such standards are consistent with the strategic thrust of globalization initiatives endorsed by politically influential bodies such as the World Trade Organization (WTO), the Organization for Economic Co-operation and

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Development (OECD), the International Monetary Fund (IMF) and the World Bank (Graham and Neu, 2003; Volcker, 2000). However, dissonant voices express the view that accounting harmonization processes repress important differences and idiosyncrasies of national accounting systems (Galhofer and Haslam, 2006). It seems sensible to acknowledge that financial reports, drawn up in accordance with IFRS, are underlined by a power discourse; especially so when the large accounting firms, the EU and other coordinating agencies (the World Bank and the OECD) accept, in a taken-for-granted manner, that accounting will be better off if IFRS are adopted (Neu *et al.*, 2002; Rodrigeues and Craig, 2007).

KPMG (www.kpmg.com) advocates the many benefits in reporting under IFRS; better financial information for shareholders and regulators, enhanced comparability, improved transparency of results, and increased capability to secure cross-border listing and funding. However, these benefits do not diffuse to other sectors, such as the local governments for example (Pilcher and Dean, 2009; Jones and Higgins, 2006). Research also indicates that financial reporting requirements are time consuming, costly, and they bring in confusion as to the expected quality of financial statements (Daske and Gebhardt, 2006).

Discussions around the introduction of IFRS in Europe mostly focus on the direction of the change in accounting quality as the result of the transition (see for example Daske, 2006; Daske and Gebhardt, 2006 to name but few). Some argue that IFRS brought an increase in accounting quality, others argue against it. Companies reporting under IFRS are expected to be more mutually comparable. In contrast to issues of comparability measurement under IFRS, is a subject of constant debate. Fair values represent reality better, but they are relatively hard to measure. Despite this, there is much discussion about the effect that IFRS has on the quality of financial reporting since it is a fact that a change in reporting standard inherently comes with a change in accounting quality (see for example Barth, 2006; Daske and Gebhardt, 2006; Schipper, 2005; Barth *et. al*, 2008)

From prior research it is not clear if IFRS is a better standard in increasing accounting quality (see for example Daske, 2006; Prather-Kinsey et al., 2008; Penman, 2007). This continuous discussion in the literature has been an important motivator for our study. We attempt to examine here the factors of listed companies in specific national settings (a code law and a common law country were chosen for our comparison represented by France and the UK respectively) deemed as indicative to evaluate the concept of accounting quality three years after the transition from local Generally Accepted Accounting Principles (GAAP) to IFRS.

Our examination considers three different measures of accounting quality. The first determinant is an earnings management measure. This is selected to inquire if IFRS leaves less room for managing earnings. The second measure is value

relevance. By making a link with market information, it is investigated whether investors adhere more value to information produced under IFRS than information produced under a local GAAP standard. The last determinant examined is accrual quality. Through the use of accruals, firm performance over one year can be measured better than on a cash basis case. Before assessing the effects of IFRS on accounting quality in comparison to former local GAAP, the effect of the transition itself was examined and in specific, the impact of IFRS on book values was measured.

Prior literature only focused on the change itself or on the change over a longer period of time. There has not been a similar study conducted in both areas. Hence, we see our work making several contributions. First, we consider the impact of IFRS on the quality of accounting data, having the availability of a larger data sample than prior research. Secondly, we attempt to examine the extent to which the law context of reporting standard application influences the quality of accounting information. Finally, it is our view that our results that are based on observations and precautions to users of financial statements show how much reliance can be placed upon reported accounting numbers to assess performance. Before IFRS adoption there was already a high quality of accounting reporting; this seems to have been maintained under IFRS.

The paper begins with a brief description of the concept of accounting quality and the requirement to adopt IFRS. This is followed by our research design and theoretical framework. Our results are then presented in order to build a picture of reporting and its subsequent impact on the quality of accounting information due to IFRS implementation.

2. Literature review

2.1. The change to IFRS

The "sudden rush" of the international community to converge national GAAP with IFRS (Fontes *et al.*, 2005) represents the workings of economic and political factors and it demonstrates the power and ubiquitous nature of globalization (Neu and Ocampo, 2007).

The need for a high quality "global GAAP" (Ampofo & Sellani, 2005) was officially recognized in 1966, when professional accounting bodies first began working towards a set of international accounting standards (IASC/IASB Chronology, 2006). Since then, world capital markets have become increasingly tied to each other (Turner, 2001), and so "integrated and interdependent" that "the stability of one market affects others" (UNCTAD, 2005). As the barriers between

nations have become more "porous" (Harris, 2002), domestic economies have become increasingly vulnerable to the "external shocks" caused by an "expanding world economy", necessitating the adoption of globalized practices if they are to function effectively (Lehman, 2005).

This level of integration meant that the financial crises of the late 1990s affected all nations, resulting in a heightened recognition of the benefits of having "one set of high-quality globally recognized financial reporting standards" (UNCTAD, 2005) and a call for the development of such standards (IASC/IASB Chronology, 2006).

From the moment that there were attempts to create an international reporting standard, developments were critically discussed by scientists and the accounting profession. On the European continent, the desire for an international reporting standard resulted into the origination of the International Accounting Standards (IAS) that were subsequently renamed into the International Financial Reporting Standards (IFRS). IFRS have been developed by the International Accounting Standards Board (IASB), which was founded by the International Accounting Standards Committee (IASC) (IASplus.com, 2008). Eventually IFRS implementation, by regulation 1606/2002 of the European Commission, dated on July 19, 2002, became mandatory from January 1, 2005 (European Union, 2002). From that date all European public companies are required to report according to IFRS. Before 2005 most European companies were reporting under local GAAP.

2.2. Voluntary vs. mandatory adoption of IFRS

Research conducted on the impact of IFRS on accounting quality can be divided into two streams; on the one hand the focus lies on voluntary transition to IFRS; on the other on the mandatory transition to IFRS (see for example Barth *et al.*, 2008). Information about companies that voluntarily adopted IFRS was much earlier available, which made it possible to understand the already examined effect of IFRS on accounting quality. The mandatory change to IFRS in Europe took place in 2005. However, Jeanjean and Stolowy (2008) criticized that it is not fair to make a comparison between early adopters of IFRS and companies that maintained local GAAP, because this would imply a self-selecting bias.

Companies that saw benefits in IFRS were more likely to adopt them early. Chua and Taylor (2008) point in this direction of self-selection bias, resulting from voluntary IFRS adopters. They argue that one cannot say anything about quality, based on a firm's voluntary adoption, if it is not exactly known which factors have driven this voluntary adoption An important reason thus to avoid this self-selection bias could be by examining existing differences in the accounting quality of reporting before and after the mandatory adoption of IFRS in 2005.

Christensen *et al.* (2007) examined if there is a difference in the change in the cost of capital between voluntary and mandatory transition of companies to IFRS. They found that the cost of capital was positively affected by a voluntary change to IFRS. On a similar note Prather-Kinsey *et al.* (2008) (in contrast to Daske 2006), found that the cost of capital, significantly decreased, due to the adoption of IFRS.

In a code law against a common law context, Bauwhede and Willekens (2008) investigated the difference in levels of disclosure. They argued that companies in common law countries have higher levels of disclosure than companies in code law countries. Prather-Kinsey *et al.* (2008) investigated market reactions due to the implementation of IFRS. They reported that companies in code law countries were found to face more significant reactions in the market than common law based companies.

Armstrong *et al.* (2008) also looked into the market reaction to the adoption of IFRS. They identified sixteen events that are according to them associated with the implementation of IFRS. For each of these sixteen events they performed tests for the market reaction. They found that the change in quality is lower for firms with higher quality pre-IFRS reports and the change in quality is less positive for firms in common law countries, than for firms in code law countries.

2.3. Code vs. common law

In our paper we also make a distinction between code and common law settings. We examine the UK and France as representatives for these institutional factors. Based on the work of Ball *et al.* (2000) we investigate if there is a difference in the effect of the change to IFRS between these two countries.

For the purposes of our research the UK and France have the advantage that both countries did not allow an early adoption of IFRS (Jeanjean and Stolowy, 2008). German companies were excluded from our sample of the DJ Stoxx index 600 on the grounds of self-selection bias (Jeanjean and Stolowy, 2008) since in contrast to the UK and France, Germany permitted an early adoption of IFRS.

Common law means that regulations are based more on principles than on rules and are governed by the market. Rules in common law countries are "created independently, function as best practices and are enforced through litigation" (CFO.com, 2008). Code law on the other hand signifies an extensive use of detailed laws and regulations. These are issued by the government, implying legal grounds instead of economic jurisdiction. In the academic literature, common law systems are perceived to result in higher quality regulations *"because they are more efficient, created by experts, and less likely to be compromised"* (CFO.com, 2008).

Based on this latter view we hypothesize that the change in the different aspects

of accounting quality is smaller for the common law UK than for the code law France.

The law setting is not the only difference between the UK and France. The different reporting monetary base (euro vs. sterling) could create a problem in comparing the financial figures of companies from both countries (Capkun *et al.*, 2008). For this reason, we translate the amounts based on the exchange rates applying at reporting date.

2.4. Accounting quality

Accounting quality is a very broad concept. Roughly there are four different aspects in which accounting quality can be divided into; timeliness, value relevance, accrual quality, and earnings management (Dechow and Dichev, 2002). All four are related to each other.

Timelines is about how fast market information is incorporated in accounting information. Value relevance refers to how much accounting information the market incorporates in estimating the price/value of a firm. Timeliness and value relevance are about the interplay between external (market) information and accounting information. Accrual quality refers to the relationship between reported performance and actual performance. Accruals make it possible to report about total financial performance by accruing benefits or costs to the period they affect. Managing of earnings is done mostly via direct or indirect manipulation of accruals (ref for the whole paragraph if possible or individual references for each of the above 4 factors if one source is not available).

A general study on accounting quality is conducted by Penman (2007). He examines whether fair value accounting is better than historic cost accounting. His investigation consists of a survey of public statements that discuss the concepts and criteria on fair value accounting. He argues that historic cost accounting leads to certain problems, but fair value accounting does not fully account for these. Thus, according to Penman (2007) it is not clear which is the better standard. To illustrate such a case let us consider the following. Cost accounting assets are recorded at their initial cost and depreciated over their useful economic lives. Changes in the actual value of the asset are not re-measured. This can lead to a silent reserve of a considerable amount. The same asset under fair value accounting is recorded at its fair value and it is liable to a yearly impairment test. Changes in the actual value are reflected in the balance sheet. The problem however in the latter case lies into how to measure the actual value.

Before the mandatory transition to IFRS in 2005 it was expected that IFRS would lead to increased transparency and accounting quality. In general, it was expected that investors would have a better view on a company as a result of

increased transparency and better information, and they would reduce their risk assessment of the company. A reduced risk assessment was expected to result to a lower cost of capital (Daske, 2006).

Daske (2006) builds on the work of Leuz and Verrechia (2000) and he attempts to calculate the cost of capital itself. In doing so he uses two different models. However, he finds that the cost of capital did not decrease as a result of the implementation of IFRS. His work was further extended by Christensen *et al.* (2007)

A measure of accounting quality, which closely relates to timeliness, is conservatism. Ball *et al.* (2000) examined conservatism (losses are incorporated directly in the accounts whereas profits are accounted for when they are realized) and investigated if there was a difference between code and common law settings. They found that conservatism in common law countries was higher than that of code law countries. This means that companies in common law countries are more sensitive to economic losses. It is expected that through the use of fair value accounting under IFRS, companies have become more sensitive to economic losses.

2.4.1. Timeliness

Timeliness is investigated by Barth *et al.* (2008). They also examined value relevance and accrual quality. This was done for IFRS and non-IFRS firms in the pre- and post-adoption period. They found that value relevance was higher, timely loss recognition was higher and accrual quality was also higher for firms that adopted IFRS compared to firms that did not. However Barth *et al.* (2008) also report that when accounting quality was higher for IFRS firms in the post-adoption period, most changes were not significant.

Hung and Subramanyam (2007) looked at firms in Germany in the period from 1998 to 2000. They examined the change in the timeliness of loss recognition and value relevance of accounting data to explain market capitalization. Their findings indicate that book values of equity were considered as more value relevant by investors than net income under IFRS. They also found that book values and net income were higher under IFRS than under German GAAP. Hung and Subramanyam (2007) did not find significant evidence supporting that timeliness of income under IFRS is higher than under German GAAP.

Gassen and Sellhorn (2006) also investigated a set of German companies that voluntarily adopted IFRS. They looked at information asymmetry and value relevance. In line with Hung and Subramanyam (2007) they report value relevance of accounting information to be higher under IFRS than under German GAAP but in contrast to Hung and Subramanyam (2007) information asymmetry was found to be lower under IFRS than under German GAAP.

Jermakowicz *et al.* (2007) also examined value relevance in the early adoption period concluding that value relevance increased under IFRS.

Leuz and Verrecchia (2000) looked if firms that are reporting under IFRS face less information asymmetry. This, due to IFRS (and US GAAP) having more detailed disclosures.

2.4.2. Accrual quality

Dechow (1994) looked at accrual quality. This is yet another measure of accounting quality. She found that the importance of accruals increased if the performance measurement interval was shorter; volatility of working capital requirements were greater, when the operating cycle was longer, and when cash flows suffered from timing and matching problems. Dechow (1994) concluded that earnings are a more refined measure of performance than primitive cash flows.

Sloan (1996) also looked at accrual quality. He investigated, whether stock prices fully reflect information in accruals and cash flows about future earnings; thus if investors only focus on earnings or if they also distinguish between cash flows and accruals. His findings indicate that investors seem to be centred on earnings. Due to this, earnings figures are used as a measure to assess value relevance (discussed in the next section).

Dechow and Dichev (2002) conducted another study on accrual and earnings quality. They develop a model to measure cash flows from operations to explain the changes in working capital. The standard deviation of the error term in this model was used as a measure of accrual quality. The authors found that there is a strong relation between accrual quality and economic fundamentals and that there is a strong relation between accrual quality and earnings persistence.

2.4.3. Value relevance

Value relevance is a metric often used to measure the effects of the (voluntary) application of IFRS. Francis and Schipper (1999) investigated value relevance from two different perspectives. A return based approach and an explanatory power approach. In the latter case they searched for statistical relations between book and market values without facing any measuring problems.

Barth *et al.* (2008) also examined value relevance. They did this for firms that adopted IFRS voluntary from 1994 to 2003. Since fair value IFRS focus on relevance, it is interesting to measure whether the mandatory transition to IFRS brought increases in the latter.

Callao *et al.* (2007) looked at the difference in value relevance due to the implementation of IFRS in Spain. Spain is known as a code law country. They found that value relevance after the transition to IFRS did not increase.

2.4.4. Earnings management

Ball and Shivakumar (2008) investigated earnings management around IPO dates. They found earnings to be rather conservative. In their study IPOs are not taken into consideration, because they do not affect accounting quality in the long run, only data around the IPO date were considered.

Tendeloo and Vanstraelen (2005) examined if companies that voluntary adopted IFRS in Germany have different levels of earnings management. They did not find significant evidence that IFRS actually lowers earnings management. This is not in line with the view that fair value accounting will lead to lower earnings management and that the change for code law countries will be greater than for common law countries (Leuz *et al.*, 2003).

3. Research design and methodological theoretical framework

3.1. Survey instrument

The data used in this paper were obtained from the Worldscope database. Both accounting and market information is contained in the different data types. The data were selected, based on the required information for the regression analysis. The associated companies are listed in the DJ Stoxx 600 index. The DJ Stoxx 600 index is derived from the DJ Stoxx Total Market Index (TMI) and a subset of the DJ Stoxx Global 1800 Index. The index contains 600 companies representing large, mid and small capitalisation companies across 18 countries of the European region (Stoxx.com, 2009). Given the focus of our study only firms from France and the UK were selected since they represent code and common law settings respectively. The period for which the analysis was performed covered the years 2002 till 2007. However, some regressions required data from previous or later years. For example, data that needed to be scaled for prior years total assets. This resulted to data obtained from 2001 to 2008.

In accordance to the academic literature we examined the existence of differences in the change in accounting quality before and after the transition to IFRS in common and code law settings. This difference is measured here by adding the dummy "Country" to the independent variables or by splitting the file and analyse the different countries separately. The dummy value is 1 for code law and 0 for common law settings.

Our choice to cover the period from 2002 to 2007 was grounded on the prior research mostly focusing on the voluntary adoption of IFRS. According to Jeanjean and Stolowy (2008), these studies suffer from a self-selection bias, since firms that saw benefits of the early adoption of IFRS were the most likely to do so.

Such work has found that the application of IFRS, led to an increase in accounting quality.

However, by investigating the mandatory transition to IFRS, this self-selection bias will be of no issue. Prior research also did not have a lot of data available after the transition date, since IFRS became mandatory in 2005. We explored a larger data set here.

Our total sample for the regression analysis contained 1960 firm year observations. 648 (33.06%) observations were from French companies and 1,312 (66.94%) involved companies from the UK.

The sample used for the various regression analyses contained 1.470 firm year observations and covered the period from 2002 to 2007. 486 (33.06%) were observations from French companies and 984 (66.94%) from the UK.

When looking at company level, there were 245 companies selected from the DJ Stoxx 600 index (40.83%). 81 companies were French (33.06%) and 164 (66.94%) UK based. Due to this difference in data availability in the UK and France we expected the results from the former to be less spread than those from the latter firms.

Not all data types were generally available in the Worldscope database. The availability of book values was not an issue, but, for instance, changes between the last year and the current year of these book values were not in every case available. The missing observations were, where possible, calculated from the data available.

Besides the data required for the regressions, data to investigate the impact of the transition on book values were also obtained. In 2005 when companies reported for the first time under IFRS, they had to restate their comparative figures also to IFRS. These restated figures together with the 2004 reported data contained 245 firm years. 81 (33.06%) observations involved French companies and 164 (66.94%) UK firms. The data used for the analysis in the transition year 2004 was comparable to the description of company level data. This was expected, since the 2004 analysis in fact covered only one year of data.

Cases for which no data were available were deleted. The same applied for data in the first and last percentile. All the analysis was repeated, with the only difference that the first and last five percentiles were deleted. This analysis did not result in a substantially different output. In addition Jeanjean and Stolowy (2008) stated in their work that the UK and France did not allow for early adoption of IFRS. From our data collection and analysis it became clear that there were a few exceptions. According to Chua and Taylor (2008) the early adopters suffered from a self-selection bias. For this reason the respective cases of the early adopters were deleted from our sample.

3.2. Methodological approach

Our work focuses on the quality aspect of the transition in the reporting standards. Our main research question is:

"Has the quality of accounting information increased due to the implementation of IFRS?"

As discussed earlier quality is a very broad concept. In order to address the subject of our inquiry, we examined the different aspects of accounting quality (i.e. value relevance, accrual quality and earnings management). In relation to these, sub-questions were formulated that focused on the transition to IFRS and on the different aspects of accounting information quality.

3.3. Book values

What has been the impact of the transition from local GAAP to IFRS? What are the differences between book values at transition date (2004)?

We expected, that through the application of IFRS that are fair value based, book values reported under IFRS would be higher than under local GAAP. Generally, assets under local GAAP were initially recognised at historic cost and subsequently depreciated over their expected useful lifetimes. Under IFRS assets are recorded against their fair value and subsequently measured against amortised cost, or fair value. The kind of measurement used, depends on the type of asset.

To measure the differences between book values the approach of Capkun *et al.* (2008) was utilised. The last time companies reported under local GAAP was in 2004. In 2005 they reported for the first time under IFRS. However, they were obliged to restate their comparing 2004 figures to IFRS in the 2005 reporting. This resulted therein that there are two sets of 2004 figures available, the figures from the regular 2004 reporting and the restated figures from the 2005 reporting. These figures are compared to each other to investigate whether the transition to IFRS had an impact on the reported book values. Under this approach the book values in the transition period were scaled for total net assets. This was done to enable us to compare the book values of firms of different size.

$BVGAAP_t$ / $TAGAAP_t$ is then compared to $BVIFRS_t$ / $TAIFRS_t$, where: BV = Book value; TA = Total assets

The changes in the ratios calculated, were tested for significance by means of a T-test on the means and a Wilcoxon signed rank test on the medians.

3.4. Earnings management

Is there a change in the extent to which earnings are managed?

Not all recordings that a company make are possible to be regulated in a

standard. Management can always exercise discretion over the entries made, and also over the posting and summations. Because management has the option to exercise this "discretion" over the accounting information, they might be able to manage earnings.

We examine here whether there is a change in the extent to which earnings are managed before and after the transition to IFRS. Dechow *et al.* (1995) investigated how well different models measure earnings management. They found that the modified Jones model produces the highest power of measuring earnings management of the models examined.

In this work we hypothesized to find a decrease in earnings management, as a result of the higher quality of IFRS. Based on Dechow *et al.* (1995) we used the modified Jones model to measure the extent of earnings management. The purpose of the modified Jones model was to determine discretionary accruals. The latter were used as a measure for earnings management. The modified Jones used model is underlined by:

$NDA_t = b_0 * (1/A_{t-1}) + b_1 * (\Delta REV_t - \Delta REC_t) + b_2 * PPE_t$

Where: NDA = Non-discretionary accruals; ΔREV = (Revenuet − $Revenue_{t-1}$)/ / A_{t-1}; ΔREC = (Receivablest − $Receivables_{t-1}$) / A_{t-1}; PPE = Property plant and equipment / A_{t-1}; A = Total assets

All items were scaled for total assets to make it possible to compare companies of different size.

Before the model could be applied the following steps were taken.

First total accruals were calculated:

$TA_t = (\Delta CA_t - \Delta CL_t - \Delta CASH_t + \Delta STD_t - \Delta DEP_t) / A_{t-1}$

Where: TA = Total accruals; CA = Current assets; CL = Current liabilities; CASH = Cash and cash equivalents; STD = Debt included in current liabilities; DEP = Depreciation and amortisation expense.

There is a difference between discretionary and non-discretionary accruals.

Therefore:

$TA_t = NDA_t + DA_t$

Where: TA = Total accruals; NDA = Non-discretionary accruals; DA = Discretionary accruals

This could be re-written to:

$TA_t = b_0 * (1/A_{t-1}) + b_1 * (\Delta REV_t - \Delta REC_t) + b_2 * PPE_t + DA_t$

Which is the same as:

$TA_t = b_0 * (1/A_{t-1}) + b_1 * (\Delta REVt - \Delta RECt) + b2 * PPE_t + E_t$

Where: E_t = Unstandardized residual.

The unstandardized residual thus served as an estimate for discretionary accruals.

The difference in discretionary accruals before and after the transition to IFRS was used as a measure of accounting quality. From the residuals the firm specific

standard deviation was calculated. The means and medians of these firm specific standard deviations were compared to determine if there were differences between periods and countries.

3.5. Value relevance

Is there a difference in value relevance between local GAAP and IFRS?

Do investors also consider IFRS as more useful than former local GAAP? If they do then value relevance will be higher under IFRS. Under the latter regime most information reported is in fair values. Fair values are expected to contain more valuable information for investors about the financial condition of a company. Therefore information which is reported under IFRS is expected to be more value relevant than information reported under previous local GAAP. Value relevance was measured here by utilising the Ohlson model (see Easton *et al.* 1993) that measures the extent to which variations in accounting information explain variations in market value. All items were scaled for common shares outstanding in order to be able to compare companies of different sizes.

The model: $P_t = b_0 + b_1 * BVEt + b_2 * E_t$

Where: P = Price per share; BVE = Book value of equity per share; E = Earnings per share

The explanatory power of the results of the model before and after the transition to IFRS were compared to provide a measure of quality. The coefficients from the regression were also analysed to measure differences between code law and common law countries.

3.6. Accrual quality

Is there a difference in accrual quality?

Accruals make it possible to attribute costs and revenues to the period in which they occur, regardless any flow of money related to these costs or revenues. The extent to which accruals really fit the attribution of costs and revenues to the period to which they relate can be used as a measure for accounting quality.

To measure accrual quality the Dechow and Dichev (2002) model was used in our study. We expected to find an increase in accrual quality as a result of the higher quality of IFRS. Accrual quality was measured by Dechow and Dichev (2002) by the firm specific standard deviation of the standard error in a cash flow from operations on a change in working capital regression. Like in the modified Jones model, all items in the Dechow and Dichev (2002) model were scaled by total assets.

The model: $\Delta WC_t = b_0 + b_1 * CFO_{t-1} + b_2 * CFO_t + b_3 * CFO_{t+1} + E_t$

Where: WC = Working capital; CFO = Cash flow from operations; E = Residual.

Before the model could be applied the change in working capital had to be calculated.

The mutation in working capital was calculated as follows:

$\Delta WC = \Delta AR + \Delta Inv - \Delta AP - \Delta TP + \Delta OA$ (net)

Where: AR = Accounts receivable; Inv = Inventory; AP = Accounts payable; TP = Tax payable; OA = Other assets.

4. Results

4.1. Impact of the transition

In this section we present our results from the comparisons made between the 2004 financial statements' book values and the restated 2004 book values (from the 2005 financial statements). Our results are presented on a per investigated item basis. For every item or group of items first the overall result of the change from local GAAP to IFRS is given (Table 4.1.1). Then the results for code and common law settings, France (Table 4.1.2) and the UK (Table 4.1.3) respectively, follow.

Property, plant and equipment net of depreciation and amortization expense (PPE net) on average decreased from 26.27% to 25.96% (statistically insignificant). The median decreased by 1.25% to 16.50% (insignificant). When looking at the change in PPE (net) for France both the mean and median didn't change significantly. However, the change in PPE (net) for both the mean and median for the UK is significant. The average change in France is an increase (0.49%) and the companies from the UK show on average a decrease (0.99%). In contrast to PPE net, property, plant and equipment gross (PPE gross) changed on average significantly from local GAAP (53.68%) to IFRS (51.09%). This decrease was also noted for both France and the UK, however the decrease was only significant for UK firms.

Intangible assets decreased on average by 0.1% to 6.89% (insignificant). The decrease in the mean of intangibles for France and the increase in the mean for the UK were also both statistically insignificant. The changes in the median values were for both the UK and France statistically insignificant. Goodwill increased from 62.52% to 83.83% in the overall situation (insignificant). This can be the effect of the great spread in the sample and/or also because of our sample size. French companies faced an increase in mean goodwill of 36.97% and the UK companies on average had a 3.50% decrease in goodwill (significant). Current assets decreased from 44.74% to 43.41% (significant). The median changed from 43.23% to 43.74% (significant).

The mean and median of current assets in France significantly decreased. In the UK the decrease in mean and increase in median were not significant. An interesting finding in the comparison between local GAAP book values and IFRS book values involved cash. Cash is normally a fixed amount, which can be objectively observed. However it changed from 6.88% to 8.36%. This can be explained by the change in total assets, by which cash was scaled. The change is overall and for the UK statistically significant. Cash and cash equivalents also overall increased from 12.23% to 12.47% (insignificant). The change in the median was also not significant.

Short term investments overall decreased from 5.15% to 4.01%, (significant). Companies in France also faced a significant decrease in this item on average. Mean short-term investments at UK companies decreased by 1.22% to 2.44% (insignificant). Total investments were overall both for the change in mean and median significantly increased. This also applied to French companies. There, also both the mean and median significantly increased. Companies in the UK did not have significant changes in mean or median total investments.

On the liability side, long term debt, short term debt and current liabilities had all decreased means and medians from 17.32% to 17.25%, 5.68% to 5.67%, and 34.22% to 34.04% respectively. Al these changes in the mean and median values were not significant. Long term debt, short term debt and current portion of long term debt decreased in France and increased in the UK. Current liabilities in France increased and decreased in the UK on average. The change in median for the UK was positive and significant. Total liabilities overall increased in mean from 64.50% to 65.58% and decreased in median from 64.92% to 66.63%. Both these changes were significant. Companies in France had no significant change in the mean and median values. The UK however had an increase in mean from 63.06% to 64.75% (significant). The increase in median was also significant. The last item examined was the book value of equity (BVE). Overall the mean BVE decreased by 0.62% (insignificant). The decrease in the median value was also not significant. For the UK BVE decreased by 1.51% (significant). BVE for French companies did not increase significantly.

In overall most significant changes were in the book values of assets. Changes with companies from the UK were more often significant than changes with French companies. This was in contrast to what expected since companies under a code law regime had been expected to face a bigger change when applying the common law IFRS standard, than companies already reporting under a common law standard.

Table 1: *Comparison of local GAAP data with IFRS data for the total sample.*

Total

		Local GAAP		IFRS		Paired samples T-test				Wilcoxon signed rank test			
Balance sheet item	N	Mean	Median	Mean	Median	Mean difference	t	Sig. (2-tailed)		Median difference	Z	Asymp. Sig. (2-tailed)	
PPE (net)	151	26,27%	17,75%	25,96%	16,50%	0,31%	0,6758	0,50		-1,25%	-0,854[a]	0,39	
PPE (gross)	124	53,68%	44,80%	51,09%	43,71%	2,59%	2,2968	0,02	*	-1,09%	-2,588[a]	0,00	*
Short term investments	120	5,15%	2,05%	4,01%	1,00%	1,14%	2,2590	0,03	*	-1,05%	-1,975[a]	0,05	*
Total current assets	120	44,74%	43,23%	43,41%	43,74%	1,33%	3,0664	0,00	*	0,51%	-4,172[a]	0,00	*
Total investments	33	33,68%	31,68%	38,36%	46,30%	-4,67%	-3,0394	0,00	*	14,62%	-2,828[b]	0,00	*
Cash	137	6,88%	4,15%	8,36%	5,13%	-1,47%	-3,3642	0,00	*	0,97%	-2,002[b]	0,05	*
Cash and cash equivalents	131	12,23%	10,20%	12,47%	9,92%	-0,24%	-0,7855	0,43		-0,29%	-0,516[b]	0,61	
Long term debt	152	17,32%	14,19%	17,25%	14,41%	0,07%	0,2228	0,82		0,22%	-1,022[b]	0,31	
Short term debt and current long term debt	149	5,68%	3,31%	5,67%	3,43%	0,01%	0,0449	0,96		0,12%	-0,690[a]	0,49	
Current liabilities	120	34,22%	32,51%	34,04%	32,87%	0,17%	0,3693	0,71		0,37%	-1,199[a]	0,23	
Total liabilities	152	64,50%	64,92%	65,56%	66,83%	-1,08%	-2,1682	0,03	*	1,70%	-2,432[b]	0,02	*
Book value of equity	152	33,26%	32,07%	32,63%	30,65%	0,62%	1,3360	0,18		-1,43%	-1,395[a]	0,16	
Goodwill (gross)	31	62,52%	28,66%	83,83%	45,63%	-21,31%	-1,2521	0,22		14,97%	-0,372[b]	0,71	
Intangible assets (net)	61	6,99%	1,11%	6,89%	1,80%	0,10%	0,0343	0,97		0,68%	-0,600[b]	0,55	

a. Based on negative ranks.
b. Based on positive ranks.
*. Significant at 0,05 significance level

This table shows the comparison of book values reported under local GAAP with the book values reported under IFRS for the total sample. Book values are presented as a percentage of reported total assets. Both the means (Paired samples T-test) and the medians (Wilcoxon signed rank test) are tested for their difference between the 2004 values reported under local GAAP and the 2004 values reported under IFRS (restated comparing figures in the 2005 annual report).

Table 2: *Comparison of local GAAP data with IFRS data for France.*

France

		Local GAAP		IFRS		Paired samples T-test				Wilcoxon signed rank test			
Balance sheet item	N	Mean	Median	Mean	Median	Mean difference	t	Sig. (2-tailed)		Median difference	Z	Asymp. Sig. (2-tailed)	
PPE (net)	69	27,12%	20,32%	27,61%	19,25%	-0,49%	-0,9292	0,36		-1,07%	-0,750[a]	0,45	
PPE (gross)	57	56,56%	45,84%	53,73%	43,88%	1,82%	1,2124	0,23		-1,96%	-1,672[a]	0,09	
Short term investments	58	6,75%	3,43%	5,69%	2,81%	1,06%	2,1484	0,04	*	-0,62%	-1,421[b]	0,16	
Total current assets	56	47,49%	49,34%	44,95%	47,06%	2,54%	4,6370	0,00	*	-2,25%	-5,253[b]	0,00	*
Total investments	13	30,00%	33,62%	39,21%	52,96%	-9,21%	-3,0734	0,01	*	19,37%	-2,760[a]	0,01	*
Cash	63	5,86%	4,15%	6,64%	3,62%	-0,78%	-1,7389	0,09		-0,34%	-0,089[a]	0,93	
Cash and cash equivalents	62	12,36%	9,92%	12,21%	9,60%	0,13%	0,4030	0,69		-0,12%	-0,074[a]	0,94	
Long term debt	69	18,99%	16,84%	18,78%	15,62%	0,21%	0,4732	0,64		-1,22%	-0,266[a]	0,79	
Short term debt and current long term debt	68	7,13%	4,90%	6,98%	5,15%	0,15%	0,3393	0,74		0,25%	-0,793[a]	0,43	
Current liabilities	56	36,09%	32,51%	36,95%	34,39%	-0,86%	-1,1485	0,26		1,69%	-1,305[a]	0,19	
Total liabilities	69	66,23%	65,81%	66,57%	65,94%	-0,34%	-0,5597	0,58		0,13%	-0,422[a]	0,67	
Book value of equity	69	30,56%	30,10%	31,01%	30,16%	-0,45%	-0,9702	0,34		0,06%	-0,691[a]	0,49	
Goodw ill (gross)	19	84,55%	29,06%	121,52%	112,56%	-36,97%	-1,3489	0,19		83,49%	-1,650[a]	0,10	
Intangible assets (net)	44	6,28%	0,97%	6,03%	1,50%	0,25%	0,0628	0,95		0,53%	-0,735[a]	0,46	

a. Based on negative ranks.
b. Based on positive ranks.
*. Significant at 0.05 significance level

This table shows the comparison of book values reported under local GAAP with the book values reported under IFRS for France. Book values are presented as a percentage of reported total assets. Both the means (Paired samples T-test) and the medians (Wilcoxon signed rank test) are tested for their difference between the 2004 values reported under local GAAP and the 2004 values reported under IFRS (restated comparing figures in the 2005 annual report).

Table 3: *Comparison of local GAAP data with IFRS data for the UK.*

United Kingdom

		Local GAAP		IFRS		Paired samples T-test				Wilcoxon signed rank test			
Balance sheet item	N	Mean	Median	Mean	Median	Mean difference	t	Sig. (2-tailed)		Median difference	Z	Asymp. Sig. (2-tailed)	
PPE (net)	82	25,56%	13,92%	24,56%	13,44%	0,99%	1,3892	0,17		-0,48%	-2,000[a]	0,05	*
PPE (gross)	67	52,09%	44,30%	48,85%	42,39%	3,24%	1,9592	0,05		-1,90%	-2,454[a]	0,01	*
Short term investments	62	3,65%	0,46%	2,44%	0,00%	1,22%	1,4092	0,16		-0,46%	-1,295[b]	0,20	
Total current assets	64	42,34%	41,16%	42,07%	43,04%	0,27%	0,4349	0,67		1,88%	-0,452[a]	0,65	
Total investments	20	36,08%	28,73%	37,80%	28,97%	-1,72%	-1,3142	0,20		0,24%	-1,065[a]	0,29	
Cash	74	7,75%	4,39%	9,81%	7,35%	-2,06%	-2,5012	0,00	*	2,96%	-2,578[a]	0,01	*
Cash and cash equivalents	69	12,13%	10,20%	12,70%	10,04%	-0,57%	-1,1566	0,25		-0,17%	-0,540[a]	0,59	
Long term debt	63	15,93%	12,64%	15,99%	13,93%	-0,06%	-0,1523	0,88		1,29%	-1,646[a]	0,10	
Short term debt and current long term debt	81	4,46%	2,56%	4,57%	2,57%	-0,11%	-0,3477	0,73		0,01%	-0,261[b]	0,79	
Current liabilities	64	32,57%	32,58%	31,50%	29,70%	1,08%	1,9133	0,06		-2,88%	-2,916[a]	0,00	*
Total liabilities	63	63,06%	64,10%	64,75%	67,32%	-1,69%	-2,2475	0,03	*	3,22%	-2,798[a]	0,01	*
Book value of equity	63	35,50%	34,70%	33,96%	31,59%	1,51%	2,0097	0,05	*	-3,12%	-2,392[b]	0,02	*
Goodwill (gross)	12	27,64%	19,04%	24,14%	16,97%	3,50%	2,4869	0,03	*	-2,07%	-2,667[a]	0,01	*
Intangible assets (net)	17	8,81%	2,13%	9,10%	3,21%	-0,29%	-0,2422	0,81		1,08%	-0,308[b]	0,76	

a. Based on negative ranks.
b. Based on positive ranks.
*. Significant at 0,05 significance level

This table shows the comparison of book values reported under local GAAP with the book values reported under IFRS for the United Kingdom. Book values are presented as a percentage of reported total assets. Both the means (Paired samples T-test) and the medians (Wilcoxon signed rank test) are tested for their difference between the 2004 values reported under local GAAP and the 2004 values reported under IFRS (restated comparing figures in the 2005 annual report).

4.2. Earnings management

The modified Jones Model was used to determine the extent of earnings management through the measurement of discretionary accruals. The residual values were analysed on the basis of their firm specific standard deviation. Differences between the residuals in the pre-IFRS and the IFRS period were tested for significance levels.

The pre-IFRS period covered the years from 2002 to 2004 and the IFRS period from 2005 to 2007. Our analysis was repeated separately for the UK and France, to examine whether there was a difference in the transition to IFRS between code and common law countries.

Earnings management is a negative measure of accounting quality. If there were more earnings management in the post IFRS adoption period, this could be an indication of a worsening in accounting quality. Since it was expected that IFRS would improve accounting quality it is evident that IFRS was expected to result in lesser earnings management. Our results from the firm specific analysis on the standard deviation (Table 4) of discretionary accruals endorsed this expectation. However this result was not significant (Table 5).

Table 4:

Panel A: Descriptives of discretionary accruals in the pre-IFRS and IFRS period

Country	Period	N	Mean	Std. Deviation	Std. Error Mean
Total	pre-IFRS	117	0,0728	0,0483	0,0045
	IFRS	117	0,0726	0,0807	0,0075
GB	pre-IFRS	89	0,0713	0,0497	0,0053
	IFRS	89	0,0754	0,0853	0,0090
FR	pre-IFRS	28	0,0776	0,0443	0,0084
	IFRS	28	0,0635	0,0845	0,0122

This table shows descriptive statistics of discretionary accruals. The descriptives are reported for the total sample as well as for the United Kingdom and France. For each country and also for the total sample, the data is split in the pre-IFRS (2002 – 2004) and IFRS (2005 – 2007) period.

Panel B: Descriptives of discretionary accruals in the United Kingdom and France

Period	Country	N	Mean	Std. Deviation	Std. Error Mean
pre-IFRS	GB	106	0,0688	0,0508	0,0049
	FR	35	0,0703	0,0439	0,0074
IFRS	GB	99	0,0777	0,0872	0,0088
	FR	47	0,0638	0,0703	0,0103

This table shows descriptive statistics of discretionary accruals. The descriptives are divided in pre-IFRS (2002 – 2004) and IFRS (2005 – 2007) period. For both these periods the data is separated for France and the United Kingdom.

Table 5:

Panel A: Comparison of discretionary accruals in the pre-IFRS and IFRS period

		Correlation		Paired Differences				Median test[b]	
Country		Correlation	Sig.	Mean difference	df	t	Sig. (2-tailed)	Z	Asymp. Sig. (2-tailed)
Total	preIFRS - IFRS	-0,0526	0,57	0,0002	116	0,0279	0,98	-0,736[a]	0,46
GB	preIFRS - IFRS	-0,1177	0,27	-0,0041	88	-0,3741	0,71	-0,284[a]	0,78
FR	preIFRS - IFRS	0,2815	0,15	0,0141	27	1,1113	0,28	-1,002[a]	0,32

a. Based on positive ranks.
b. Wilcoxon Signed Ranks Test
*. Significant at 0,05 significance level

This table shows the comparison of discretionary accruals in the pre-IFRS (2002 – 2004) and IFRS (2005 – 2007) period for France, the United Kingdom as well as for the total sample. The discretionary accruals are compared for both their mean (paire samples T-test) and median (Wilcoxon signed rank test).

In this context we also expected companies from the UK to experience less earnings management in the pre-IFRS period than French companies. This was also consistent with the findings from our analysis (Table 4.2.3). The results showed that companies from the UK on average exhibited a standard deviation of discretionary accruals of 0.068, while French companies on average showed 0.070. The difference of 0.0015 however, was not statistically significant. This could be an indication, that in spite of what some prior research assumes, there was not a big difference in quality of financial information disclosed between code and common law countries pre-IFRS adoption.

Table 6:

Panel A: Comparison of mean discretionary accruals in the United Kingdom and France

			Levene's Test		T-test for Equality of Means			
Period			F	Sig.	t	df	Mean Difference	Sig. (2-tailed)
preIFRS	GB - FR	Equal variances assumed	0,339	0,561	-0,1520	139	-0,0015	0,88
		Equal variances not assumed			-0,1636	66	-0,0015	0,87
IFRS	GB - FR	Equal variances assumed	1,366	0,244	0,9495	144	0,0138	0,34
		Equal variances not assumed			1,0248	110	0,0138	0,31

*. Significant at 0,05 significance level

This table shows a comparison of mean discretionary accruals in France and the United Kingdom. This is done for both the pre-IFRS (2002 – 2004) and the IFRS (2005 – 2007) period.

Panel B: Comparison of median[a] discretionary accruals in the United Kingdom and France

Period	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
preIFRS	1716	7387	-0,663	0,51
IFRS	2143	3271	-0,769	0,44

a. Grouping Variable: Country
*. Significant at 0,05 significance level

This table shows a comparison of median discretionary accruals in France and the United Kingdom. This is done for both the pre-IFRS (2002 – 2004) and the IFRS (2005 – 2007) period.

French companies were expected to experience a bigger change in the extent to which earnings were managed than companies from the UK. This was also confirmed by our results (Table 4.2.1). In the UK companies on average experienced an increase from 0.071 to 0.075 in the standard deviation of discretionary accruals, which implied more earnings management. In contrast to the UK, companies in France experienced the opposite effect. French companies on average showed a decrease in earnings management from 0.077 to 0.063. However both changes were not statistically significant (Table 4.2.2).

Under IFRS it was expected that, since both countries would report under the same reporting frame, there would be no significant changes. Our results again confirmed this expectation (Table 4.2.3). There was no significant difference between France and the UK. On average the standard deviations of the discretionary accruals between the two countries did not defer significantly, but the results indicated that French companies under IFRS performed better (lower standard deviation) than companies from the UK. Under IFRS there are still slight differences in rules between countries. A possible explanation for the difference between the UK and France could be that rules still defer from each other, or that IFRS in France are applied more strictly.

The firm specific standard deviations of the discretionary accruals were tested both for their difference in their mean and median values respectively. The results from these tests added to the results of the T-tests. However, our results were again statistically insignificant.

The results from the examination of earnings management between code and common law countries in the pre-IFRS and IFRS period mostly corresponded to our expectations based on prior literature. Code law country based companies had more discretionary accruals than common law based companies and showed an increase in accounting quality when they transitioned to IFRS. However we did not test if that difference before and/or after the transition, or the transition to IFRS itself is significantly different between code and common law countries. The small size of the sample could have been an influencing factor on our results. An analysis that accounts for differences in industrial settings and time was also conducted, but it did not lead to any result, since not enough data were available.

4.3. Value relevance

Value relevance determines the extent to which accounting information is incorporated in the market information. To investigate the relation between these two types of information the Ohlson model that links earnings and book value of equity to the companies' share price was used. Value relevance was measured by the adjusted explanatory power (R2) of the model. The difference between code

and common law countries was determined by the use of a dummy variable. Our analysis was made both for the pre-IFRS and the IFRS period. The pre-IFRS period covered the years from 2001 to 2004 and the IFRS period from 2005 to 2008.

In the pre-IFRS period we expected that the relation between accounting information and market information would be weaker than in the IFRS period. This was mainly expected due to historic cost versus fair value accounting issues. Fair values are values retrieved from the market, or their best estimates. Despite the expectation of an increase in value relevance a decrease from 0.726 to 0.625 was found (Table 7). Possible explanations could be the relative small size of our sample or differences in the composition of the sample. The IFRS sample contained half as much observations as the pre-IFRS sample. This caused a greater variability in the results that made our analysis less powerful. There were also relatively more common law than code law observations.

Table 7: *Value relevance in the pre-IFRS and the IFRS period.*

Value relevance in the pre-IFRS and the IFRS period

$$P_t = b_1 + b_2 * BVE_t + b_3 * E_t + b_4 * Country + b_5 * Country * BVE_t + b_6 * Country * E_t$$

	R	R Square	Adjusted R Square	Std. Error of the Estimate
pre-IFRS	0,848[a]	0,719	0,717	12,363
IFRS	0,791[b]	0,626	0,621	13,025

Pre-IFRS:	F-value: 386,475	N: 760
IFRS:	F-value: 129,005	N: 391

In this table the explanatory power of the regression is shown. The explanatory power serves as a measure for value relevance. The analysis is performed for both the pre-IFRS (2001 – 2004) and the IFRS (2005 – 2008) period. The models are both significant.

As it can be seen from Table 4.3.2, for every euro of share capital in the pre-IFRS period, companies from the UK reported 0.91 euro equity and 6.40 euro earnings. French companies reported for every euro of share capital 0.77 euro of equity. This was not significantly different from companies in the UK. French companies reported 0.42 euro earnings. This was significantly different from the UK (6.40). Under IFRS UK companies reported under per euro of share capital 0.86 euro of equity and 5.02 euro earnings. French companies reported 1.02 euro of equity and 0.98 euro earnings for each euro of share capital. The difference in equity between both countries was not significant. The difference in reported earnings was again significant. For French companies, both equity and earnings on a per share basis increased.

Table 8: *Comparison of coefficientsa in the pre-IFRS and IFRS period.*

Comparison of coefficients[a] in the pre-IFRS and IFRS period

$P_t = b_1 + b_2 * BVE_t + b_3 * E_t + b_4 * Country + b_5 * Country * BVE_t + b_6 * Country * E_t$

		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
pre-IFRS	(Constant)	2,569	0,704	0,000	3,649	0,00 *
	BVE[b]	0,905	0,148	0,574	6,131	0,00 *
	Earnings[b]	6,395	0,835	0,659	7,657	0,00 *
	Country	21,139	1,507	0,426	14,029	0,00 *
	Country * BVE[b]	-0,133	0,155	-0,089	-0,859	0,39
	Country * E[b]	-5,976	0,866	-0,603	-6,904	0,00 *
IFRS	(Constant)	3,293	1,037	0,000	3,175	0,00 *
	BVE[b]	0,861	0,206	0,440	4,183	0,00 *
	Earnings[b]	5,016	1,190	0,481	4,216	0,00 *
	Country	13,345	2,210	0,300	6,038	0,00 *
	Country * BVE[b]	0,163	0,226	0,088	0,723	0,47
	Country * E[b]	-4,040	1,245	-0,374	-3,246	0,00 *

a. Dependent Variable: Share price
b. Items are per share
*. Significant at 0.05 significance level

This table shows the coefficients (Unstandardized Coefficients) and their significance of the regression analysis. The coefficients are reported for both the pre-IFRS (2001 – 2004) and IFRS (2005 – 2008) period.

From our results it appears that the relation between accounting and market information weakened after the transition to IFRS. This was in contrast to our expectations. Furthermore the results from the comparison between code and common law countries showed that in the pre-IFRS period there were differences in reported earnings, but that these differences in the IFRS period no longer exist. There was no significant difference between reported equity in code and common law countries.

4.4. Accrual quality

Accrual quality is a measure of the relation between cash flows and earnings. Accruals help in presenting actual firm performance rather than on a cash basis. In this paper accrual quality was assessed using the Dechow and Dichev (2002) model. The latter regresses cash flows from a year prior until a year after the current period on the change in working capital. The residual values represent accruals.

The residuals were analysed here by their firm specific standard deviation. They were also tested for differences between the pre-IFRS and the IFRS period. Our analysis was again repeated separately for the UK and France.

In accordance to Dechow and Dichev (2002) we expected a positive relation between the independent variables and the cash flows in the prior year, a negative relation for the current period, and a positive for the future year. However from the pooled regression analysis it can be seen that the sign for cash flows in the prior year was negative, and positive for the cash flows in the current period. The coefficient of cash flow in the future year was not significant (Table 4.4.1).

Table 9: *Regression coefficients.*

Regression coefficients[a]

$$\Delta WC_t = b_0 + b_1 * CFO_{t-1} + b_2 * CFO_t + b_3 * CFO_{t+1} + E_t$$

	Unstandardized Coefficients		Standardized Coefficients			
	B	Std. Error	Beta	t	Sig.	
(Constant)	0,0105	0,0067		1,5665	0,12	
CFO_{t-1}	-0,5961	0,0786	-0,4220	-7,5852	0,00	*
CFO_t	0,6312	0,0877	0,4530	7,1973	0,00	*
CFO_{t+1}	0,0939	0,0757	0,0667	1,2396	0,22	

a. Dependent Variable: Change in working capital
*. Significant at 0,05 significance level

This table shows the coefficients (Unstandardized Coefficients) and their significance of the regression analysis. The coefficients are reported for both the pre-IFRS (2002 – 2004) and IFRS (2005 – 2007) period.

The residual values (Table 4.4.2) were further analysed. Comparing the pre-IFRS firm specific standard deviation of the residuals to the IFRS standard deviation led to a non-significant result (Table 4.4.3). There was no significant difference in the average standard deviation between these two periods. The comparison of medians was also insignificant, which confirmed the result from the comparison of the mean standard deviation.

Table 10:

Panel A: Descriptives of accruals in the pre-IFRS and IFRS period

Country	Period	N	Mean	Std. Deviation	Std. Error Mean
Total	nonIFRS	87	0,0698	0,0528	0,0057
	IFRS	87	0,0701	0,0810	0,0087
GB	nonIFRS	74	0,0696	0,0555	0,0064
	IFRS	74	0,0743	0,0830	0,0096
FR	nonIFRS	13	0,0709	0,0356	0,0099
	IFRS	13	0,0460	0,0669	0,0185

This table shows descriptive statistics of accruals. The descriptives are reported for the total sample as well as for the United Kingdom and France. For each country and also for the total sample, the data is split in the pre-IFRS (2002 – 2004) and IFRS (2005 – 2007) period.

Panel B: Descriptives of accruals in the United Kingdom and France

Period	Country	N	Mean	Std. Deviation	Std. Error Mean
nonIFRS	GB	86	0,0685	0,0566	0,0061
	FR	39	0,0704	0,0431	0,0069
IFRS	GB	85	0,0695	0,0793	0,0086
	FR	17	0,0480	0,0597	0,0145

This table shows descriptive statistics of discretionary accruals. The descriptives are divided in pre-IFRS (2002 – 2004) and IFRS (2005 – 2007) period. For both these periods the data is separated for France and the United Kingdom.

Table 11:

Comparison of accruals in the pre-IFRS and IFRS period

		Correlation		Paired Differences				Median test[a]	
Country	Period	Correlation	Sig.	Mean difference	df	t	Sig. (2-tailed)	Z	Asymp. Sig. (2-tailed)
Total	nonIFRS - IFRS	0,4014	0,00*	-0,0003	86	-0,0350	0,97	-0,944[a]	0,35
GB	nonIFRS - IFRS	0,4190	0,00*	-0,0047	73	-0,5200	0,60	-0,288[a]	0,77
FR	nonIFRS - IFRS	0,2589	0,39	0,0249	12	1,3397	0,21	-1,782[a]	0,07

a. Based on positive ranks.
b. Wilcoxon Signed Ranks Test
*. Significant at 0,05 significance level

This table shows the comparison of accruals in the pre-IFRS (2002 – 2004) and IFRS (2005 – 2007) period for France, the United Kingdom as well as for the total sample. The accruals are compared for both their mean (paired samples T-test) and median (Wilcoxon signed rank test).

In the pre-IFRS period it was expected that France would have a lower accrual quality than the UK. A higher standard deviation in this case would stand for lower

quality. France indeed had a higher standard deviation. However, the difference was not significant (Table 4.4.4) in contrast to our initial expectations.

Table 12:

Panel A: Comparison of mean accruals in the United Kingdom and France

			Levene's Test		T-test for Equality of Means			
Period			F	Sig.	Mean Difference	t	df	Sig. (2-tailed)
nonIFRS	GB - FR	Equal variances assumed	1,1687	0,2818	-0,0020	-0,1919	123	0,86
		Equal variances not assumed			-0,0020	-0,2123	96	0,83
IFRS	GB - FR	Equal variances assumed	2,5906	0,1107	0,0214	1,0557	100	0,29
		Equal variances not assumed			0,0214	1,2741	29	0,21

*. Significant at 0.05 significance level

This table shows a comparison of mean accruals in France and the United Kingdom. This is done for both the pre-IFRS (2002 – 2004) and the IFRS (2005 – 2007) period.

Panel B: Comparison of median[a] accruals in the United Kingdom and France

Period	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
nonIFRS	1510	5251	-0,890	0,37
IFRS	656	809	-0,597	0,55

a. Grouping Variable: Country
*. Significant at 0.05 significance level

This table shows the coefficients (Unstandardized Coefficients) and their significance of the regression analysis. The coefficients are reported for both the pre-IFRS (2002 – 2004) and IFRS (2005 – 2007) period.

For French companies it was expected that the transition to IFRS would improve accrual quality. This was confirmed by our findings from the standard deviations of the residuals (Table 4.4.3). Companies from the UK were also expected to experience an increase in quality, but not as big as France, since UK firms had already before the transition to IFRS been reporting under a common law based set of standards. Our results in contrast indicated a small decrease in accrual quality, however statistically insignificant. Thus, the quality of accruals in both France as the UK did not change significantly.

Under IFRS it was expected that there would not be a significant difference between the UK and France (Table 4.4.4). The results indeed indicated that there was no significant difference in the IFRS period. The median tests pointed in the same direction. It seemed that under IFRS there is no difference between code and common law countries. This was confirmed by both the test on the mean accruals and the median accruals.

Before IFRS became applicable, there were also no significant differences between code and common law countries. Therefore it could be that the change

from pre-IFRS to IFRS on a total scale and on national scale was insignificant too. An explanation for the insignificant results could be again due to the relative small size of the sample.

5. Conclusion

Users of financial statements want to rely on the information disclosed therein. These disclosures depend much on the set of reporting standards used. Therefore it is important to know if the latter meet a certain degree of quality.

IFRS in the European Union became mandatory in 2005. Before this transition, IFRS had already been the subject of much academic work. The results from these investigations differed substantially. Both increases and decreases in the accounting quality were and are still found.

Our paper also examines the effect of IFRS on accounting quality. At the time of our work three full years of IFRS data had been available with most of the prior literature not having more than one or two years of IFRS data available.

In the prior literature there have also been discussions about differences between the regulatory contexts of the countries in which IFRS would be/is applied. To investigate the impact of IFRS in these settings, the UK and France were selected as representatives for code and common law countries. The impact of IFRS on accounting quality was investigated thus in our paper from four different angles.

First the transition itself was examined. Reported book values from the 2004 annual report were compared to the restated comparing figures in the 2005 annual report. Approximately half of the examined book values changed significantly. In the UK also about half of the items changed significantly. In France almost no items changed significantly. From these it could be concluded that IFRS brought some change in the accounting quality. This however cannot be clearly stated for France.

The second measure of accounting quality examined here was earnings management. The modified Jones model was used for this purpose. Our results indicated that there were no significant changes in earnings management between the pre-IFRS and IFRS period for the total sample as well as for both code and common law regulatory settings. Our results also illustrated that there were no significant differences between code and common law countries in both the pre-IFRS aand the IFRS period. The conclusion that could be drawn from these is that IFRS did not affect the extent of earnings management in both the UK and France. Our results however indicated that earnings management declined after the transition to IFRS. Thus it appears that IFRS is a step in the right direction of higher accounting quality.

Value relevance, was measured by the Ohlson model. This is the third factor of accounting quality examined here. Our results showed a decrease in explanatory power between the pre-IFRS and IFRS period. The comparison of co-efficients however illustrated that there was a bigger difference in the pre-IFRS period than in the IFRS period. Therefore we cannot conclude that value relevance decreased due to the transition to IFRS.

The last measure used was that of accrual quality. The latter was examined with the Dechow and Dichev (2002) model. The co-efficients from the regression analysis showed unexpected relations. The model did not function well on the used set of data, although outliers were deleted. The results from the analysis of the discretionary accruals indicated significant differences between the pre-IFRS and IFRS period. However, there were no significant differences between the two countries in the pre-IFRS and the IFRS period. The results also indicate increases in accrual quality. Again, with the latter being statistically insignificant.

The transition to IFRS had a big impact on the companies who had to deal with this new standard. Prior research is not unanimous about the positive effect that the transition to IFRS according to the IASB should bring. From the analyses carried out in our paper we cannot conclude that accounting quality increased as a result of IFRS adoption. The differences between code and common law were almost for our whole analysis statistically insignificant. Another conclusion that could be drawn therefore is that the proposed differences in accounting quality between code and common law countries before the introduction of IFRS is not that big as some prior literature has indicated.

There are, however, limitations with regard to the data used here. It might be that future research with a more extensive data set can provide more powerful insights. Although no significant differences between code and common law countries were found, our analysis pointed to the direction of some improvement in accounting quality.

6. Limitations and future research

There are several factors that could have influenced the quality of our results. At the time of this work there were three years of IFRS data available. This was a positive factor for our study if compared to prior research that has only used one year of IFRS data or data from voluntary IFRS adopters. In future the subject matter could be extended with larger samples over time. With more years of data the effect of IFRS in the long run might be better to determine. When the period over which IFRS adoption is measured becomes longer, the effects of natural

growth would also increase. It is recommended to control for these effects.

Like the effect of natural growth, the industry examined can also affect the results. A company in heavy industry like metal manufacturers rely mostly on big plants with many tangible assets. In contrast, an IT company for example developing software needs only a building and some computers. Therefore, intangible assets will be relatively larger than in the industrial company.

In our paper it was not possible to control for industry and time effects, because this would result in small samples, to which no sensible conclusions could be attributed.

An opportunity for future research could be to repeat our examination with all listed companies for which data will be available. The DJ Stoxx 600 index that was used here was expected to be a representative reflection of different listed companies in the investigated code and common law settings. An extension of the amount of cases could make it possible to correct for industry and time effects and to better understand the effect of IFRS on accounting quality.

Not all the factors that influenced our results can be found in the data themselves. Market development could also have an influence. The global financial crisis also has a great impact on the daily business and economy. It could well be that companies before the crisis already responded to the first signs of a possible predicament and the result of IFRS adoption was overshadowed. Because the total impact of the financial crisis is not clear until now, this could be an interesting element to examine in the future. The extent to which the financial crisis influenced accounting quality under IFRS.

Another factor could relate to one-time events such as take-overs, acquisition of other companies, reorganisations and innovations. Due to our small sample, these events may have caused a greater variability in the data, making our results less powerful. The effects of these events were for the greatest part eliminated, by controlling for outliers and the use of three years of IFRS data. However a possibility for future research could be to control even further for events that can influence the measurement of accounting quality with respect to the change from local GAAP to IFRS.

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SERVICE QUALITY IN THE HOSPITALITY INDUSTRY: RECONCILING TOURISM DEVELOPMENT WITH SUSTAINABLE VALUES

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Abstract

Considering that the concept of sustainability strives to reconcile existing conflicts among goals of economic growth, environmental protection and social justice, it is not surprising that this concept has also emerged as a leitmotif of tourism research.

It is generally recognized that improving quality in tourism destinations is an essential requirement in satisfying tourist's need, in enhancing the competitiveness of the tourism industry and ensuring a balanced and sustainable tourism development.

Integrated quality management and service have been identified as a process that can help destinations to deliver a quality product, improve tourists experiences and to work towards sustainability. Whilst the various models of service quality can protect and upgrade the operation of enterprises as well as the level of tourist demand satisfaction.

This paper focuses on the growth of modern tourism, and the importance to practise service quality methods towards to achieve sustainable tourism development.

In conclusion, this paper aims: 1) to sustain that practicing service quality through sustainable values can be considered as the major tool to achieve development and enhance the hospitality industry, 2) to assess that perceived service quality is a crucial matter for the global tourism growth and can bear sustainable development.

JEL classification: L15, L83, Q01.

Keywords: Service quality, Service quality models, Sustainable development, Sustainable values.

1. Introduction

The last few decades, tourism phenomenon has developed rapidly. Nowadays tourism is one of the world's largest industries and one of its fastest growing economic sectors. It has a multitude of impacts, both positive and negative on

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socio-cultural issues, economic and environment as well.(McCool, Moisey, 2002) Clearly, tourism has become a global financial power, achieving a planetary presence unequalled by many other economic sectors. As it has grown, so have the criticism of its environmental, economic, socio-cultural and political consequences (Cater & Goodall, 1992; McLaren, 1997). Tourism is no longer the benign economic development tool that the boosterism of the past purported it to be.

Sustainable tourism development meets the needs of the present tourists, their satisfaction and hosts regions while protecting and enhancing the opportunity for the future. It is envisaged as leading to a management of all resources in such a way that economic, social and aesthetic needs can be fulfilled, while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems.(McCool, Moisey, 2002;)

In this paper, we analyze the notion of practising service quality methods under sustainable values towards to achieve sustainable tourism growth.

2. Theoritical approaches of Service quality in the hospitality industry

Research on service quality is now of major concern to industries such as the tourism/hospitality industry, which are basically 'peopleoriented'.

There is widespread agreement in the general service management literature that the provision of service quality is concerned with generating customer satisfaction. Grönroos (1984), Parasuraman, Zeithaml and Berry (1985) and Johnston (1988) define service quality in terms of customer satisfaction, that is, the degree of fit between customers' expectations and perceptions of service. Other authors attempt to deal more specifically with the issue of service quality measurement. Smith (1982) argues in support of the proposition that service quality is difficult to quantify, and identifies measures used in manufacturing firms. Voss (1985) proposed that it is the intangible aspects of the service package which are most difficult to measure, and concludes that as a result service quality tends to be ignored. Johnston and Morris (1985) argue that service organisations tend to measure only what is easy to measure and quantify, and shy away from the use of soft, qualitative measures. Kaplan (1983) argues satisfaction. Whilst the measurement of customer service perceptions are now widespread in tourism/hospitality, an understanding of managements' perception of guest expectations, as well as staff responses to such management expectations, are yet to be explored.

Hochschild (1983) has described the work performed by service providers as 'emotional labor' that requires them to subsume their own feelings to the goals of their employer and the immediate needs of a paying customer. Indeed, she

described service encounters as the commercialisation of human feeling, and warns of the individual and social effects that may engender. Klaus (1985) has described service encounters as interlocking behaviour composed of task and 'ceremonial' elements, in which the former are the economic exchange elements and the latter the psychological need satisfaction that provider and customer provide each other.

Surprenant et al. (1983) apply social interdependence theory to describe the service encounter, along with McCallum and Harrison (1985). Interdependence theory holds that the behaviours of each party have an effect on the outcomes received by the other. It further suggests a framework for analysing the balance of dependence or interdependence that shapes the nature and content of the interaction. Key to the issue of dependence and interdependence is the possession of market-place power and the strategy of the organisation, as noted by Czepiel (1992).

3. Customer Satisfaction and Retention and its contribution to achieve sustainable tourism development

Oliver (1981) defined satisfaction as a "summary psychological state resulting when the emotion surrounding disconfirmed expectations is coupled with the consumer's prior feelings about the consumption experience" (p.27). Oliver (1997) pointed out that satisfaction encompasses more than mere fulfillment. It describes a consumer's experiences, which is the end state of a psychological process.

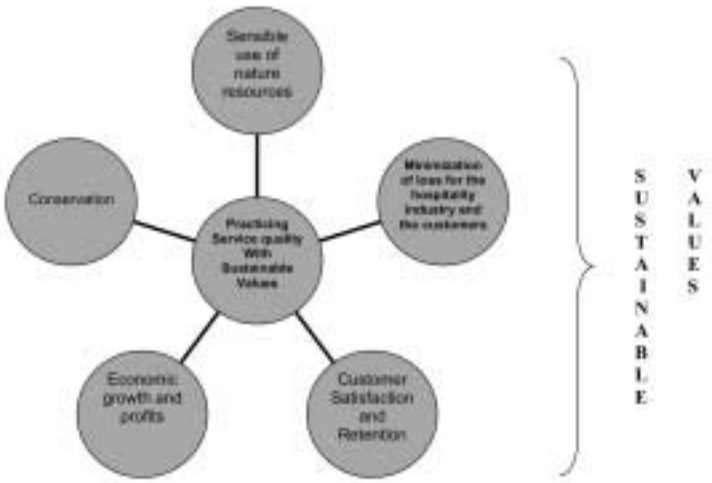
Satisfaction has become a central concept in modern marketing thought and practice (Yi 1990). Many studies have made significant contributions to better understanding this complex phenomenon (Bearden and Teel 1983; Oliver 1980, 1989; Spreng et al. 1996; Williams 1988). Achieving visitor satisfaction is one of important goals for most tourism service businesses and organizations today (Jones and Sasser 1995). Increasing customer satisfaction and customer retention generates more profits, positive word-of-mouth, and lower marketing expenditures (Reichheld 1996; Heskett et al. 1990).

Satisfaction is a visitor's affective and evaluative response to the overall product or service experience (Oliver 1997). What visitors received from the investment money, time and other resources on a trip or a visit) are psychological benefits. Thus, it is an experience that tourists receive from a visit with tangible goods (Mathieson and Wall 1982). It is also more likely that satisfied visitors will return and say positive things about a service (Tian-Cole et al. 2000).

Improving the quality of service attributes as well as improving the emotional and psychological reactions that visitors obtain from service experiences is considered important to commercial and public tourism businesses and organizations. As Otto

and Ritchie (1996) stated: the intimate, hands-on nature of the service encounter itself affords many opportunities for affective response… it has long been acknowledged that human interaction itself is an emotionally-charged process.

Figure 1: *The circulation of service quality- with sustainable values.*



4. Tourism & Sustainable Development

The massive and rapid development of industry increased the concern of sustainability. "The strive for a concerted development of the economy and ecology based on a coherent and integrated viewpoint has stimulated many social scientists to adopt systemic notions and concepts for achieving a balance between natural and socio-economic systems. The functioning of such natural and socio-economic systems has, in their view, to be studied from the angle of material inputs of all production and consumption processes" (Nijkamp, 1995:67).

New disciplinary efforts such as human ecology and environmental economics have come to the fore, in where important attempts have been made to certify a merger between ecology and economics. These efforts have been especially intensive in the last two decades. The concern that a sustainable development is a matter of fact which shows in present and in future as well, its quantitative and qualitative implementations have been significantly increased (Butler, 1995:49). The stakeholders having been aware of the problems which can be caused because of the negative influence of the mass Tourism considerably took action by carrying out training methods, seminars, and publishing reports and documents in favour of the conservation and indications for sustainable tourism.

5 Economic Perspectives of growing Sustainable Tourism - An overview of today's tourism industry

Tourism can be considered as a tool for social and economic development, as a method to enhance economic opportunity, not as an end itself. Gale and Cordray's (1994) investigated the query "What should be sustained?" in a natural resource management context, to which they gave various answers, primarily focusing on various ecosystem characteristics. In this sense, tourism is integrated into boarder economic and development programmes (Hunter, 1995; McCool,2001) and can be viewed as a method –similar to many definitions of ecotourism– to protect the natural and social capital upon which the industry is built.

By this query, tourism can be viewed as a tool, which at times, may be important to a community and other times not so important. In this sense, there is no any case of protecting cultures for their value to the tourism industry, but because of their value to their people (Robinson, 1999). It may be possible under this view that tourism is not sustained over a long period, but is used as a method to accumulate income and government revenue that can be used later for other development tools. Tourism would be viewed as a part of larger policy framework designed to achieve a sustainable society.

These alternative views of sustainable tourism carry significantly different implications for social economic policy, selection of indicators, public participation and the processes of planning should have encouraged the growth of tourism in private sector. They reflect different perspectives on the concept of sustainability. It seems that it more properly places tourism as a means and not an end to economic development. It allows tourism to be considered as one of the several alternatives that can help a community overcome its weaknesses and preserve its strengths. It views tourism as a tool and not as an end.

There are many hidden costs to tourism, which can have unfavourable economic effects on the host community. Often rich countries are better able to profit from tourism than poor ones. Whereas the least developed countries have the most urgent need for income, employment and general rise of the standard of living by means of tourism, they are least able to realize these benefits. Among the reasons for this are large-scale transfer of tourism revenues out of the host country and exclusion of local businesses and products. (WTO, 2002)

The tourism industry generates substantial economic benefits to both host countries and tourists' home countries. Especially in developing countries, one of the primary motivations for a region to promote itself as a tourism destination is the expected economic improvement. As with other impacts, this massive economic development brings along both positive and negative consequences. Jobs generated by Travel and

Tourism are spread across the economy - in retail, construction manufacturing and telecommunications, as well in travel companies. They have a high proportion of women, minorities and youth, are predominantly in small and medium sized enterprises and offer good training and transferability. This pattern applies to developed and emerging economies alike" (WTTC / Green globe reports, 2002).

5.1. Sustainability principles and its primary focus

Sustainability criteria often used in tourism include environmental, social, cultural, economic, educational and local participatory aspects (Mowforth and Munt, 1998). The environmental, social, economic experimental and planning issues included in this definition have been operationalized into 12 principles of sustainable tourism (Table 1), based on (Eber, 1992:1-5) combined with two principles from ecotourism (WWF, 1995). Table 1 indicates to which of these criteria each sustainability principle is primarily related. (McCool F., Moisey R., 2001)

The sustainable approach to tourism is relevant to the industry, which needs to ensure its long-term viability; to resource managers, who need to secure the natural and cultural resource base; to local residents, to ensure that their quality of life is maintained; and to the tourists, who prefer to maintain quality experiences in the destination that match their motivation and recreational needs. Consequently, sustainable tourism has to address environmental, socio-cultural, economic, experiential and quality-of-life issues as well as the planning and management practises of the industry.

Table 1. *Sustainability principles.*

Sustainability principles	**Primary focus**
Sensible use of nature resources	Environmental
Reduction of consumption and waste products	Environmental
Maintain diversity of plants and animals	Environmental
Studies of environmental and social impacts	Environmental and social
Responsible marketing of tourism	Environmental and social
Support of local economy	Economic
Tourism supports improvements in the area	Economic
Cooperation with local residents	Local participation
Consultation of interest groups including stakeholders	Local participation
Integration of tourism into local, regional and national planning	Planning
Information and nature interpretation for tourists	Educational
Training of staff	Educational

Source: (McCool F.& Moisey R.,2001:291).

6. Service Quality, customer satisfaction and retention: tools to enhance the hospitality industry and achieve sustainable tourism development

In attempt to achieve sustained competitive advantage, hospitality enterprises are now investing quite heavily in a host of service quality improvement initiatives. Berry and Parasuraman (1991) stated that service is the essence of services marketing and hat service quality is its foundation. Perceived service quality is a user's judgment about a service's overall excellence or superiority (Berry et al. 1988).

In tourist enterprises and organizations, suppliers provide the same types of services, but they do not provide the same service. Wager (1966, p.12) observed, "Quality is a human concept based on highly subjective criteria … and seems to be a highly personal matter." Due to the central importance of service quality, tourist enterprises and organizations have commissioned research studies designed to identify, assess, or evaluate the phenomenon of service quality.

In the private sector of tourism, the ultimate goal of tourist enterprises and organizations is to increase profits. Improving technical aspects of goods and services is not sufficient to retain participants. Hospitality businesses are investing more effort in improving perceptions of service quality so consumers (participants) will become repeat consumers and spread positive word-of-mouth to their social group (Crompton and Lamb 1986).

The requirement of an approach to quality improvement concentrates on the continual evaluation of service quality as perceived by the customer.

Tools to achieve continuous development in the hospitality enterprises:

- Customer satisfaction and retention (external client)
- Market evaluations
- Claims
- Complaints and incidences
- Audits reports
- Auto-evaluations
- Benchmarking / EFQM

7. The framework of strategies for sustainable tourism development

The assumption of sustainable tourism development, should be balanced with broader economic, social and environmental objectives at national and local level by setting out a national tourism strategy that is based on knowledge of environmental and biodiversity resources, and is integrated with national and regional sustainable development (Ntanos, 2007).

Action issues:

- establishment of a national tourism strategy that is updated periodically and master plan for tourism development and management
- development of coherent policy to reflect tourism's challenges
- work with the tourism industry to learn about the realities shaping available choices, while helping create an environment in which higher standards can be delivered
- integration of conservation of environmental and biodiversity resources into all strategies and plans
- enhancement prospects of economic development and employment while maintaining protection of the environment sustainability in tourism and related activities
- strengthening of the coordination of tourism policy, planning development and management at both national and local levels
- satisfying the tourist demand.

8. Conclusion

Sustainability, for tourism as for other industries, has three interconnected aspects: environmental, socio-cultural, and economic. Sustainability implies permanence, so sustainable tourism includes optimum use of resources, minimization of ecological, cultural and social impacts; and maximization of benefits to conservation and local communities. At the end the potential dimension to make tourism a form of Sustainable Development, by practising Governmental Legislation and its applicable concepts, in a few years should be viewed as a part of larger policy framework designed, to be achieved a sustainable society.

The existence of a positive link between quality and occupancy level is supported and is driven by client loyalty and an increase in sales figures. Similarly, the positive effect of the seasonality of demand, measured by monthly occupancy levels, on the price of the service was supported, although, in contrast to what may be thought, this positive relationship exists up to a certain occupancy level. On the other hand, occupancy level has a positive effect on average direct costs, which means that if we take into account the direct costs components, that technology used by the hotels is subject to decreasing mean labour productivity.

Earning high satisfaction ratings from guests is an especially important strategy for hotel companies, because loyal customers are the principal driver of profits. Along with continuing to stay at a brand's properties, satisfied customers also refer

new business. Companies with satisfied, loyal customers enjoy higher margins –and, consequently, greater profits– than do businesses that fail to retain and satisfy their customers.

The strategic planning and the application of service quality provide customer satisfaction and retention. Its efficient application enhances the hospitality industry, activates the effects of tourism development in socio-cultural issues and provides economic growth and in a long term scheduled planning can bear sustainable tourism development.

At the end we summarize by answering to the following question: Is it possible to create and practice a new model of mass tourism with sustainable values?" Tourism development with sustainable concepts, or preferably, the ideal profile of mass tourism under sustainable values can be achieved by long term marketing policies, strategic management planning and the participation of the stakeholders and the tourist consumers.

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LEADERSHIP–EMOTIONAL INTELLIGENCE AND INTERCULTURAL CHALLENGES IN THE MANAGEMENT OF HUMAN RESOURCES IN THE TOURIST SECTOR

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Abstract

Societies today display an extended cultural profile, consisting of individuals who come from various social and cultural backgrounds and who have both the will and the power to participate in socioeconomic, political and developmental procedures. The new theories about leadership demand inspiration, vision and not entrenched views, they call for analytical skills-judgement and not control, effective communication-cooperation and not antagonism. Particular weight is laid upon personal traits such as initiative, insight, adaptability and persuasion. Therefore, an inspired leadership enriched with the basic elements of emotional quotient acquires a particular importance as to the ability of introspection as well as the management of human resources.

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1. Introduction

Confronted with constantly intensifying antagonism, outcome of the new conditions of the international market, the role of manpower and especially that of inspired leaderships constitute a contemporary necessity. Obsolete notions and leadership models are being reconsidered. The leader leads to response, as directed by the forces of change, and not to contentment indicated by sheer force of habit.

We believe that the purpose of our exploration ought to concentrate on the following parameters:

A) To the new abilities and skills considered as basic elements of the personality of a leader, such as the ability to bring about radical changes in the workplace and the ability to set off the diversity of characters effectively.

B) To the utilisation of the significant particulars which will lead from the level of cognitive intelligence to emotional quotient, forming the appropriate

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background for introspection and evaluative attitude, appraise of personal value, self-management, with particulars like self-control, integrity, conscientiousness, and adaptability.

C) To contemporary economy which requires cultural intelligence, that is ability for interaction and harmonious cooperation with employees of diverse cultural identities.

2. The tourist enterprises confronted with a new semiotic environment. Approach to a new organisational structure

In the developed societies a new socio-economic environment emerges, in which enterprises and organisations are called to earn their ethical legalisation. Its characteristics are the appearance of a semiotic reflexive society, which radically affects the behaviour of individuals as well as collective subjects, such as enterprises (Tsoukas, Theocharakis, Milonopoulos, 2004). According to Tsoukas (1999:499-528) there are four dimensions in the new environment of the enterprising world:

Distantiation – action from a distance. In innovative societies enterprises are characterized on the one hand, by dissociation of place of production and time of operation and on the other hand, by a system of general guarantees and knowledge. The more this system relies its functioning on commonly accepted criteria and on the trustworthiness of the sector, the more trust of the consumers it will enjoy.

Dematerialization – the production of symbolic goods. The semiotic nature of the economies in the recent innovation renders them more receptive to assessments which results in the enterprises being constantly evaluated by the public (Media – organized social groups, scientific sectors – Non-governmental Organisations). The value of most products is the result of aesthetics (design – logo) but mainly that of emotional power. The products which are not promoted in the market as merchandise, but as ideas constitute an experience and lifestyle and rocket sky-high as collective illusions (Stavrakis, 2007).

Universalisation – mediated communication. Mediated communication creates a new sense of "present time" (tsunami) it coordinates universal actions, responding to broadcasts of far-away events (anti-war demonstrations) with its main component being the co-shaping of the events by the Media.

De-traditionalisation - Social reflexivity. Social reflexivity compels enterprises to be in constant wonder with society, trying to satisfy symbolic and emotional needs, moral – social and political issues in order to gain the trust of a society. Furthermore, the parallel, ongoing detraditionalisation demands radical changes,

aided by technology, communication, culture and the way of thinking in the workplace.

The classic organizational model in which the manager has to manage, in the best possible way, the factors of the production (technology, human capital, raw material) in order to fulfill a purpose is no longer effective in the face of the demands of the new semiotic environment. In the place of the old model a new concept of the organizational structure is born which claims that the enterprises are an entity of dynamically forming and developing quality relationships (communication - cooperation - diversity - sincerity - respect - healthy and strong relationships - personal satisfaction).

According to the approach above, the manager co-forms and co-influences with his every single action the organizational structure so as it constitutes a new field of meaning and co-perception together with the manpower. The question posed is: How do we turn the power-authority into productive capacity and not into a problem? How do we shift the centre of gravity of our strategic and operational predictions towards the facilitation of the procedure to quality and not quantity (form – direction – sense - inwardness) aiming at co-establishment of healthy and strong relationships within the organization?

Therefore, the collective effort, the action of composition and the creation of a common ground, replace the classic hierarchy, the control, the analytical techniques for prediction, the fragmentation of knowledge and the overall strategic of plans and graphs at the expense of the human factor - he replacement, that is, of the predictability with a field of human capabilities. This new concept calls for a leader who is counselor, teacher, trainer and not commander, controller, manager and generally, bureaucrat (Cullen, 2001).

If we desire to advance in the new worlds which we ourselves create there is a dire necessity to espouse contemporary modes of organization, in which our main concern will not be the leadership – authority that imposes order on human activity, determines policies and controls everything but the dynamic of individual and collective vitality of organizations.

In the final analysis the ideas, the vision – the values which are pinpointed in an enterprise are the true powers and not some powerful authority (Whitley, 2000).

The classic weapons of the one-dimensional system of analysis and prediction alone can no longer buttress organizations with adequate mental agility and intelligence, in order to cope effectively with the incessant barrage of non-scheduled changes of the semiotic environment. In conclusion, according to Sarmaniotis (2005), the emphasis in the future of contemporary management focuses on the human factor where the findings and conclusions drawn by sociology, biology and information technology sciences are utilized.

3. The role of unobtrusive leadership in a society of citizens

The key to the survival and effectiveness of any organization is the consolidation of a culture of constant improvement and learning. The quality becomes evident through the existence of an inspired leadership (which acknowledges that it does not have all the answers), with the constant questioning of its own beliefs (intellection models), with the cultivation of relationships of trust and sincerity (group work and learning), with creative attitude/ability (personal expertise), with the development of intuition (global view) and finally the achievement of mutual consent on the future which their people really want to create (common vision) (Senge, 1992).

According to Drucker (1996) the leaders must possess:

1. High level of perception, intuition and self-knowledge
2. Excellent levels in motivating employees to tackle the arduous procedure of learning and changing in particular.
3. The emotional strength to control inward and outward stress, as learning and change are an integral part of the daily routine.
4. New "abilities" in analysing cultural elements, in recognising functioning and malfunctioning cases and involving procedures which magnify civilisation building it on the strengths and its functional elements.
5. The will and the ability to involve others and win their participation because the duties will be complex and the network of information scattered for the leaders to be able to solve problems on their own.
6. The will and the ability to share the power and control in accordance with the knowledge and skills of the employees, that is to return and encourage the development of leadership in all the spectrum of the organisational structure.

This means that more and more non economic elements (psychology, social sciences, biology) are incorporated in policies of leadership with the aim of comprehending the complexity and the contrasts of a globalised reality.

The leadership ought to perceive the tendencies of global economy which diffuse and shape the local situation with the aim of effectively combining them (Godelier, 2007).

On business level the enterprise must focus locally (aims, culture, values, quality, human resources, strengths and weaknesses) but globally with perspective (scope).

The person-centered and charismatic leadership is based on the natural talent of the leader and is no longer able to deal with the challenges of the great changes in technology and civilization of the 21st century. On the contrary the unobtrusive

leadership being trained in the creation of a field of manpower relationships, common ground, inter-company culture, succession in leadership and appropriate handling of crises, is what produces added value for the customer, the employee and the shareholder. The distinguishing line between good (ethic-effective) and bad (unethic-effective) leadership on the one and charismatic leadership on the other is a lot more significant. (Kellerman, 2008). The existence of charismatic leadership constitutes a combination of having been born in the right place, having been given the opportunity, having been endowed with natural talent and finally having the support of the systems of communication and authority (Kanter, 2005).

The objective of our present approach is the unobtrusive leadership, which believes in the participation of companies in the society of citizens (social enterprising) on the one hand and on the other it possesses the ability to set off the talent and the potential of the human factor which was curbed by the classic organizational model of management. It deals, that is, with the liberation of the potential of "others" in an organization as it was very correctly pinpointed by Dr Covey (2004), the reinforcing of its people so as to enable them to maintain the grandeur of the enterprising supremacy. The unobtrusive leadership can only be examined as a holistic approach of establishing relationships and in particular the promise of those of commitment, trust and dedication. An unobtrusive leader inspires trust with his principles, impresses the values which determine the goals and the strategies, influences, converses, possesses self-knowledge, encourages his colleagues and fills them with optimism, is humane and finally he is the first among equals – primus inter pares - (Baldoni, 2008).

The great challenge for the contemporary leader especially today in a particularly unstable and uncertain environment, in a world which presents radical changes, storm-tossed by a global economic crisis, is his ability to defend common interests and values. The gravity, depth and breadth of his principles concerning the human factor are the key elements which will contribute to avoidance of marginalization of the enterprises.

The management of frequent and topical changes, requires the leader to possess abilities such as flexibility, fortitude and adaptability in order to prevail in international competition.

While in the 80s, the key word for the successful products and services was quality, in 2000 Glocal's tendency urged enterprises to develop both locally and internationally with complex products and services based on technology. The present, however, is described as the era of authenticity, simplicity, transparency and genuineness of products and services and it is in the best interest of the enterprises to develop services which are familiar to the customers, less complex and relatively easy to comprehend (Kotsios, 2008).

The proposed organizational structure is based on bridging the true differences

in culture, in the sense that it constitutes the hallmark of each enterprise and contributes to its recognisability. It is either the result of strategic planning or is formulated by its timeless course in a specific space-time social framework. Its impact on the collective identity guarantees the uniqueness and future existence of the organization. Each employee ought to appropriate it and transform it into a desirable and clearly defined organizational conduct. The leadership on the other hand interprets the activities in the workplace through those variables which determine human conduct.

According to Denison (1990) four types of organizational culture can be pinpointed:

1. The culture of tenacity, in which the members of the enterprise share common prospects, ideologies and values and individual initiative within the team is encouraged.
2. The culture of common visions, in which everyone's expectations are met through the accomplishment of the mission and common goals.
3. The culture of participation, in which active participation of the members on all levels ensures commitment to the company.
4. The culture of adaptability, in which emphasis is placed on the ability of the members to perceive and interpret external stimuli so as to achieve high levels of adaptability, incorporation and flexibility in new environments.

All the above can co-exist providing different levels of quality, intensity and frequency, given that they depict the efforts of the leadership to combine stability with the promotion of the sense of the dynamic system which emphasizes change in particular.

It is estimated that the success of a system of leadership is based first and foremost on its adaptation to the conduct, the needs and the cultural profile of the administrated, since the causes of failure are always sought in its non acceptance. According to well-documented theories, born leaders are those who learn from their mistakes and continuously seek or create learning opportunities. They wander from the narrow limitations of the production sectors, they communicate with individuals in various posts, they negotiate in an internationalized environment and sacrifice a part of their authority to the benefit of more democratic procedures (Lepsinger & Lucia, 1997). Work environments which are poor in opportunities for communication (feedback), are conducive to production of poor quality products or services (Turner, 2008).

Nonetheless, whatever system of leadership is chosen, three hallmarks of the organizational structure must be examined simultaneously. A) if an enterprise can assign to external associates some parts of its chain of value in order to minimize the cost and enhance the quality (outsourcing). B) If it has the potential to form

alliances in order to benefit from technological advances or penetrate new markets and C) The abolition of the barriers of the traditional system within the enterprise itself in order to reinforce flexibility (Patrininos & Anastasiou, 2007).

In view of the above we may conclude that the need to create new models of leadership and structures is imperative. Globalisation leads us to all the more modern, flexible enterprises, in which the sense of creativity, of dominant importance of the manpower, of the deviations from the strategic plans, the new perception of space and the global consideration of the potential in terms of strategic technology and management creates within them a powerful innovatory motive power (Vlados, 2006).

In this dynamic framework the leaders have been urged for some years now to take into consideration the impact of immaterial forces which are at work in the organizations such as those of the culture-of values-of vision-of ethics. The organizational vision and the values function as fields and although invisible, they are true forces which directly affect the atmosphere in the workplace as well as the conduct of the manpower.

According to Bourantas (2005), continuous competitiveness and success is achieved through the leadership which creates an organizational environment (enterprising factors: values, company culture, systems of assessment, communication, management) which determines the corresponding organizational atmosphere (trust, justice, sense of meaning, appreciation, participation) which constitutes the motive power in the creation of attitude and potential in the employees to offer their very best.

In terms of ecosystems, what is really needed by many organizations is a leadership-catalyst structured so as to constitute a holistic system, which will infiltrate every level of the organization (individuals, teams, culture) commencing from the head, but with a strategy from below and upwards (Goleman, Boyatzis, Mc Kee, 2002), model of behaviour (not role), creator of meaning which will be based on two basic pillars of social area of emotional quotient and of the intercultural challenges in the workplace.

4. Unobtrusive Leadership and Emotional Intelligence in the management of manpower in the tourist sector

The transformation of enterprises from a mechanistic reasoning to a dynamic all the more unpredictable organisation compelled the leaderships to alter the traditional structure of hierarchical management to a horizontal and flexible structure with dialectical, interdependent and creative procedures. The goal is the

creation and preservation of a competitive advantage, in which a large number of employees is in a position to adapt fully to the perpetually changing interior and exterior environment (Prati etc. 2003: 21).

The complex enterprising organisations are now underlining the need for leaders who can undertake new roles of coordination and orchestration of conduct at work, through self-knowledge, self-confidence, insight and social awareness, so as to be able to formulate the necessary fertile organisational atmosphere with the aim of achieving continuous competitiveness and the success of their organisation.

While there is systematic study concerning the characteristics of capable leaders and how they make their decisions, there has been observed a shortage of study on their psyche and their disposition as well as the role of their sentiments in the processes of leadership. Irritable leaders take a long time to establish good relationships with their colleagues. Similarly, a leader with a positive attitude in the workplace may not respond successfully to inefficient performance on the part of his subordinates (George, 2000). Therefore it emerges as an urgent need to take into consideration factors such as the emotional ability of the employees supported by the new models of leadership and hierarchical structure which diffuse authority and the ability to make decisions in the whole of a "live" dynamic enterprising organisation. Leaderships which succeed in conveying to the employees their enthusiasm, optimism, faith, confidence and team spirit, those which can give prompt solutions to their problems, which are open to suggestions and criticism, which support initiative and encourage the development of manpower are the most likely to succeed.

In recent years social skills appear to be the most critical factors of a leader's success. Emotional quotient constitutes one of the most particular elements of social effectiveness, while it is claimed to be a fundamental element of good performance in the workplace. Apart from the changes in the roles of the leaders, significant changes have taken place in the whole of the relationships within hierarchy, since self-management of posts by the employees who are directly responsible for their performance is encouraged, while their functioning in teams is almost an one-way street in order to accomplish the complex organisational goals of contemporary enterprises. Team work has quickly evolved into the most common form of organisation in an organisation (Cohen & Bailey, 1997:239-290).

According to Goleman (1995) abilities other than intelligence but which are complementary to it can be described through emotional quotient (recognition of feelings, management of interpersonal relationships). The distinction between gnostic and emotional intelligence (Thorndike, 1920: 227-235) is referred to as " the ability to respond wisely to personal relationships". Howard Gardner (1983) suggested a widely accepted model of "multiple intelligence" based on a strict system of eight criteria (lingual, logical-mathematical, special, bodily-kinaesthetic,

musical, naturalistic, interpersonal, inner-personal) through which all the possible skills, talents and intellectual potential must be determined as self-existent concepts. In 1988 Reuven Baron introduced Emotional Quotient, EQ as opposed to the until then well known Intelligence Quotient, IQ, pointing out that sentimentality mainly refers to aspects of personal life (success, contentment) as opposed to Intelligence quotient which is suitable only in certain cases (Ryback, 1998). Later he distinguished five dimensions of Emotional Quotient, IQ, the inner-personal, the interpersonal skills, the adaptability, the management of stress and the overall attitude (Baron 2000: 363-388). Peter Salovey και John Mayer (1997) first developed a complete theory of emotional intelligence as "the ability to manage personal and interpersonal emotions and the use of them as a guide for thought and action", furthermore, it was expressed as "the ability to comprehend and deepen emotions and knowledge, in order to promote emotional and intellectual growth" (Mayer & Salovey, 1997:3-31). Finally, according to Cooper & Sawaf (1998) "emotional intelligence is the capacity to sense, comprehend and effectively apply power and intuition of emotions as a source of human energy, information, connection and influence".

In view of the above a lack of comprehension and self-knowledge is the main cause of the creation of anti-productive interpersonal relationships, which in turn lead to ineffective performance of the employees, unruly conducts and problems with customers. The leader who respects the needs and wishes of his team, builds useful relationships with them, inspiring respect and creating faithful followers who are willing to go in excess for the common good. "Therefore, the interest, as far as the management of human resources is concerned, lies in the interpersonal ability of the employees as a criterion for the distinction of attitudes, intentions, motives, emotions but also in the inner-personal ability for adaptable behaviour, based on self-knowledge" (Lazari, Stavrakis, Karagiorgou, 2008).

According to Goleman (1998b, 2001) we can distinguish two basic dimensions of emotional intelligence in a system of emotional skills: A. The dimension "self" which contains two basic emotional skills: A. 1) Self-knowledge as a process of emotional competence, the accurate self-assessment, and self-fulfillment, a strong sense, that is, of personal value and potential. A. 2) The self-management (self-control), the reliability and integrity, the conscientiousness, the adaptability, the motives for success and the undertaking of initiative. B. The dimension of "others" which also contains two skills: B. 1) The social and organizational awareness (self-awareness), as a process of recognition of the dominant emotions in the team and the balance of powers which prevail in it. B. 2) The management of relationships, the influence, the communication, the handling of conflicts, the visionary leadership.

Substantial differences can be pinpointed between the above mentioned theories, such as the fact that Baron approaches emotional intelligence in the light of

personality theories, Salovey and Mayer as a theory of intelligence, while Goleman gives it precedence as a process of performance emphasising abilities with capacity of learning and improvement.

While up till now the theory of emotional intelligence referred to its positive presence in various aspects of life (Goleman, 1995, Salovey & Mayer, 1990), it is now claimed to possibly play a significant role in the effectiveness of leadership. In the world of enterprise, according to high ranking members of personnel administration Intelligence Quotient ensures a job whereas Emotional Quotient helps in promotion and professional rising (Gibbs, N. 1995).

The leaders in order to be able to produce and maintain the enthusiasm in their subordinates, must be capable of assessing how they feel, of influencing their emotions, they must be able to predict how they will react on different occasions, events and changes on the one hand and on the other effectively manipulate these reactions in the desired direction.

The ability of the leadership to distinguish between real and unreal emotions of the subordinates is an arduous task, since several emotional manifestations are controlled for various reasons (Goleman, 1995), which are dictated by a given social frame (Rafaeli & Sutton, 1989:1-42).

High ranking posts often involve hectic rhythms of work with changing demands and high levels of pressure (Kanter, 1983). Effective leaderships not only must respond to these but also be able to retain control and resolve creatively any possible conflicts in an atmosphere of trust and cooperation. High quality interpersonal relationships between leaders and subordinates through emotional intelligence promote numerous advantages for the enterprising sector on the whole (Gerstner & Day, 1997: 827-844). In a research by Claudio Fernadez-Araoz (2001) concerning the factors of the success of high ranking members of the administration it is ascertained that they presented a different profile in three basic elements: previous experience, learning ability, emotional intelligence, combinations which determine the successful course of high ranking members, while their utilization can contribute decisively in their selection for the high ranking posts.

Golemamn (2000) mentions types (styles) of leadership (visionary-humane-democratic-instructive-consultative) directly related to emotional intelligence which decisively affect performance in the workplace and the atmosphere in the organization. The truly successful and effective leaders do not employ one or the other type of leadership exclusively, but they adjust them and alternate them according to the needs of the enterprise as they stand at any time. The interest is focused on the visionary leader who mobilizes the individuals towards a common vision and is characterized by his abilities deriving from his emotional intelligence, self-confidence and self-awareness.

Cherniss & Goleman (2001) claim that an individual's emotional intelligence can be improved provided that there are strong endogenous motives, such as the need of executives to rise in hierarchy, as well as exogenous motives, such as the institution of certain rewards on the part of the enterprises for those who display behaviour governed by emotional intelligence. Consequently, the successful application of any program in an enterprise presupposes its complete incorporation in the overall system of administration of human resources and first and foremost in the processes of selection, training and evaluation of the performance of the employees (Jacobs, 2001: 159-181).

The unobtrusive leadership ensures the sense of consistence and security in the employees, it offers a clear vision and blazes a concrete strategy. The flexible, cooperative teams can be the fundamental structural units of an effective organization especially when the programs are complex and demand innovation, immediate adaptation and substantial rallying.

According to Coleman (1998a: 93-102) it is easy to ignore emotions when you work in isolation, but it is impossible when you work as a member of a team. Emotional functions such as self-awareness, contribute to the understanding of the position of others and the harmonious functioning of the enterprising sector one leads and this functioning constitutes a determining factor for the leadership which wants to succeed in the intercultural dialogue concluding to agreements without the risk of misinterpretations and misunderstandings.

5. Intercultural challenges and social skills in managing diversity in the workplace of the tourist sector

One does not need to delve deeper to ascertain that the concept of culture, let alone the academically recognized and politically legalized version of it, that of multiculturalism, is insolubly united with "diversity" (Kyridis & Andreou 2005: 134), that is what makes people unlike one another (Rheinsmith, 1996). The state societies are multicultural not necessarily because they consist of many ethnic groups, but simply because the concept of culture cross-refers to a meeting (of civilisations) as this is reflected in the conscience and behaviours of the subjects (Trompenaars & Turner, 1998).

In 1993 the European Council launched the slogan "all different, all equal" in an effort to reconcile the traditional liberal call for equality with the contemporary principle of the protection of diversity. This is where the difficult negotiations for adjustment between diversity and equality begins (Christopoulos, 2002: 211-215). At the same time skills and knowledge are important to invigorate creativity and

the ability for innovation (ECU, 2008). However, for these individuals to co-exist harmoniously, to exchange views and materialise decisions in contemporary multicultural societies, they need to have previously been educated in the techniques of intercultural approach (Paleologou & Papanis, 2007). To put it simply, the requisite is the transfer from an education for foreigners to an intercultural education (Souliotis, 2005: 20-26).

The conflict and composition of social contrasts or in other words, the outcome of the strife between social identity and diversity as it stands at any time, is determined each time by the social class which is more dominant and more convincing to the degree of imposing its terms in the field of cultural leadership, too. Action concentrates on the following points:

A) Support of experiential involvement and reinforcement of critical approach to the issues of cultural diversity as an "alternative" educational practice.

B) Episodic education, further education of executives who are already being trained or/and are active in related fields and further delving into issues concerning their work and their experience. (WU, 2008)

What we attribute to the educational process is not only the rendering of knowledge, skills, the improvement of the intelligence and the ability to delve into the cultural particularities of an individual, but also the making of more rational decisions, the shaping of cultural values of enterprising culture and working ethics. "The error in this case is that within the concept of education they place the concept of culture. In this way they confuse an active process like education (formal and informal education), with a passive process, one that is not directly controlled like culture (values, attitudes, models, stereotype convictions etc.). It is up to the enterprise to introduce educational programs which will counterbalance shortages of gnostic and psychological nature, the employees are not consistently good or consistently bad, but their behaviour has highs and lows which, nonetheless, when added up should converge to an at least average level of efficiency at work.

With the term diversity we mean the notions and approaches to work which are brought into the company by the employees who belong to different categories (Thomas & Ely 2005: 124). Consequently, it is not only the culture of the enterprise which has to be altered but the employees' mentality itself. According to Gundara (1986), the Director of the Centre of Intercultural Education of London University, contemporary societies are characterized by multiculturalism, whereas interculturalism refers to the interaction and mutual cooperation which ought to be sought after by all peoples.

The efforts for diversity in the workplace start with very good will but sometimes they trigger tensions, strife on different levels of hierarchy which are considered

natural, since cultural diversity seems to intensify such conflicts. According to Thomas & Ely (2005) three models are responsible for this situation whereas the forth may be able to solve the problem:

1) The model of discrimination and equal treatment is based on the admission that discrimination is wrong. According to this model progress is estimated by how well the company accomplishes its goal of attracting and maintaining executives. There are companies with visible cultures in which values as well as equal treatment are prevalent, while the codes of behaviour are clear and indisputable.
2) The model of piecemeal market, according to which organizations/enterprises seek access to a more differentiated clientele, adjusting their demographic details to the consumers targeted. It celebrates diversity. In the enterprising environment there is increased dissimilarity among the employees and therefore, a clear opportunity or an imminent threat for the company.
3) The model of learning and effectiveness or association of diversity with the prospects of market. It contains elements of the first two models, but it proceeds closely combining dissimilarity with work methods. Companies have developed a notion about dissimilarity, which gives them the ability to incorporate the employees' prospects in the main objective of the organization and to promote work, studying from scratch basic tasks and re-defining markets, products, strategies, missions, enterprising methods and even culture. This kind of companies utilize the model of learning and effectiveness for the management of dissimilarity, while in this way they make good use of the true benefits of diversity (Hofstede 1994).
4) The model of the suitable (unobtrusive) leadership, shows that when employees are urged to combine their dissimilarities in order to find creative ideas, then the level of knowledge is improved through the acknowledgement of the prospects of learning and the organisations fulfil their missions more effectively. These leaders encourage the employees to utilise their cultural experiences to their advantage in the workplace. They perceive that a dynamic personnel distinguished by dissimilarity will incorporate different notions and methods at work, will deem the variety of opinions and thoughts valuable, will create enterprise culture, will form levels of expectations for high standards of performance, will instigate personal development, will encourage freedom of expression, the culture will give employees the feeling of being valuable and the enterprise will have a well-expressed and widely comprehended mission (Goffee & Jones, 2005: 27-34).

The aim is for the leaders to pinpoint the advisable method of approach and to embrace it or adapt it to the particularities of their workplace. In addition, they

should ensure that their organizations are still secure places where employees can behave and develop normally and as they feel. (Livingston J.S., 2005: 45-71) As a result, they are always in a position to realize that tensions arise naturally and the enterprise allows for dissimilarity, experiments with the process and ideas for new products and learns to reassess its mission. Furthermore, leaders, according to Thomas & Inkson (2004), develop social skill (Cultural Intelligence) that is the ability to interact and cooperate harmoniously with employees from different cultural backgrounds. They support that it can be cultivated through: 1) The objective knowledge of cultural particularities from bibliographical references, lectures or special seminars. 2) Analytical exercises which develop ways of approach and methods of "sensitivity" during training. 3) Empirical ascertainment and realization of the difficulties which may arise from the daily activity/association and professional cooperation with people from different cultures.

The aim is to formulate a wide social identity and acceptance, a product of contact, adjustment, convergence and divergence, complementation and partition. All of the above instigate a constant transformation of their forms and their semantic substance. (Badie, 1995 in Kiridi A. 2005: 109)

6. Case Study. Analysis of Research Field. Critical Approach. Conclusions

In the context of the present study, qualitative research was conducted, which "is related to the study of the causes of human behaviour and not its effects" (Christou, 1999: 41), that is, the investigation of human thoughts is sought and not their actions.

In order to communicate with those surveyed, the internet or post was used. Most questionnaires were sent back to the research team through the internet, besides, "E-questionnaires are becoming an increasingly used tool for tourism research across a variety of sectors" (Gayle, 2001: 197)

The sample was selected randomly and it consists of 87 managerial executives of tourist enterprises and organizations. Namely, 36 representatives of hotels, 50 representatives of tourist agencies and one tour operator replied.

Table 1. *Sample.*

Travel agency/tour operator	51	59%
Hotel	36	41%
	87	100%

The questionnaire included 12 questions in total. Open-end questions as well as importance scale questions were used. Referring to open-end questions, "they are

considered especially useful due to the spontaneous nature of the answers, which is coloured by each person's individual perspective (Christou, 1999:145) and in general, qualitative research analyzes data by organizing it into categories on the basis of themes, concepts, or similar features. (Neuman, 2000).

The results of the research are particularly interesting. Almost 54% of the sample states that they frequently use inspiration, persuasion and non-material incentives to get their colleagues to "do things right" while they use authority less. 35% replied that they do so to some extent.

The majority of the sample states that to some extent they make strategic and other important decisions based on the future of the enterprise or its organizational unit and not based on the present or on the past.

'I frequently boost the self-esteem and self-confidence of my colleagues to some or a great extent' replied the majority of the sample.

Table 2. *Boost of confidence.*

1	Not at all	0	0%
2	A little	4	5%
3	Medium	6	7%
4	Enough	50	57%
5	Very	27	31%
	Total	87	100%

'I frequently make my colleagues feel and function as a mature and effective team' was stated by 83% while 10% stated that they do so moderately.

Table 3. *Function of team.*

1	Not at all	0	0%
2	A little	0	0%
3	Medium	9	10%
4	Enough	72	83%
5	Very	6	7%
	Total	87	100%

A large percentage of the sample stated that they achieve this: A. By analyzing the goals of the enterprise. B. By describing responsibilities. C. With effective organization. D. With vision. E. With clear rules of communication-procedures. F. By setting goals. G. By measuring the results and providing feedback. It is a fact that leaders are responsible for the formulation of the vision of the enterprise and for the diffusion of the business goals, values and qualitative criteria. A charismatic leader can systematically express the expectations of the whole team, but what is

important is the management of the subsystems which constitute the whole, given that individual contribution has meaning only through its relationships with the team. (Palmer et al. 2000)

When asked if experience or knowledge is enough to enable them to handle interpersonal relationships, the answers were as follows: A. Experience and knowledge are necessary prerequisites but are not enough. The ability to handle interpersonal relationships is the most essential parameter and without a doubt it greatly contributes to the success of the employees and the enterprise as a whole. B. Knowledge is required but experience plays an important role as well.

'I question and change the established rationales and practices, aiming to the progress and constant success of the enterprise' was stated by the vast majority of the sample as 66% answered enough and 33% answered very.

'I have created the culture required in the enterprise or organizational unit in order to make it effective, competitive and constantly successful'. 58% replied medium while 41% replied enough.

Table 4. *Business culture.*

1	Not at all	0	0%
2	A little	0	0%
3	Medium	50	58%
4	Enough	36	41%
5	Very	1	1%
	Total	87	100%

Business culture includes all the values of a social or organizational reality placing emphasis on the explicit and ineffable rules and the definition of the desirable conduct, it refers to all the informal procedures, the cognitive and emotional dimensions of an organization in a common system of symbolisms which are interiorized by its members, formulating an acceptable ideology. (Barling & et al, 2000).

To the question 'how do you believe the members of a heterogeneous team of multicultural composition can be unified in harmony?' the answers converge to the following: A. By stressing the importance of the services they offer. B. By describing their necessary presence and contribution to the outcome of the enterprise. C. Financial incentives. D. Good atmosphere and working conditions in general. E. Equal treatment. F. Comprehension of the particularities of each individual member. According to the theory of Parson & Shils (1951) the cultural subsystem aims at preserving the traditional forms and their action is interpreted as decoding the symbolic meanings and values. Culture transfers the assessment framework to the society or enterprise which embodies it in its structural reality in

the form of regulative patterns. The aim is the co-ordination of individuals or teams and the avoidance of conflicting elements which hinder the performance of employees.

98% of those asked, replied that they employ or have employed in the past foreign employees in their enterprise or organization. The problems encountered, according to the answers of the sample, are frequently pinpointed to: A. Problems in communication concerning language. B. Formalities concerning their legal employment. C. Behaviour related to the different culture and customs of foreigners.

In conclusion, the study of business culture, charismatic and flexible leadership, job satisfaction, emotional skills, acquires particular importance, especially nowadays when internal and external competition, galloping technological advances have created a combination of factors which impose a new social and psychological consideration of business relationships (Reynolds & Valentine, 2004). Enterprising change is achieved by redefining goals and constant education. Enterprises which invest and aim at profit, ignoring social dynamics and the role of learning development will crush defeat in a possible economic crisis. Job satisfaction is no longer based purely on individual approaches. It should be based clearly on empirical data free from past obstructions and one-dimensional theories and approaches.

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HELPING MIDDLE MANAGERS TAKE EFFECTIVE ACTION: AN EMPOWERING LEADERSHIP STYLE

E. GALANOU*

Abstract

Contemporary management thinking is paying a great deal of attention to recruit, develop and retain managers' talent to gain a competitive edge and create an effective and high performing organization. Manager and especially middle managers have secured an increasingly important place in the strategic change management. After the peace agreement, to find a solution for the apparent lack of high performing organizations, some clarify that middle managers and their leading style are the key that reinforce the importance of innovative, entrepreneurial and strategic practices in leading and managing organizational renewal.

The author, having developed a theoretical change management approach, provides a framework of four kinds of leadership styles that middle managers can adapt to their behavior and recommends the "empowering" leadership style as the specific one for managerial performance and effectiveness. The primary data has been generated through a survey of middle managers who have participated in a Bank. The findings of the research indicate a favorable assessment that the middle managers are able to learn, to take new initiatives and change to the critical and integral "empowering" leadership style for the organization.

JEL classification: M12, M1.

Keywords: change management, competences, management development, middle managers, leadership styles.

1. Introduction

It is a fact that the pace and complexity of change has never been greater, even though this has been claimed to be the case for many centuries.

Indeed, among chief managers, there is a growing awareness of the impact of change in their organizations, of the pressure to learn a large number of new things, and the turbulence of superiority in such a business environment

So, both academics and practitioners stress the importance for behavioral competitive strategies that relies on core competences and capabilities among employees, not only because they provide the most effective response to market

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demands, but also because they are not easily copied by competitors (Hammel and Prahalad,1994;Stalk,Evans and Shulman,1992).

This exactly means that HR managers have begun with an understanding of the organization' s strategy, as well as the objectives of the unit and business problems which make managers and especially middle managers confront with an attempt to implement that strategy. The middle managers in an organization, constitute a team with high motives, which can create a realistic motivation force for the transformation and the development of the organization. (Katzenback and Smith, 1993).

Within the strategic management literature, the middle managers are considered as crucial providers of information to upper levels.

In his critique of strategic planning, Mintzberg (1994) notes that middle managers get direct qualitative information which is priceless for strategic decision – making. They also hold "tacit Knowledge" which is essential for strategy formation.

Nonaka(1988) supports that the only managerial style adapted to the intensity of market competition and speed required for efficient information creation is a "middle-up down" management. The core of this style is middle managers, well equipped with ability to combine macro and hands-on information.

Brennan defines them as "general operational managers responsible for all operational decisions and the progress of the department, they have a number of supervisors below them and work closely with the department manager" (Brennan,1991).

Decision–making focus is the criterion that Breen 1984, uses and according to his definition middle managers are "people who are largely responsible for keeping the wheels of industry and commerce rolling. They do not necessarily make the big decisions, but they do make a multitude of smaller decisions, each of which could either help or harm their organization".

Also, Total Quality Management literature insists on the crucial role of middle managers as change agents, in order to implement the new practices and the new philosophy carried by TQM.

Most of the quality experts agree that this particular level of management is the key to the successful implementation of a total quality improvement effort and the keepers of a "quality culture" (Collard,1998;Dale et. al.,1993;Ishikawa,1985; Wilkinson et al.,1993). Ishikawa (1985) considers middle managers to be the key people in quality management and the key players in breaking the *status quo.*

According to the business school-type literature, it is admitted that Human Recourses (HR) are a crucial asset, and the company development must rely on effective HR development. The middle managers are "strategic ambassadors"

helping to link the overall objectives and strategies of the organization with the task of each individual (Nonaka, 1991).

Burgelman (Burgelman 1983) emphasizes the importance of autonomous behavior initiated outside top management and therefore, middle managers, have a crucial role in formulating new strategies and trying to convince the top management of them.

As Yves- Freferic Livian and John G. Burgoyne claimed in 1997,in their book "Middle Managers in Europe" that Middle Managers are recognized as the key to company performance and at the same time are often viewed as "reluctant" to change'. They carry a large part of an organization's experience and executives are seeking to renew their competence through injection of "new blood" and education or training. They are a stable element of organizations, but also always in search of their identity.

The place of middle managers in management thinking has always been ambivalent and their role remains a controversial subject. The picture of middle management portrayed by many articles and by the business press is predominantly a gloomy one: On the one hand middle managers are viewed as critical actors of corporate performance and change. On the other hand they are almost absent as objects of analysis and descriptions.

However a part of the bulk of the literature is a pessimistic outlook from the point of the survival of middle managers as a tradition, of the effect of the information technology, new work and organization initiatives and structures of the numbers of status of the opportunities for middle managers.

Van Gils (1997) opined that middle management as a function, is an organization "in between" the top both of the organization and the workforce at the bottom. They have the task of turning the objectives into goals, targets and actions, transmitting information to lower or higher organizational levels. This implies that middle managers are recognized as the power of the human mind in organizations to identify and correct problems more efficiently than all the quality tools invested in act goal attainment.

Apparently, the «middle management» as dynamic phenomenon and a driving force in achieving competitive advantage and survival in today's rapidly changing world business environment, is in the center of attention and interest of scientists.

Recent standards indicate that management is a function and system which, is in fact necessary but not capable of ensuring the constant competitiveness and business success. The effective confrontation of the modern and prospective challenges, the vanguard and the success, apart from management, presuppose the development of the leading function of all the hierarchical levels and not only those of the top.

This view is adopted by many important researchers of the Business Science's place. Characteristically, we mention that the distinguished professors, N. Tichy,(1986) of Michigan University, J. Kotter and Kets de Vries M (1988) of Harvard Business School, Warren Bennis (1999), consider and establish that the difference between the wasted and the profitable businesses is made by the manager's leading ability.

Beer (1988), Belgard, Fisher, & Rayner (1988) opined that the process of change in an organization is not always initiated by top management, and they may not become involved until the process is well underway. The essential role of top management is to formulate an integrating vision and general strategy, build a coalition of supporters who endorse the strategy, then guide and coordinate the process by which the strategy will be implemented. Instead of specifying detailed guidelines for change at all levels of the organization, it is much better to encourage middle- and lower – level managers to transform their own units in a way that is consistent with the vision and strategy (Ntanos, 2005).

However, Garry Yukl, (2000) reasoned that successful implementation of change requires a wide rage of leadership behaviors. These behaviors can be grouped into two distinct but overlapping categories called political/organizational actions and people– oriented actions (Beer,1988;Connor, 1995; Kotter, 1996;Nadler et al.1995). The one aspect of leadership emphasizes that the Political/ organizational change is accomplished through the managers who get involved to build a broad coalition to support the change, to fill key positions with competent change agents, to use task force to guide implementation, to make crucial, symbolic changes that affect the work, to monitor the progress of change. The second aspect of leadership which support that the People- oriented Actions requisites people who ccreate a sense of urgency about the need for change, prepare people to adjust to change, help people deal with the pain of change, keep people informed about the progress of change, demonstrate continual commitment to the change, empower people to implement the change.

The leadership's exercise, is found in close connection with the productivity, in the sense that an efficient way- method of leadership influence in a way straight out in proportion to the increase of the employed productivity and it contributes to the development of their capacity. Seeing it this way, the administrative activity and the leadership's exercise are two changeable items which contribute to the shaping of the necessary administrative model that can be applied with effectiveness and with the objective goal of an increase in productivity. It is however evident, that the manager's administrative activity and the leadership's behavioral pattern, in which their administrative way is entailed, is a complicated case that no theory can contend through a simple consideration or a specific model that achieved to

satisfactorily explain and covers all the cases.

Of the leadership's basic meanings, it clearly arises that the effective leadership takes into account both the employees' expectations and behavior's motives, and the environment's conditions.

However, as Lambert (1995) notes there is "no single best type leadership". In fact, for middle managers it is important to know how to respond as leaders to the unique organizational circumstances or problems. Obviously there are wide variations in the contexts for leadership and that to be effective, these contexts require different leadership responses. Their influence depends, to a great extent, on mastery in a large repertoire of leadership practices. In other words, middle managers as leaders, need to attend to the multiple voices in their organizations and to develop a "power to" not a "power over" practice of leadership.

In any case, that means the leading behavior is constituted by the exercise of the partial roles like the person's strengthening, the guidance, the team's development etc.

Yukl,(2002) explains that "the managerial job is too complex and unpredictable to rely on a set of standardized responses to events. Effective leaders are continuously reading the situation and evaluating how to adapt their behavior to it".

In particular, some of the best-practice strategies are considered those that pay special attention to the development and the strategic role of the middle managers. The quintessence of these strategies is that by having middle managers developed, they can then act as leaders and "vehicles" of the workplace change and "facilitators" of the implementation of the visions and strategic objectives of the organization.

Mullins' (1996) identified style of managerial behavior as one of the most important factors in the successful implementation of organizational change. More specifically, he posited that a participative style of managerial behavior is more likely to be effective, as each person would be more highly committed to the implementation of change. A leader should be able to apply a leadership style that would be favorable as practice of management, for the purpose of gaining the benefits of performance of managerial work. The way the leader relates to the subordinate, influences the willingness of subordinates to adapt to change.

Mullins (1996) describe leadership as a dynamic process, suggesting that it could be altered to suit a particular management philosophy.

Many leadership styles have been proposed in the literature. The most particular ones are dichotomized, like the democratic and autocratic (Lippitt,1969), consideration and initiating structure (Fleishman,1974), employee-centered and production-centered (Likert, 1961). The stylistic characteristics associated with the

directive leaders include establishing followers as compliant subordinates by relying on such behaviors as commanding and directing, assigning goals, and punishments (Sims & Manz, 1996). Directive leaders, gather a wide range of data and their followers have little discretion over the job and are rarely allowed to participate in decision-making. Of course, this style is rooted in theory X management style (McGregor, 1960), initiating structure behaviors as articulated by the Ohio State studies (Fleishman,1953;) and punishment research (Arvey & Ivancevitch, 1980).

The role of a leader in the attainment of employees' goals has been exemplified in the path goal theory (House, 1971). The word path signifies that the leader shows the light and leads the way towards goal achievement. House and Dessler (1974) thus identified four leadership behaviors associated with this model: directive leadership, achievement-oriented leadership, supportive leadership, and participative leadership. The first two behaviors are similar with Misumi' s (1995) performance leadership styles, while the last two are synonymous with the maintenance style. In addition, research is now examining expanded behavioural patterns of leadership as a multidimensional, dynamic interpersonal process which highlights placing attention to the areas of transformational leadership styles (Avolio and Bass,1988; Bass,1985; Hollander,1978; Kuhnert and Lewis,1987). The transformational leader is one who possesses a high level of charisma and thus induces loyalty, commitment and, in some instances, devotion from followers (House et al.,1986;Conger and Kanungo,1987). Transformational leaders concentrate their effort on longer- term goals, emphasize the vision and inspire followers to pursue the vision, and foster trust and commitment (Howell & Avolio, 1993;Jung & Avolio, 1999). The historical base of this type is expectancy theory (Vroom,1964), path-goal theory (House,1971), exchange/equity theory (Adams, 1963), and reinforcement theory (Luthans & Kreitner, 1985).So, the dominant typology is the one articulated by Bass (1981, 1997) and his associates (e.g. Bass & Avolio,1993; Bass, Avolio & Goodheim, 1987) who suggest a transactional-transformational paradigm.

There is, however, a good deal of research that indicates that a considerate, participative, empowering or democratic style of leadership is generally (if not always) more effective. There are two main reasons for this.

First, the development of participative management and empowered teamworking is the part of a wider social and political trend which has raised expectations concerning personal freedom and quality of working life. These social values encourage resistance to manipulation by impersonal bureaucracies and challenge the legitimacy of management decisions. Thus participation/teamworking, reflects evolution in democratic, social and political values.

Second, participative management and empowered teamworking have been encouraged by research, which has demonstrated that this style is generally more effective, despite the fact that an autocratic style can be effective in some circumstances. A participative/empowering style can improve organizational effectiveness by tapping the ideas of people with knowledge and experience, and by involving them in a decision-making process to which they become committed. This is reinforced by the growth in numbers of knowledge workers, who expect to be involved in decisions affecting their work, and whose knowledge makes them potentially valuable contributors in this respect.

Recognition of dispersed leadership does not imply a shift of focus away from formal senior figures. It may be useful to separate notions of leadership from formal positions and prestige job titles. However it is also necessary to recognize that senior figures with prestige titles continue to exercise leadership roles and functions as well.

The notion of a wide dispersed leadership is illustrated by Warren Bennis and Burt Nanus (1985) model of the twenty-first century leadership (in which the new role of the leader is to be "as leader of leaders"). The emphasis of the leader is placed on the terms: leaders at every level, few managers, leading by vision, new directions, create distinctive competences, creative, anticipate future change, empower, inspire, facilitate, information shared with many, creating learning organization, balancing risks, leader as change agent, design flat, leader develops future leaders.

Many commentators argue that the hostile, rapidly changing competitive climate and the consequently pressured conditions of work require participative/empowering, visionary and inspirational styles of leadership (Ansoff, 1997; Duncan,1972). A traditional, autocratic, task-oriented style encourages little more than mechanical compliance with directions. The new leader, in contrast, encourages commitment, initiative, flexibility and high performance. The style and behavior of new leaders also seems more appropriate to the motivation of knowledge workers and the development of the learning organization (P. Senge et al.1999; Mike Pedler - John Burgoyne - Tom Boydell, 1997; Gherardi,1997).

Lawler (1986) claims that because so many features are altered, new design plants are "a new kind of organization". This is a grand claim to make on behalf of methods aimed at relieving the monotony of jobs designed according to scientific management principles. He seems to assess several significant items for the "new organization", the involvement and autonomy in work, and the creativity with the meaning of challenge and personal development. These needs seek fulfillment in contexts facing multiple socio-economic pressures. Addressing these needs and pressures involves individual job enrichment and self-managing teamworking. In

theory, the increased emphasis on personal development and continuous improvement contributes to organizational adaptability, product quality and customer care- to organizational effectiveness and to quality of working life.

Bennis (1989),Kanter(1979),Lawler (1986),Peters & Austin (1985) posited that empowering leadership has emerged as an idea designed to increase involvement and participation in decision making by those perceived as working in environments and delegating decision- making authority to organization members, productivity and performance. Empowering leadership is a style of leadership where followers are targeted to develop their own self-control, they are encouraged to participate in decision-making, and, to a large degree, are charged to innovate and act on their own. The role of leaders is to foster greater self-discipline, enjoyment, and motivation at work, as well as constructive thinking patterns and habits. The historical roots of this style of leadership lie in behavior self-management (Thorenson & Mahoney, 1974), social cognitive theory (Bandura,1986), cognitive behavior modification (Bandura,1986; Meichenbaum, 1977), participative goal setting (Locke & Latham, 1990), and self-leadership theory (Manz & Sims, 1980, 1990).

Summarizing, the conceptualization of leadership is derived from the historical leadership and motivation literature and consists of the following four styles: Directive, transactional, transformational, and empowering.

An identification of the valuable empowering leadership style/behavior as an integral part of organizational performance and sustainable success toward the attainment of this is what the present study is designed to achieve.

Based on the foregoing, the present research sets out to answer the following key questions:

- 1) What leadership style and leadership qualities needed to middle mangers, would the management of the organization suggest for them to drive it forward to gain ground to competitors?
- 2) What are the critical leadership styles middle managers of the organization need and are capable of in order to take the business into the anticipated future?
- 3) Given where the organization is headed for the future, how aligned is its current middle managers' leadership style to its subsequent business needs?

The hypotheses, therefore, examined in the study include:

The broad hypothesis hold by the research is that there is a need to suggest the new leadership style for middle managers in an organisation. The next stage is to answer the question if middle managers of today know anything about the new

leadership style or if it is completely unknown to them.

Clearly, the first research question seeks to find if the empowering leadership style exists in a specific degree in middle managers today.

The second research question seeks to find what leadership styles are used by middle managers today and if they can be rated as adequate enough in order for the new leadership style to develop.

The third research question attempts to find an answer to whether middle managers can be improved changing from today's leadership style and competences to the new empowering one.

This research question is answered by examining if there is possibility for middle managers to develop further so as for them to run the business with the empowering leadership style.

The way of theorising and studying social reality in these questions that the researcher decided to adopt is the quantitative approach.

2. Research method

2.1. Setting

This research uses a single case study as a strategy in order to understand or explain the phenomena, that is middle managers' leadership style, competences and job effectiveness and efficiency, by placing them in their wider context, that is the specific organization within the Greek market.

The chosen case study is a successful, large and powerful banking organization in Greece, called Emporiki Bank. It is one of the main players in the banking sector of Greece and plays a definitive role in promoting entrepreneurial and investment activities in the country and decisively contributes to the business and investment activities of the country as well as to the modernization of the banking system.

A building block of the organizational structure within Emporiki (and consequently, within the majority of banking or financial institutions) is the "Branch".

The Emporiki bank' s branches are mainly operating in 3 modes according to: (i) the capacity of their employees, (ii) their employees' job responsibilities, and (iii)the products and services they offer to the businesses and to the individuals. The subdivision of the branches is as follows:

- Full Service Branches,
- Small-and Medium-Sized Businesses and Individuals Branches,
- Individual Customers Service Branches.

The Organizational Structure of the branches defines the job roles and responsibilities of Emporiki's employees. In particular, Emporiki's middle managers are:

- Those who have managerial status,
- Those who manage small branches and have managerial status,
- Those who manage the "Businesses and Individuals" banking sectors in the Full Service Branches,
- Those who act as "Account Officers" or "Investment Consultants" or "Head Of Operations" in the Full Service Branches.

Based on their status, position and job responsibilities, middle managers have some common general characteristics:

(a) Their basic duty is to manage their departments' or workgroups' operations, to coordinate and control their workgroups' activities (with the assistance of their colleagues) in order to achieve the strategic objectives of the organization,

(b) They have the authority to allocate work to their subordinates,

(c) They have the responsibility for their subordinates' or their workgroups' activities,

(d) They are able to take initiatives and direct their workgroups towards achieving the organization's objectives,

(e) They direct and achieve results through their subordinates.

2.2. Sample

The study seeks to learn about some *target population*, which is all middle managers, by studying a *survey population* of middle managers at Emporiki Bank. The sample is constituted by 190 middle managers, in a total population of 1.176 middle managers in the Emporiki Bank.

The sampling strategy that was used is called *random stratified sampling*.

The population of middle managers in Emporiki Bank was divided up into a naturally occurring strata of the three categories, according to the organizational Structure of the branches of the Emporiki Bank.

Thus, according to official information from Emporiki Bank, the stratum disposes nowadays:

- 432 middle managers in Full Service Branches,
- 282 middle managers in Small- and Medium- Sized Businesses and Individuals Branches and
- 462 middle managers in Individual Customers Service Branches.

The answers of the sent questionnaires showed that the ones who responded were:

- middle managers in Full Service Branches,
- middle managers in Small- and Medium- Sized Businesses and Individuals Branches and
- middle managers in Individual Customers Service Branches.

As it is well- known, the size of the sample is an important issue under deep consideration, and formal statistical techniques can be used to determine the ideal sample size. Generally, the larger the sample, the greater the confidence that the researchers may have in the findings. In view of the size of the population (1.176 middle managers in Emporiki Bank), 300 questionnaires were mailed through Lotus Notes to the three stratum of middle managers. One hundred and ninety usable questionnaires were returned, for a response rate of 63,3 per cent with a reminder being done by the researcher' s phone-call. The medium response rate was explicable, and the explanation was the middle managers' lack of free time and the pressure and limitations they face in their everyday routine.

Also, it is considered that it needs to be 90 per cent certain that the "estimate" is accurate (the level of confidence is the estimate). So, the relative error of estimating the proportion sample instead of the population, is 5% for the three middle managers' categories with the probability of 90%. This calculation assumes that the data in the sample is based on the proportion of responses of these particular middle managers' attributes.

2.3. Instruments

The idea behind the operation of the current questionnaire is to explore if there is a leadership style that characterizes the middle managers in their daily professional life and if there is a correlation among leadership styles and some crucial factors such as commitment, satisfaction, communication and effectiveness.

A structured questionnaire, consisting of eight sections, was used to collect data.The questionnaires that were given to middle managers and were completed by them, are characterized as questionnaires of self-report, since they should express clearly personal ideas and experiences in the questionnaires.

The fist section describes the directive leadership style. It was selected because it is one of the four fundamental leadership styles, that the researcher is determined to make it participate in her research. There are 10 items in this questionnaire and it has a Likert five point scale ranging from 1 (Not at all,

Never/Rarely) to 5 (to a very great extent).The second section consisted of 20 items describing and measuring the empowering leadership style because it is the contemporary of the four fundamental leadership styles. The items modified and standardized from Likert' s five- point response format ranging from 1 (Not at all, Never/Rarely) to 5 (to a very great extent). In the third section, the transformational leadership style is described as another one of the four fundamental leadership styles. A total of 20 items measured the transformational leadership style. Subjects responded on a five point Likert response pattern, ranging from 1 (Not at all, Never/Rarely) to 5 (to a very great extent). Some questions were used from the multifactor leadership questionnaire form 5x –short (Bass and Avollio,1995) to measure transformational leadership style. The MLQ assesses the leadership style that motivates followers to achieve expected performance. The forth section describes the transactional leadership style, the last one of the four fundamental leadership styles, that the study determines that it is going to participate in it. A total of 7 items measured the transactional leadership style. Subjects responded on a five point Likert scale, ranging from 1 (Not at all, Never/Rarely) to 5 (to a very great extent). Some questions were used from the multifactor leadership questionnaire form 5x –short (Bass and Avollio, 1995) to measure transactional leadership style. The MLQ assesses the leadership style that motivates followers to achieve expected performance. The 5^{th} and 6^{th} sections consist of 3 items and 2 items equivalently and they describe the organizational commitment and the job satisfaction.

For the questions about the job satisfaction, adapted from the multifactor leadership questionnaire form 5x –short (Bass and Avollio,1995) was adopted, with slight modifications on the items. These were designed to measure perceived devotion. The scale was designed in Likert five- point response pattern ranging from 1 (Not at all, Never/Rarely) to 5 (to a great extent).The aspect that commitment and satisfaction can be the major determinant of the organizational performance, and the key resources of significant importance to corporate profitability and growth, presuppose competent managers.

For the needs of this current study, it is adopted that, the degree of appearance of the elements of commitment and satisfaction in middle managers' behavior demonstrates that they possess these elements in proportion to the competences oriented to managerial job and specialized knowledge.

The seventh section describes the communication and consists of 3 items.

The scale was designed in Likert five- point response pattern ranging from 1 (Not at all, Never/Rarely) to 5 (to a very great extent).

Communication is one of the basic building blocks of social interaction.

The sensitivity to understand the feelings of others, their social level, and their

education is critical for job performance whenever the focus is on interactions with people. The ability to read others' needs comes naturally to the best managers of development teams (Spencer & Spencer, 1993). In an increasingly diverse workforce, communication allows us to read people accurately and avoid resorting to stereotypes that can lead to performance deficits. Creating an atmosphere of openness with clear lines of communication is a key factor in organizational success.

For the needs of this current study the researcher adopts the principle that, the degree of existing communication in middle managers' behavior, demonstrates that they possess competences oriented to people and integrity.

The eighth section describes the effectiveness and consists of 3 items.

Subjects responded on a five point Likert scale, ranging from 1 (Not at all, Never/Rarely) to 5 (to a very great extent). Some questions were used from the multifactor leadership questionnaire form 5x –short (Bass and Avollio,1995) to measure the personal effectiveness. The competences involved in maximizing personal effectiveness can be seen as very important because they underpin all the other competences and skills involved in working with people.

Summarizing, these components will contribute to the exploration of the current middle managers' leadership style but also to the examination of what their relationship is with their existing competences which influence the managers' performance.

2.4. Procedure

To achieve the objectives of research, 57 variables/questions were chosen for the analysis. The factor analysis technique was used with the aim to explore the relationships between the different variables/questions and to summarize the information into a smaller set of new composite dimensions or factors with a minimum loss of information thus, constructing the basis for the research model. Also, they were subjected to exploratory factor analysis in an attempt to identify the underlying dimensions as perceived by the participants. A principal components analysis was conducted on each of the leadership style in an effort to reduce the data into a more manageable scales. A total of 43 questions emerged.

With regard to the level of measurements and sample size involved, the study has adequately the above requirements.

Initially, to assess the construct validity of the variables/questions, it is performed as a procedure, a confirmatory Spearman correlation and Cluster Analysis with two ways(single Linkage and Complete Linkage). Moreover, to ensure the use of Factor Analysis, the Barlett Test of Sphericity (BTS) and Kaiser-

Meyer-Olkin(KMO) test of suitability were carried out accordingly. The results indicated that the data was appropriate for the purpose of factor analysis. Statistically, this meant that there exist relationships between the variables/questions and that they can be appropriately included in the analysis.

Information on the internal consistency reliabilities of the questionnaire was recorded by Cronbach alpha, and was found that for all the groups of questions (factors) there was a fluctuation in an acceptable level, with reference point under of 0,80.

Additionally, A one-way analysis of variance (ANOVA) was used to determine if significant differences occurred between four leadership styles in their perceived importance of the factors (four leadership styles). The test determined where significant differences exist.

When for each group of questions the reliability ® is about 0,8 and p-value > 5% then, this group is considered statistically acceptable and as a result this group of questions verifies the corresponding level/concept it belongs.

Thus, it is observed that:

The four leadership styles were counted, and verified by most of the questions (from the statistical procedure 43 questions were significant from collected totally 57 in the questionnaire) that were identified originally by the researcher in order quantitatively to count these styles. In the brief interpretation it is exhibited that the determined leadership styles exist in middle managers' professional behavior in Emporiki Bank.

However, it is helpful and critical, to consider which is the level/degree that each leadership style has an impact on the middle managers' daily current working life. This is explored by Comparison between Leadership styles and an ANOVA analysis is performed to test the 4- factors-questions-variables that are found by the factor analysis procedure.

According to table 1, there is a conclusion that the Transactional leadership, which is expressed through the variable q53 (as derived by factor analysis, as the special influenced variable - question), is in a superior position compared to Transformational leadership, to Empowering and to Directive leadership, as they are expressed by the variables, q37, q30 and q5 (as they derived by factor analysis, which are the special influenced variables - questions), respectively. (q53 (transactional style) > q37 (transformational style) > q30 (empowering style) > q5 (directive style)).

Table 1. *One-way Anova.*

```
One-way ANOVA: q5; q30; q37; q53
Source    DF        SS      MS       F      P
Factor     3    242,14   80,71   65,87 0,000
Error    756    926,43    1,23
Total    759   1168,57

S = 1,107  R-Sq = 20,72%   R-Sq(adj) = 20,41%

                      Individual 95% CIs For Mean Based on
                      Pooled StDev
Level  N   Mean  StDev  --+---------+---------+---------+----
q5   190 2,558 1,323   (--*--)
q30  190 3,474 1,288              (--*---)
q37  190 3,700 0,931                       (--*--)
q53  190 4,095 0,791                             (--*--)
                   --+---------+---------+---------+-------
                   2,50       3,00       3,50       4,00
Pooled StDev = 1,107
```

Finally, the study attempts to investigate a quantitative tool to explain the main characteristics, that each leadership consists of. That is, it is going to give a distribution of some characteristics for each of the four styles of leaderships. The mean for each style of Leadership is 2.56, 3.47, 3.7, and 4.09, respectively, as shown on Table 2, indicating that our sample consists of managers with 18.5% Directive leadership, 25.1% Empowering Leadership, 26.7% Transformational Leadership and 29.6% Transactional Leadership.

Table 2. *Descriptive Statistics.*

	N	Mean
Q5	190	2,56
Q30	190	3,47
Q37	190	3,70
Q53	190	4,09
Valid N (listwise)	190	

Mean

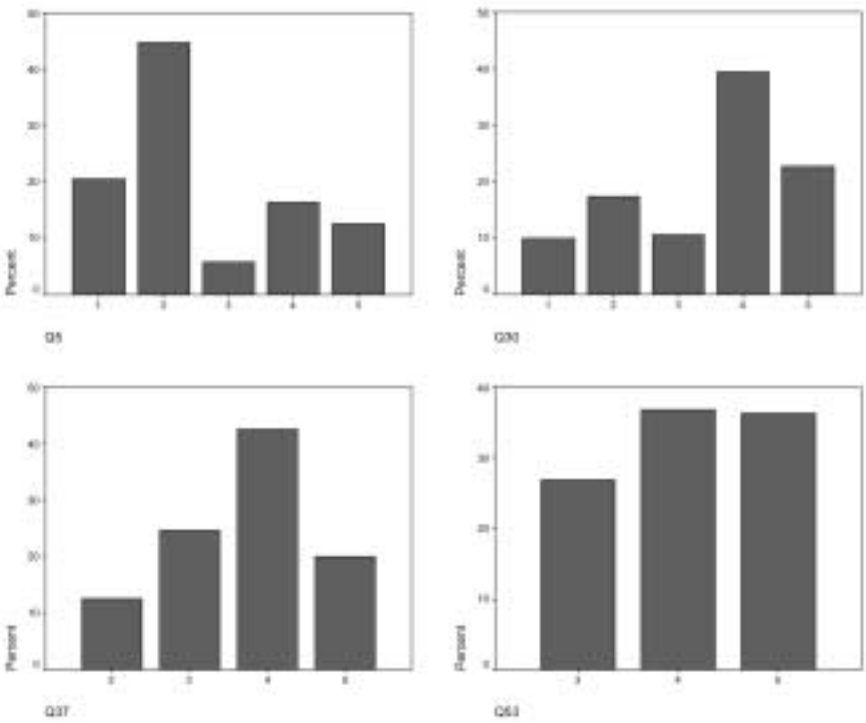
Q5 = Directive leadership style 2,56 or 18,5%

Q30 = Empowering lead/hip style 3,47 or 25,1%

Q37 = Transformational lead/hip style	3,70	or 26,7%
Q53 = Transactional lead/hip style	4,09	or 29,6%
	13,82 =	100%

From Figure 1 it is shown that the Directive Leadership is about 65% below its average level (average level is considered the 3rd level of Likert Scale), the Empowering Leadership is approximately 65% above its average level, the Transformational is 60% above its average level, and the Transactional Leadership is 65% above its average level. Thus, it is concluded that the Empowering and the Transformational and Transactional Leaderships overdo, while the Directive underlie.

Figure 1:



As it is presented in Table 3 the researcher observes that the Empowering and the Transformational Leadership are characterized by high levels of Commitment, while the same happens for the other two styles of Leaderships (Directive and Transactional) but at a lower percentage. Furthermore, Empowering Leadership has the maximum percentage (31.7%) at the 5th level of Commitment. The same

scenario is repeated for the Satisfaction; that is, from table 4, the four styles of Leaderships are characterized by high levels of Satisfaction, with the Empowering to be the one with the highest Satisfaction. The Communication seems to be highly observed at the four styles of Leadership too, as shown in table 5, with the Empowering one to be the most significant between all (37.6%). Finally, from table 6, the Effectiveness seems to be present at high percentages, in the Empowering Leadership.

Table 3. *Case Summaries.*

% of Total Sum

Q59	Q5	Q30	Q37	Q53
2	2,1%	,6%	,6%	,9%
3	24,3%	9,4%	11,4%	17,4%
4	52,3%	58,3%	58,6%	56,0%
5	21,4%	31,7%	29,4%	25,7%
Total	100,0%	100,0%	100,0%	100,0%

Q59= Commitment

Table 4. *Case Summaries.*

% of Total Sum

Q61	Q5	Q30	Q37	Q53
2	2,1%	,5%	,7%	1,2%
3	30,9%	9,2%	12,4%	20,2%
4	36,2%	38,9%	38,8%	36,6%
5	30,9%	51,4%	48,1%	42,0%
Total	100,0%	100,0%	100,0%	100,0%

Q61= Commitment

Table 5. *Case Summaries.*

% of Total Sum

Q64	Q5	Q30	Q37	Q53
2	,8%	,3%	,3%	,5%
3	24,5%	9,5%	10,7%	15,9%
4	51,2%	52,6%	53,9%	52,8%
5	23,5%	37,6%	35,1%	30,7%
Total	100,0%	100,0%	100,0%	100,0%

Q64= Commitment

Table 6. *Case Summaries.*

% of Total Sum

Q68	Q5	Q30	Q37	Q53
2	1,6%	,8%	,9%	,9%
3	23,9%	12,0%	13,8%	17,6%
4	57,4%	61,5%	61,5%	60,7%
5	17,1%	25,8%	23,9%	20,8%
Total	100,0%	100,0%	100,0%	100,0%

Q68= Commitment

3. Discussion

Directive leadership, Empowering Leadership, Transformational Leadership and Transactional Leadership style seemed to apply in the middle managers' management style of the Emporiki Bank studied. From the analysis of the data and statistical results, it is obvious that middle managers are reluctant to fully utilize their skills and competences by providing four clear and sound leadership styles to manage their employee.

This assumption is demonstrated by the existence of the transactional leadership style in middle managers at a percentage of 29,6%, of the transformational leadership style in middle managers at a percentage of 26,7 %, of empowering leadership style in middle managers at a percentage of 25,1 %, and of the directive leadership style in middle managers at a percentage of 18,5 % (see table 2). Concerning the percentages of the middle managers' leadership styles, data shows that the transactional and transformational leadership style both added together can overcome the 56% of the total of the four leadership styles, mentioning that they don't establish out-of-date management techniques. The researcher also found that the vast majority of the middle managers' sample (figure 1) has a rather clear and sound expressing way about their beliefs, their values, their relations and even further their management style. Figure 1 shows that only the Directive Leadership is about 65% below its average level (average level I considered the 3rd level of Likert scale), in contrast to the answers given by the middle managers who occurred the rest management practices.

This means that middle managers are adept at all four styles that have an impact on organizational performance, matching them with the appropriate circumstances. Middle managers in Emporiki Bank, acknowledge leadership as a

multilevel construction that involves the aspects of leader and follower in connection with the relationship between them (Graen & Liden R., Hoel W., 1982; Steers, Porter, & Bigley, 1996). So, they do not typically interact with their followers (employees) in the same manner (Hughes, Ginnett, & Curphy, 1999; Sparrowe & Liden, 1997). In addition, middle managers, as leaders, adopt different leadership styles depending on particular circumstances and adjust their tasks on the situational variables and/or relationship behaviors with their followers to increase the likelihood of success (House, 1971;Hughes et al., 1999; Reddin, 1970; Vecchio, 1982).

Given the substantial variability in the current data within the organization, underlying different leadership styles, the effectiveness of a leader in motivating and satisfying employees is likely to be influenced by the degree to which the middle managers can adapt their leadership behaviors and styles to match the characteristics of their personalities, the goal, the subordinates and the environment (House, 1971; House & Dressler, 1974; Steers et al., 1996; Yukl, 1990).

The above logical aspects finds theoretical basis on both contingency approach to leadership (e.g. LMX theory: Graen, 1976; Graen & Liden R., Hoel W.,1982; path- goal theory; House & Dressler, 1974; situational leadership theory: Hersey & Blanchard, 1969,1977) and the human resource architecture perspective (Lepak & Snell, 1999) in H. R. Department in Emporiki Bank.

The interesting finding is that Directive leadership comes last. Probably, the organization studied and realized in time the need for flexible workforce and by using more the organization's informal mechanism of setting goals and targets than the professional process of planning and implementing, influenced the employees perspectives.

Concerning the middle managers' empowering leadership style, data shows that 25,1% of the sample adopt an innovative and "open minded" administrative activity. In that case the Bank provides some useful information about if the Board of the organization could depend on the quality of the current human workforce to more advancement in future plans.This means that middle managers are adept at all four styles that have an impact on organizational performance, matching them with the appropriate circumstances. Middle managers in Emporiki Bank, acknowledge leadership as a multilevel construct that involves the aspects of leader and follower in connection with the relationship between them.

Also, the clear ascertainment of all four leadership styles in the middle managers of the Bank, along with the fact that the directive leadership style possesses the last position (18,5%), can possibly reassure the event that the strategic policy of Emporiki Bank has been expanding in the last period to create a mixture of

attention to people- oriented process with attention to the design of the middle managers' human – technical system. So, middle managers have "escaped" from the traditional directive style of management and it seems that they learn and accept the options of managing according to modernized, humanistic practices.

Building on the results of the data collected (see table 2), the research gives structure to the question of "how" middle managers work. In doing so, the information is that transactional leadership is in a superior position compared to transformational, empowering and directive leadership providing insight into the development process to change the nature of middle managers leadership role. That means, the attributes that middle managers' possessed as transactional or transformational or directive leaders have many possibilities to make them acquire the high profile of empowering leaders.

Before moving on, the really slight difference with which the transactional leadership style prevails over the transformational leadership, (although if they are both added together they can overcome the 56% of the total of the four leadership styles) leads to the conclusion that middle managers are engaged in behaviors that complement proportionately their subordinates' environment and their abilities, in a manner that compensates for deficiencies and which is instrumental to the subordinates' satisfaction and individual or work- unit performance. So, the response to the answer, "How do leaders determine whether to adopt a more transformational or transactional perspective?", it is their reading of context, and matching that with their inclinations and aspirations that determines which element of leadership to pursue. The contextual logic of "What am I supposed to do ?" coupled with the individual' s view of the world and their desire to maintain the steady status or change the equilibrium and balance in the world, drives their switching between the transformational and the transactional.

In that point, there is an active attempt to correlate more distinctly, the current leadership style with the existing competences that middle managers possess. The difference between the characteristics and features of the transactional leadership style, as dominant leadership style that middle managers use today, and the characteristics and features of the empowering style, as a determined goal (desired situation), can be explained by: 1) the variety of the middle managers' possessed competences, which are not developed in the same degree and 2) the fact that the organization recognizes the need for a powerful and durable process for high–performance identity by focusing on the customer and the continuous quality improvement and by placing high value on human resources, diversity, and the high- performance of the teams.

The "distance that has to be covered" so that middle managers can develop at a higher level not only the existent competences but also some new ones may be

accomplished via management development and through training.

Finally, with descriptive statistics (see tables 3, 4, 5, 6), there was a research over the number of middle managers percentage who possess the competences/situations of commitment, satisfaction, communication, effectiveness in the Bank. It was, thus, perceived that the middle managers with the transactional leadership style, show a lack of commitment, satisfaction, communication and effectiveness, in comparison with the equivalent percentages that are noted for the middle managers with the empowering leadership style. For instance, more intensive relationships of the factors commitment, satisfaction, communication and effectiveness are observed with the empowering leadership style. There follows the transformational leadership style, while in the third position the transactional leadership style is detected and the directive leadership style possesses the last position.

Furthermore, the numeral distinction that is noted among the percentages of each factor: commitment, satisfaction, communication and effectiveness that middle managers possess with transactional leadership style against the middle managers with empowering leadership style, is quiet small. This observation strengthens the option that the middle managers in organisation can be developed and reach the desired situation, which means their advancement and their transformation into managers with empowering leadership style.

Future research could explore differences in leadership style in an organization particularly from the followers' perspective.

Also, one future research direction is to examine middle managers' leadership styles in various organizations, taking into consideration: a) individual difference variables, such as personality that may interact with quality of management, and b) organizational culture.

Perhaps, it is interesting to focus on the timeless development of the spectrum of the middle managers' leadership styles in various sectors in the workplace market and the environmental changes in the workplace in these sectors in Greece and forward compare these sectors within the European context.

The challenge for the future research is to develop a competency model that identifies specific tasks and behaviors that manifest the competences we have identified, describes the inter-relationships among the competences, and theorizes the antecedents and consequences of the competences.

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