ROMANIAN ECONOMIC AND BUSINESS REVIEW

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THE GLOBAL ECONOMIC CRISIS: A STEP FORWARD TOWARDS BETTER GLOBAL GOVERNANCE OR GLOBAL GOVERNMENT?

Florin Bonciu*

Abstract

The paper analyzes the implications of the current global economic crisis for the decision making mechanisms and interactions among the major players. The analysis explores the possibility that the changes implied and required by the economic crisis may lead either to a better global governance or even a step closer to a possible, virtual, global government.

Keywords: *global economic crisis, global governance, global government*.

A philosophical perspective of the crisis

The world economy is witnessing for the past months the beginning of one of those significant moments when the only sure thing about the its future it's the fact it will be different. It all started like a financial crisis in the United States but, driven inexorably by the intertwined forces of globalization it soon became a global financial crisis and then, like by the book, it became an economic crisis.

A lot has been already written about the causes and consequences of this crisis but we want to deal here with a different perspective: that of the structural changes in the institutions, decision making mechanisms and balance of power at a global level.

Before going any further maybe it is worthwhile to reflect a bit on the term "crisis" itself. Coming from the Greek "krinein" – meaning "to decide" it means "an unstable or crucial time or state of affairs in which a decisive change is impending" or " a turning point for better or for worse"[1]. Therefore a first important thing is that a crisis is moment in time, it is not an era, a long period of time, a state of fact. Second, a crisis a real crisis is about a decisive change, not just about a problem to be solved while the things return to their previous state of affairs. Third, the crisis implies almost intrinsically a decision, the crisis is not the decision itself, but the decision is unavoidable because of the crisis.

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[1] www.merriam-webster.com

To sum up, a global economic crisis means, just by the very analysis of the words meaning:

- a moment of instability, of threat;
- when a decision is to be made even if we like it or not;
- the post crisis state of the economic system will be different in comparison with the initial one;
- and all of the above in a global economic context.

The global economic crisis of today and the post-war economic paradigm

After the second world war and particularly after the '80s, the developed countries adopted more or less consciously a paradigm of development based on a fast replacement of goods and ever larger use of services, beyond current needs. The paradigm itself became a sort of model for other countries, be they in Central and Eastern Europe after 1990 or in other parts of the globe, even if at a lower and limited scale (Russian Federation, China, India).

The paradigm was based on the consumerist approach but enlarged at an unprecedented scale. The mechanism was simple: people obtained easy money from credits and they bought more products and services than they needed or replaced them much faster than physical or moral depreciation. It was not unusual to see people change their mobile phone or laptop very 6 – 8 months, to replace the TV sets or DVDs every year and their cars every 3 – 4 years. The surge in demand generated a good opportunity for the supply side to work at full speed which, in turn, meant more jobs, higher salaries and more creditworthiness for the respective employees who, in turn, could obtain more credits, buy more goods and services, create or maintain jobs, and so on.

A real virtuous circle, it seems.

But, for how long ? And on what scale ? Or for how many people, for how long ?

The first problem with that model was that it was not sustainable for several reasons related on a fundamental level to the second law of thermodynamics[2]. In a simple way, this second law deals with entropy which is a measure of unavailable energy (so called bound energy, for instance energy heat energy contained in soil or sea water, an energy we can not normally use). If human society wants to put to use in its interest the unavailable energy, other free energy from outside its system has to be used. As result, the total quantity of unavailable energy in the universe increases.

[2] Nicholas-Georgescu Roegen, The Entropy Law and the Economic Process, Harvard University Press, 1971.

The above considerations may seem a bit abstract but they had a significant impact on economics and particularly led to the concept of bio-economy, or in today's jargon, to sustainable development.

And now, let's put to use the entropy concept. The paradigm described above implied the ever larger use of energy and materials for more and more goods and services to be used primarily in the developed countries and to less but growing extent in the developing ones. The result implied more entropy, that is more unavailable energy, more pollution and even climate change.

At the same time, it required the "import" of available energy from outside the initial system (the developed countries). From this perspective, globalization has been an objective phenomenon, as no high development or maintenance of high living standards in already developed countries could not be obtained without the "import" of available energy from other parts of the world which, in this way, became themselves parts of the system. The functioning of such a system requires to "bring in" more and more parts of the world and thus the system (the economic system) becomes larger and larger. In current terms we can speak in fact about a more and more integrated system rather than about a larger and larger system.

The question is what happens when all parts of the globe are integrated to a high intensity level of consumption of available energy. From the point of view of a physicist the answer is simple: the system either stops, because all energy is bound, that is unavailable. Or, we expand the system even further, that is outside this planet. One may think this is pure science fiction. But is not, and anyone can check the existence of such plans for the past 30 years.

Now let's convert this theoretical approach to the real situation. The economic system cannot continue like that. If it was not for the financial crisis, it would have been the global climate change to stop the process. Or the fact that new countries started to consume as much as the developed ones. And humankind became one time again aware that at a given technological level it is simply unsustainable to have the same consumption for all human beings on the surface of the Earth[3].

Conclusion is that the existing paradigm led to a growing instability in the economic system and that led to a crisis.

Dealing with the current crisis

In dealing with this crisis there are a number of dangers of carrying our the analysis in the wrong frame of mind:

[3] Donella H. Meadows, Jorgen Randers, Dennis L. Meadows, Limits to Growth: The 30-Year Update, Chelsea Green, 2004 .

- The first risk is that the analysis is done from a partial point of view, not a systemic one. This is not just a financial crisis, or just a energy and raw materials crisis or just a climate change crisis. It's all of them and more.
- The second risk is to oversee the paradigm crisis. It is not about how we produce and how we consume, but why we do it in the first place. In order to design a more sustainable paradigm we have to re-think what is good, what is fashionable, what is the mark of success in society. Such changes are difficult and long term, maybe comparable with the changes brought about by the Enlightment.
- A third risk is to look only for immediate problems and therefore for immediate answers. If all what we do is to save a bank, or the automobile industry or the jobs in one industry or the other, or if we just want to preserve the status quo of the world balance of power then we do not see the real problem. And we shall think about answers to other questions than the real one.

The complexity of the current crisis and the long term implications of any possible solutions require unprecedented communication and coordination among many transnational actors. While various debates already took place on various issues (like trade in World Trade Organization or climate in IPCC – Intergovernmental Panel on Climate Change of the United Nations) or summits were organized on global issues (like G – 8 or more recently G – 20 or World Economic Forum) this crisis require a true global governance in the sense of permanent collective efforts to identify, understand and address global issues that go beyond the capacity of individual states or actors to solve.

Global governance – it's a must

Global governance can be defined in a common sense as "the political interaction of transnational actors aimed at solving problems that affect more than one state or region when there is no power of enforcing compliance"[4]. In the past decades globalization itself required more and more such interactions and raised issues which could not be settled within the state centered government system.

What is different now is the scale of the problems and of their solutions. No single actor can solve this crisis because the solution requires a new paradigm which has to be widely accepted. No single summit of the 20 largest actors can solve the problem either.

Maybe for the first time ever the solution require very large competing actors like United States, Russian Federation, China and India, or new comers at that global stage like Brazil to really decide together and accept a new reality.

The G 20 Leaders Summit on Financial Markets and the World Economy which took place on November 14–15, 2008 in Washington, D.C. carried in itself

[4] www.wikipedia.org

a two parts message: United States is still an important actor on the global scale. But the world of today is more and more a multi-polar world.

Maybe the significance of the G 20 Leaders Summit on Financial Markets and the World Economy is that in the world economy of today is no longer significant who owns the car, but rather who has the steering wheel. Or who advises the one who has the steering wheel.

Anyway, this economic crisis is a significant catalyst for a serious consideration of global governance and for its operationalization, that is for accepting it openly and creating a true operational mechanism for it. The fact that global governance is a serious issue can be proved by the serious institutions dealing with it like:

- The Center for the Study of Global Governance at the London School of Economics[5] established in 1992;
- Global Governance Project established in 2001[6];
- Global Governance Watch[7];
- The Centre for International Governance Innovation (CIGI) established in 2002[8], to name but a few.

One of the most comprehensive approaches to global governance is to be found with the Global Governance Project which has a three tier approach[9]:

First, global governance as characterized by the increasing participation of actors other than states, ranging from private actors such as multinational corporations and (networks of) scientists and environmentalists to intergovernmental organizations ('multi-actor governance').

Second, global governance as marked by new mechanisms of organization such as public-private and private-private partnerships, alongside the traditional system of legal treaties negotiated by states.
Third, global governance as characterized by different layers and clusters of rule-making and rule-implementation, both vertically between supranational, international, national and sub national layers of authority ('multi-level governance') and horizontally between different parallel rule-making systems.

In view of the above, we may conclude that the crisis generated a lot of dialogue and reflection and that global consultation among all relevant actors is a must, it is already happening and by mere repetition will lead to a certain form of institutionalization.

[5] http://www.lse.ac.uk/Depts/global/
[6] http://www.glogov.org/?pageid=2
[7] http://www.globalgovernancewatch.org/about/
[8] http://www.cigionline.org/
[9] Idem, reference 6.

Global economic crisis – a step closer to global government ?

Anyway, we may go even further with the analysis and ask ourselves if the magnitude of the current crisis may even lead to more favorable conditions for a global government.

In our perception a global government is not to be seen in the near future. The strengthening of global governance is not a direct step towards global government because it happens exactly due to the lack of a global government.

What happens anyway due to the increase of the number and magnitude of issues that require consultations is the fact that sovereign actors took more and more part in decision making processes regarding global issues and thus transfer a part of their sovereignty into that inter-action.

The network of decision makers has as result of the crisis more participants and the intensity and frequency of interactions has increased substantially. IN the short run , due to pressures from general public and from industrialists it is even possible that politicians at the national level be more active, at least in large and developed countries.

Conclusions – Towards a new paradigm

The inner significance of this crisis is not its magnitude and/or implications but rather its fundamental character: it is a crisis determined by the existing development paradigm and also by the evolution of the "new economy" which made obsolete the existing institutions and regulations[10].

The real challenge is to define a paradigm that allow increase of consumption, at a global scale, in a sustainable way. What a task to accomplish !

Such a paradigm may appear and be accepted in stages and its birth may witness the pains of several successive crises if the approach is more centered on treating the effects rather than the causes.

Such a paradigm will involve a correlation of institutions, regulations and access to money with the information based economy and with the large scale participation of an ever greater number of people of the world to economic processes. It is not be Heaven on Earth, it is just about being sustainable.

The solution to this crisis is not be found with more or less state intervention in economy but rather with the acceptance and participation to what Schumpeter called "creative destruction."[11]

The solution is to be found maybe more than ever before in cooperation and not in confrontation as this is the only way on which the ones which have been less exposed to crisis will be of help to those that were more exposed[12].

[10] Mary Kaldor, Crisis as a Prelude to a new Golden Age, www.opendemocracy.net, 31.10.2008
[11] Joseph Schumpeter, Capitalism, Socialism, Democracy, Harper, New York, 1975.
[12] George Soros, The Worst Market Crisis in 60 Years, Financial Times, January 23, 2008

At the same time, the solution, the new development model is to be found in a holistic approach that will search not only for economic solutions but also to solutions for new challenges: global governance, climate change, the energy revolution, and the rise of a multi-polar order[13].

[13] Andre Wilkens., The global financial crisis: opportunities for change, www.opendemocracy.net, 10.11.2008

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INFLATION CONVERGENCE IN CENTRAL AND EASTERN EUROPEAN ECONOMIES

Alina M. Spiru [*]

Abstract

In this study, the degree of convergence of inflation rates of Central and East European economies to a variety of measures of European norm inflation is assessed using a range of econometric techniques. These include unit root testing based upon time series and panels of data and – an innovation to the pertinent literature – tests of nonlinear convergence. The results suggest that while convergence can be revealed in a number of cases, there is some sensitivity associated with the testing framework, in particular whether time series or panel methods are used. Furthermore, the inflation convergence performance of the Central and Eastern European countries is conditional on the chosen inflation benchmark, the composition of the panel and the correlations among members. Moreover, by conducting a battery of linearity tests, it is found that nonlinear inflation convergence is virtually ubiquitous for the period that includes the accession of the Central and Eastern European former transition economies into the EU.

Keywords: *inflation convergence, panel data, linearity tests*

1. Introduction

After joining the European Union, the main goal for Central and Eastern European (henceforth, CEE) countries is to prepare for monetary union membership. To ensure that participation of new member states contributes to the stability and viability of the system, their entry into EMU is conditional on the fulfilment of the Maastricht criteria for nominal convergence. These criteria impose a number of benchmark values for inflation, interest rates, government deficit and public debt.

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This paper conducts an empirical inquiry focused on one of the facets of nominal convergence, specifically the convergence of inflation. Compliance with this convergence criterion is intrinsically related to the effectiveness of monetary policy in achieving disinflation.

Eleven countries form the sample under scrutiny in this study. In terms of macroeconomic policy design, they have been characterised by a variety of experiences: ten of them joined the EU in May 2004, eight after successfully completing the transformation of their economies (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovak Republic and Slovenia), two others (Cyprus and Malta) after years of experience as market economies. The eleventh country of the sample is Romania, which joined the EU in January 2007. The composition of the sample portends a challenging assessment that will combine elements of comparative analysis and country-specific coverage.

The prospects of these economies as candidates for monetary integration will depend strongly on the ability to align themselves with the institutions and macroeconomic policies of the existing EMU members. Although structural change and institutional adaptation to EMU norms are still in progress, convergence to EMU standards has gained momentum. Therefore, the analysis conducted in this paper represents a stock-taking empirical exercise, whose purpose is twofold. First, it examines the extent to which the candidate countries have been able to achieve a certain degree of convergence to EMU standards. Second, it sheds light on convergence to group averages, relevant to assessing a number of common features.

The Maastricht Treaty states an explicit target in terms of convergence of inflation rates: the inflation rate of a country that aims to join EMU should not exceed by more than 1.5% the average of the three lowest inflation rates in the Euro zone. Since the beginning of the 1980s until the introduction of the Euro in 2002, inflation rates have declined within the Euro area. After the inception of the single currency, however, a proliferating inflation divergence has been observable. The pertinent literature is yet to discern whether this divergence is only short natured or represents the manifestation of a more structural phenomenon. A forthcoming EMU enlargement, mostly with CEE countries, is likely to add new dimensions to this stylized fact. Two questions become relevant in this context. First, what is the degree of inflation convergence towards EMU benchmarks that currently characterises the future members of the monetary union? Second, what is the anticipated effect of the EMU enlargement on the inflation rates of the current members? The empirical analysis conducted in this paper endeavours to provide an answer to the first question, while highlighting some issues that may be relevant in tackling the second. To this end, the methodological framework employed here builds on the literature on growth convergence and brings together several econometric techniques to address the stationarity properties of inflation differentials. The main contribution of the

analysis performed in this paper consists in employing an augmented framework, which features two classes of econometric techniques: time series and panel, while encompassing two modeling paradigms: linear and nonlinear. The use of the nonlinear approach in this context is novel and provides results that generate new insights into the inflation convergence process. Moreover, this study covers the period January 1993 to December 2004, which extends the time span used in other empirical analyses in this vein, in an attempt to draw more reliable inferences. In terms of country coverage, I include more countries and form more panels, in order to gain a better understanding of the impact of institutional and regional characteristics on convergence, while also paying attention to country-specific factors and cross-country differences.

The organisation of paper is as follows. After this introduction, a selective review of inflation convergence studies is presented in section 2, with an aim to integrate this study into the existing literature. Section 3 focuses on methodology. Section 4 presents the data and reports the empirical findings of the analysis, using conventional and more sophisticated approaches to the testing of order of integration. Section 5 discusses the results from a policy perspective. Section 6 concludes.

2. Empirical Studies on Inflation Convergence: A Review

The primary interest in this section is in reviewing the techniques employed to examine inflation convergence. From a methodological point of view, one can classify existing attempts into two broad categories: time series approaches and panel studies. While the first approach has dominated most of the early contributions, the second has started to gain popularity when the enhanced power of panel methods over their univariate time series counterparts was widely documented.

The time series-based strand of the literature examines inflation convergence by employing several techniques. For example, Koedijk and Kool (1992), who assess the degree of convergence in inflation rates of the EMS members, utilise a variant of the principal components method. Hall et al. (1992) and Holmes (1998) estimate models with time-varying coefficients. Other studies (Caporale and Pittis, 1993; Thom, 1995; Siklos and Wohar, 1997; Holmes, 1998; Westbrook, 1998; Amián and Zumaquero, 2002; Mentz and Sebastian, 2003) employ cointegration analysis to identify common stochastic trends in inflation rates. In these papers, the existence of a common stochastic trend is regarded as evidence of convergence. To examine inflation convergence among EMU countries, Busetti et al. (2006) use a sequence of univariate and multivariate unit root and stationarity tests that take into account correlations across countries.

A second strand of the literature uses panel unit root and cointegration tests (see, for example, Kočenda and Papell, 1997, Holmes, 2002, Beck and Weber,

2005). The main conclusion that can be drawn by examining the evidence on inflation convergence among the EU (or EMU) economies is that the results are sensitive to the time interval considered and institutional arrangements. It is widely agreed that participation in the Exchange Rate Mechanism (ERM) has fostered inflation convergence, while the introduction of a single currency and a common monetary policy generated a certain degree of divergence.

The eastward enlargement of the EU has generated a growing interest in the macroeconomic convergence of CEE economies. The extent of this convergence has been assessed from two angles: first, within their own groups, formed based on geographical and/or institutional criteria (Kočenda, 2001; Kutan and Yigit, 2002) and second, with respect to EU benchmarks (Brada and Kutan, 2002; Brada et al., 2002; Kutan and Yigit, 2002 and 2004; Kočenda et al., 2006). From a methodological standpoint, some of the above mentioned studies employ time series testing techniques, while others attempt to mediate the short time series dimension of the sample by applying panel methods. Moreover, nominal convergence is examined together with real convergence. The findings of these studies suggest that the CEE countries have surpassed the difficulties of the macrostabilisation process and started moving in the same direction as the EU economies. However, the results are sensitive to the methodology employed.

3. Methodology

The concept of convergence is inherently related to that of economic growth. Therefore, definitions and methodological approaches to convergence are rooted in the empirical growth literature, pioneered by Baumol (1986), Barro (1991) and Barro and Sala-i-Martin (1991, 1992). This literature defines two types of convergence: absolute and conditional. Absolute convergence implies that, independent of their characteristics, different economies will eventually converge to the same long-term level. With conditional convergence, all countries grow to their own steady state, which depends on underlying, country-specific, economic factors.

In two seminal contributions, Bernard and Durlauf (1995, 1996), drawing on Carlino and Mills (1993), develop the concept of "stochastic convergence". This entails that, in terms of economic variables, differences between countries will always have a transitory nature. Hence long-run forecasts of the differential between any pair of countries converge to zero, as the forecast interval increases (Oxley and Greasley, 1997).

Stochastic convergence can be present only if shocks to the disparity between two countries are temporary, in other words their effects dissipate over time. Hence, the stochastic approach to convergence is characterised by a testable inference: the differential series is stationary. Nonstationarity of the differential series implies that any shocks to this relative variable will have a long-lasting

effect, accentuating the gap between countries. Evans and Karras (1996) show that in order to investigate the presence of stochastic convergence one can conduct standard unit root test for the differential series. If the null of a unit root cannot be rejected, then there is no convergence between the two countries involved in the calculation of the differential. Alternatively, if stationarity is supported by the results, then convergence is present.

Testing inflation convergence involves studying the dynamic properties of the inflation differential between two economies. If we let $\pi_{i,t}$ denote the inflation rate of country i at time t, then the inflation differential ($d_t^{i,b}$) between country i and a benchmark country b can be calculated as:

$$d_t^{i,b} = \pi_{i,t} - \pi_{b,t} \qquad (1)$$

Stochastic convergence of country i's inflation rate towards the benchmark value implies that:

$$\lim \mathrm{E}\left(d_{t+\tau}^{i,b} \mid \Omega_t\right) = \alpha, \ \forall t \ (2) \ \tau \to \infty$$

where Ω_t denotes the information set available at time t, comprising current and past observations on the differential series. For $\alpha = 0$, expression (2) mirrors the definition of absolute inflation convergence in a stochastic environment, in the spirit of Bernard and Durlauf (1996). This definition states that absolute convergence entails equality of long-term forecasts of the two inflation series at any fixed point in time. If, in (2) above, α is different from zero, then convergence is conditional or relative (Durlauf and Quah, 1999), implying that the two inflation series converge towards a time-invariant equilibrium differential.

Empirical test for stochastic inflation convergence can be implemented in a time series framework by examining the univariate properties of the inflation differential using a unit root test. Both absolute and conditional convergence require a stationary inflation differential. While absolute convergence implies that the auxiliary regression of the test does not include an intercept term, conditional convergence does not impose this restriction. As argued by Busetti et al. (2006), a simple time-series representation of conditional convergence is provided by a first-order autoregressive process:

$$d_t^{i,b} - \alpha = \rho\left(d_{t-1}^{i,b} - \alpha\right) + \varepsilon_{i,t} \quad (3)$$

which, parameterised in first differences, has the following expression:

$$\Delta d_t^{i,b} = \gamma + \left(\rho - 1\right) d_{t-1}^{i,b} + \varepsilon_{it} \qquad (4)$$

where $\varepsilon_t^{'}$s are a sequence of martingale difference innovations, ρ represents the speed of convergence and $\gamma = \alpha\left(2 - \rho\right)$ (where α is defined in (2) above).

Representation (4) illustrates that the value of the growth rate of the inflation differential in the current period is a negative fraction of the inflation gap between two countries in the previous period, after allowing for a permanent difference (γ).

Expression (4) above corresponds to the maintained regression of the standard DF unit root test. However, in empirical studies on inflation convergence, the ADF test, a generalisation of the DF test that accounts for serial correlation in the residuals, is a more suitable representation. Commonly applied in studies of inflation convergence, the auxiliary regression of the ADF test requires additional lagged values of the inflation differential $\Delta d^{i,b}$ in specification (4) above, having the following expression:

$$\Delta d_t^{i,b} = \gamma + (\rho - 1)\, d_{t-1}^{i,b} + \sum_{j=1}^{p_i} \varphi_{ij} \Delta d_{t-j}^{i,b} + \varepsilon_t \quad (5)$$

Using representation (5) above, inflation convergence can be examined by conducting a unit root test, which evaluates the null hypothesis $H_0 : \rho = 1$, against the alternative $H_A : \rho < 1$. Müller and Elliott (2003) argue that the power properties of this unit root test depend on an initial condition, that is how far $d_0^{i,b}$ is from α. If the hypothesis under scrutiny is that of absolute convergence and consequently α is assumed to be equal to zero, a test based on an ADF regression with no intercept term performs relatively well, with a high initial value of the differential leading to enhanced power properties of the test (see Harvey and Bates, 2003 and Müller and Elliott, 2003, for a formal demonstration and Busetti et al., 2006, for an empirical illustration). As a result, a specification that does not include a constant term is appropriate for testing the null of no convergence against the alternative hypothesis that two inflation series are converging in absolute terms, since it provides an improvement in power. However, testing absolute convergence is of interest when inflation differentials pertain to countries that are already members of a monetary union. In this study, I will employ the conditional variant of convergence, this being appropriate in view of CEE countries' inflation history since the beginning of transition.

As mentioned in Section 2, the methodological approach employed in empirical studies of convergence has gradually moved on from time series to panel data techniques. The latter provide more sophisticated devices. In a panel setting, the time series dimension is augmented with the information contained in the cross-sectional one. This implies that nonstationarity from the time series can be dealt with and combined with the increased data and power that the cross-sectional dimension brings to the analysis. As a result, the inference becomes

more accurate. Such outcome is particularly important in the case of CEE economies, where time series data are available over a short span, but similar data may be obtained across a cross-section of countries.

Panel unit root tests not only mediate the time dimension problem that arises in small samples, but are also characterised by enhanced power properties in comparison with their univariate counterparts. It is now a widely documented fact that commonly applied standard unit root tests, such as ADF, have low power in distinguishing the unit root null from a stationarity alternative, tending to over-reject the alternative of stationarity. In a convergence testing framework, this is equivalent to offering more empirical support to divergence between countries.

In this study, two panel unit root tests are conducted to assess the extent of convergence of CEE inflation rates. The first is the test proposed by Im, Pesaran and Shin (IPS, 1997, 2003), a test that addresses the convergence properties of a panel as a whole. The second test employed here, developed by Breuer, McNown and Wallace (SURADF, 2002) sheds light on the convergence performance of each panel member. These two testing frameworks complement each other, enabling one to derive convergence results not only for the panel as a whole, but also for individual countries. Their features facilitate a comprehensive analysis, which can focus on country-specific aspects. Moreover, both tests allow for heterogeneity in convergence rates.

To conduct the IPS test, an ADF-type regression is specified and estimated for each inflation differential, as follows:

$$\Delta d_t^{i,b} = X_{it}^{'}\gamma_i + \phi_i d_{t-1}^{i,b} + \sum_{j=1}^{p_i} c_{i,j}\Delta d_{t-j}^{i,b} + u_{i,t} \quad (6)$$

where $i = 1,...,N$ and $t = 1,...,T$. N is the cross-sectional dimension of the panel, while T is the time dimension. X_{it} is a vector of deterministic components. In the framework of equation (6), the null hypothesis of a unit root, $H_0 : \phi_i = 0$, $\forall i$, is tested against the alternative $H_A : \phi_i < 0$, for $i = 1,...,N_1$ and $\phi_i = 0$, for $i = N_1 + 1,...,N$. Here, $\phi_i = \rho_i - 1$, where ρ_i is used as a measure of the speed of inflation convergence. The specification of the vector of deterministic components (X_{it}) is important in empirical applications. If no deterministic components are allowed in (6) above, then the IPS procedure tests absolute convergence between inflation rates, which is equivalent to assuming that the two inflation rates used in the calculation of the differential are characterised by identical steady states. When a constant term is included in (6), then one can distinguish two cases. In the first case, the constant is restricted to be equal across panel members ($X_{it} = 1$ and $\gamma_1 = \gamma_2 = ... = \gamma_N = \gamma$), which suggests that inflation rates are characterised by the same growth rate. The second case allows different constant terms, which is

equivalent with a model with fixed effects, suitable for representing conditional convergence. If the vector of deterministic components includes a constant and a term trend, where the constant is not the same across panel members, then there is a time-changing disparity between inflation rates

The empirical analysis conducted here uses a constant term as the only deterministic component in the specification of (6), therefore adopting a model with fixed effects. This representation allows for idiosyncratic features and heterogeneity across countries.

The IPS t -bar test statistic can be computed as an average of the *t*-statistics on the coefficients ϕ_i resulted from the estimation of ADF-type maintained regressions, illustrated in equation (6), for all countries in the panel.

An important drawback of the IPS testing technique is that it builds on the assumption that the error terms u_{it} in (6) are individually and identically distributed, IID (0, σ_ε^2). If the residual terms are contemporaneously correlated, this assumption is no longer valid, and the IPS test is characterised by significant size distortions, as demonstrated by Maddala and Wu (1999) and Strauss and Yigit (2003). To account for cross dependencies across panel members, Im, Pesaran and Shin (op.cit.) suggest the following solution: introduce a common time effect by decomposing the error term in (6) into a common time effect and an idiosyncratic random effect that is independently distributed across groups. To remove the common time effect, one needs to subtract the cross sectional mean from each panel member. However, simple demeaning to account for the presence of contemporaneous cross correlations does not remedy the size distortions in a satisfactory way (Strauss and Yigit, 2003).

Taylor and Sarno (1998) argue that panel unit root tests that focus on the stationarity properties of the panel as a whole, like the IPS test, have an important drawback: the null of (joint) nonstationarity might be rejected due to strong stationarity of one panel member, which induces rejection of the unit root null. This critique pertains to the results delivered by the IPS test, in cases where the panel under scrutiny comprises a mixture of convergent and non-convergent inflation rates. When the results of the IPS test are interpreted, if the sample test statistic exceeds its critical value(s), it may not be the case that all members of the panel are stationary. The IPS testing framework does not allow one to distinguish how many and which members of the panel contain a unit root, which may constitute a serious drawback.

One of the objectives of the analysis conducted here is to shed light on the individual experiences, in terms of inflation convergence performance, of the selected countries, while exploiting the advantages of panel approaches over univariate ones. To this end, I complement the IPS testing framework with the series specific SURADF panel unit root test. By employing a SUR framework,

this test offers an improvement in the power of univariate time series tests, without sacrificing much series-specific information.

To conduct the SURADF test, ADF-type regressions, illustrated in (6) above, are specified for each panel member (similar to IPS). In a subsequent step, these regressions are estimated using a seemingly unrelated regression (SUR) approach, and individual unit root tests are conducted for each member of the panel. The SUR framework allows taking into consideration contemporaneous cross correlations among panel members, circumventing one of the drawbacks of the IPS test. The trade relations and institutional arrangements that exist among the CEE countries considered in this paper suggest that a panel unit root test that accounts for cross correlations is required to ensure an accurate assessment. Since it accounts for cross correlations among panel members, which are specific to each panel, the SURADF test statistic is characterised by a nonstandard distribution, and so the critical values of this test must be generated by Monte Carlo simulations tailored to the panel under scrutiny.

4. **Data and Empirical Results**

The dataset comprises monthly observations on prices (represented by CPIs) for: Cyprus, the Czech Republic, Estonia, Germany, Greece, Hungary, Latvia. Lithuania, Malta, Poland, Romania, the Slovak Republic and Slovenia. The data are obtained from *International Financial Statistics* compiled by the IMF. The data cover the interval January 1993 to December 2004. The pre-1993 period is excluded from analysis for two reasons: first, in order to avoid the early years of transition and the instability that characterised them and second, for countries which have gained separate identities only recently (like the Czech Republic and Slovakia), data are available only since January 1993. Therefore, to construct balanced panels, in line with the requirements of the panel unit root tests conducted in this study, the beginning of the sample is fixed at January 1993.

Based on the monthly CPI observations, I calculate annualised[14] inflation rates as log differences:

$$\pi_t = \ln CPI_t - \ln CPI_{t-12} \qquad (7)$$

Six panels of countries are constructed as follows: *CEFTA*[15] (the Czech Republic, Hungary, Poland, the Slovak Republic and Slovenia), the extended

[14] Since I am using monthly observations on the consumer prices, annualisation is congruent to deseasonalisation

[15] CEFTA represents the acronym for the Central European Free Trade Agreement, signed by former Czechoslovakia, Hungary and Poland on December 21, 1992. On March 1st, 1993, CEFTA goes into effect. On January, 1st, 1996, Slovenia joins CEFTA as a full member. On July 1st, 1997, Romania also joins CEFTA.

CEFTA (*ECEFTA*: the Czech Republic, Hungary, Poland, Romania, the Slovak Republic and Slovenia), the Baltic States (*BALTICS*: Estonia, Latvia and Lithuania), the first wave group[16], comprising only former transition economies (*FIRST8*: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, the Slovak Republic and Slovenia), the complete first wave group (*FIRST10*: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia) and a panel that includes all former transition economies (*ALL9*: the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, the Slovak Republic and Slovenia). Therefore, I form panels based on both institutional and geographical criteria.

To examine convergence, I calculate inflation differentials of the selected countries with respect to the following four benchmarks: Germany, Greece, the Euro area and their group average, where the groups are those described above. Germany is chosen as a benchmark to represent the core EU standards, since it has a remarkable experience in terms of low inflation. Greece is chosen to represent the peripheral countries of the union. The third benchmark is a weighted average CPI for the Euro area, reported by Eurostat.

Table 1 provides some descriptive statistics for the inflation rates considered. The averages suggest that the lowest mean inflation rate prevailed in Germany, followed by the Euro zone. Not surprisingly, inflation tended, over this period, to be higher in the transition economies than elsewhere.

Univariate Unit Root Test Results

To test for mean-reverting behaviour (beta convergence), standard ADF unit root test are first conducted. They serve as benchmark for comparison for the results of subsequent panel unit root tests and assist in the selection of the lag order for these tests.

If we can reject the null hypothesis of a unit root and therefore detect stationarity (and convergence), any shock that causes deviations from equilibrium[17] has a temporary nature and its impact will eventually die out. The speed of this process can be derived using the estimated value of the speed of convergence ($\hat{\rho}$). Given $\hat{\rho}$, half-lives (HL) can be calculated using the following formula:

[16] I adopt this terminology in order to distinguish between the first wave of new member states, which entered EU on 1 May 2004 (Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, the Slovak Republic and Slovenia) and the second wave, which comprises Bulgaria and Romania.

[17] Proxied, as mentioned above by the benchmark value of inflation.

$$HL = \frac{\ln(0.5)}{\ln(\hat{\rho})} \qquad (8)$$

The results of the ADF test suggest that, with only a few exceptions, the inflation differentials examined here are unit root processes. The only country which appears consistently not to have a unit root in the inflation differential is Romania; this is likely due to its particularly large average inflation differential. However, since this limited support for convergence may be due to the low power that characterises the ADF test, in what follows I present results derived from a panel framework.

Panel Unit Root Test Results

Table 3 reports the results of the IPS t-bar test for each inflation benchmark and panel of countries. After calculating the standardised version of this test statistic, its level of significance is determined using critical values drawn from a standard normal distribution.

[insert Table 3 here]

The null hypothesis of a unit root is rejected for all benchmarks and lag values for four panels: BALTICS, FIRST8, ALL9, FIRST10. However, for the CEFTA and ECEFTA panels, the results are conditional on the selected lag length and benchmark inflation rate. It may be the strong rejection of nonstationarity for the Baltic States that drives these results, if we look also at the CEFTA and ECEFTA results.

[insert Table 4 here]

Table 4 presents two measures of convergence: the speed of convergence (ρ) and the corresponding half-life (HL). The convergence coefficient (ρ) represents a measure of the speed of convergence. The closer ρ is to 1, the slower the convergence of the inflation rate to the chosen benchmark value. Interpreted in terms of the half life of shocks, convergence is faster when the value of the half life is smaller, which implies that the impact of a shock causing a deviation from equilibrium (proxied by the benchmark value) will die out more rapidly. Table 4 illustrates that regardless of the inflation benchmark considered, convergence is faster in the case of the new EU members that had a longer history as fully-fledged market economies, Cyprus and Malta. They are followed by Slovakia, Slovenia and two of the Baltic States, Latvia and Lithuania. Convergence is

definitely slower in the cases of Hungary, Poland, Czech Republic, Romania and Lithuania.

The second panel of Table 4 reports average values of the speed of convergence and half lives for the six panels examined in this study. They illustrate that when the benchmark inflation value is the German inflation, convergence is fastest for the panel that comprises the new EU members (FIRST10), followed by CEFTA. The Baltic panel is characterised by the slowest convergence. A change in the benchmark value of inflation to the Greek inflation changes the ranking, with CEFTA and ECEFTA panels showing the fastest convergence and the Baltics the slowest. If the benchmark is an average Euro zone inflation rate, then convergence is fastest for the new EU members (FIRST10), followed by CEFTA and ECEFTA.. The panel with the Baltic states is again characterised by the lowest speed of convergence.

In view of the sensitivity of some of the above results to lag length, and to look at the inflation convergence performance of each country, it is instructive to employ also the SURADF test, which allows a more flexible approach in terms of lag specification. In the representation of this test, I use different lag structures for each panel member, where the lags are the same as those used in the specification of the univariate ADF test. They are determined, as before, by employing the data dependent, top-down procedure devised by Campbell and Perron (1991). Table 5 displays the findings of the SURADF testing approach when inflation convergence is tested against a German inflation benchmark.

When the benchmark is Germany, convergence in inflation rates occurs consistently for Poland and Slovenia (in five out of six panels) and also for two Baltic economies, Estonia and Latvia (in four out of six panels). In the case of the new EU member states with tradition as market economies, convergence in inflation rates to the German benchmark occurs for Cyprus, while Malta is close to converging. The results indicate that the Slovak Republic is also close to converging, while the Czech Republic, Hungary and Romania do not exhibit convergence in any of the panels. Lithuania displays convergence only in the Baltics panel, which shows the greatest degree of homogeneity among all panels considered in this study, with all three members converging in their inflation rates to the German benchmark. These findings are, in general, in accord with those of Kutan and Yigit (2004), who study the inflation convergence performance of the ten new EU member states with respect to Germany using the SURADF test. However, they consider a shorter sample period, which ends in December 2003.

Table 6 illustrates the inflation convergence performance of the countries included in this study when the benchmark economy is represented by Greece, the last country to join the EMU structures. In comparison with Germany, Greece exhibited higher inflation rates throughout the interval under scrutiny. In various empirical assessments, Greece is generally viewed as a peripheral EMU economy.

This being so, the macroeconomic performance of the Central and Eastern European EMU candidates is often compared to that of Greece.

When the benchmark is Greece, convergence in inflation rates occurs consistently for Estonia and Latvia (in all panels that include them). Poland also exhibits convergence, while Slovenia is close to converging. Similar to the case when Germany is selected as benchmark, the Baltic panel displays the highest degree of homogeneity, with all three Baltic States converging. However, when other countries are included, Lithuania ceases to exhibit convergence. The change in benchmark does not alter, in qualitative terms, the results obtained in the cases of the Czech Republic, Hungary and Romania. Slovakia is, in all panels, closer to converging than these three economies. The inflation rates of Cyprus and Malta do not exhibit convergence to the Greek one, which shows that, in their cases, a change in the benchmark matters for the inflation convergence performance.

When a Euro area average inflation is the benchmark value, convergence occurs in the cases of Cyprus, Estonia, Latvia, Poland and Slovenia. The Baltic panel exhibits again the highest degree of homogeneity, in that all three inflation rates converge to the Euro area benchmark. Slovenia converges, albeit at 10%. Lithuania is close to convergence. Negative results in terms of convergence are uncovered for the Czech Republic, Hungary, Malta and Romania.

To summarise the results reported so far, the empirical evidence consistently shows that a number of countries, namely Estonia, Latvia and Poland display inflation convergence regardless of the Euro area inflation benchmark considered. At the other end of the convergence spectrum, the Czech Republic, Hungary and Romania do not exhibit convergence in inflation rates to any of these benchmarks. The evolution of inflation in Romania, with values that peaked several times as a result of several unsuccessful stabilization attempts and remained in the double-digit range until 2004, may justify its poor performance in terms of inflation convergence. In the cases of Czech Republic and Hungary, an explanation is more difficult to find. The Czech inflation rates have constantly been below those recorded by Estonia, which displayed a consistent inflation convergence. Therefore, in the light of this argument, an explanation may be sought in the way inflation convergence is defined from the viewpoint of an applied econometrics approach, as a process of lessening of differentials. This may be complemented with insights offered by a look at patterns in the evolution of inflation over the sample under scrutiny, which reveals a rather volatile evolution of Czech inflation over the period analysed, with values that have been much below the benchmark in some years and much above them in others. For Hungary, a possible explanation also lies in the inflation patterns during the interval under scrutiny, with several reversions in trend and a rather disappointing inflation performance over the past few years. Compared with the other countries considered in this analysis, Lithuania has represented an outlier in terms of inflation performance. In spite of this, the results indicate that in a panel which also includes the other two

Baltic States, Estonia and Latvia, Lithuania exhibits convergence in terms of inflation to all three benchmarks considered. This may be due to the strong correlations that exist among the three Baltic economies, correlations that have been accounted for by the testing methodology applied in this study.

A fourth benchmark employed in this study is represented by the average inflation of the groups considered. The results of inflation convergence to the group average illustrate that the strongest convergence occurs in the case of the Baltic States (Estonia, Latvia and Lithuania), which form the most homogeneous panel, a finding that reinforces previous results. At the other extreme are situated the CEFTA and ECEFTA panels, where, with the exception of Poland, the member countries do not converge in their inflation rates to the group average. The panel that comprises the eight CEE economies which joined the EU in May 2004 also evinces a high degree of homogeneity, in that convergence to the group's average inflation occurs for five countries (the Czech Republic, Estonia, Hungary, Poland and the Slovak Republic), while the other three (Latvia, Lithuania and Slovenia) are characterised by divergence. This result supports, to some extent, their admittance into EU as a group. However, one can notice that countries that exhibit convergence to this group's inflation average are, with the exception of the Slovak Republic, those who formed the initial first wave of accession economies. Latvia and Lithuania were initially members of the second wave. Their upgrading to the first wave of accession was decided based on their macroeconomic performance. However, their performance in terms of convergence to the average inflation of the group may suggest that their inflation experiences may have been different from those of the other first wave CEE economies.

Adding Romania to the group that comprises the other eight former transition countries does not significantly change the results, except for one rather puzzling outcome: convergence in inflation rate to the group's average also occurs in the case of Romania, besides the Czech Republic, Estonia, Hungary and Poland. As it is evident that Romania represents more of an outlier within this group, the impact of its high inflation rates on the group's average may solve the puzzle.

The panel that comprises the ten new EU members is also characterised by homogeneity, with most of its members (the Czech Republic, Estonia, Hungary, Lithuania, Malta, Poland and Slovenia) converging to the group's average inflation. This result tends to support their EU accession as a group.

The Case for Nonlinear Inflation Convergence

To complement the results based on linear representations reported so far, a new dimension is added to the empirical analysis performed. Specifically, the potential presence of nonlinear features in the inflation convergence process is investigated. A nonlinear adjustment is characterised by changes in the speed of

convergence. Panel methods, which belong to the family of linear modelling frameworks, cannot account for this feature. In the applied econometrics literature, nonlinear representations have mainly been used to illustrate the dynamic adjustment of the real exchange rates to equilibrium or the dynamics of macroeconomic variables over the business cycle. However, their main features make them suitable for assessing potential changes in the speed of inflation convergence.

Intuitively, a nonlinear adjustment makes sense if one considers the EU accession of the CEE economies. Nonlinearities may have been induced by policy actions, when more effective disinflationary measures have been implemented by monetary authorities to ensure compliance with EU benchmarks. Such policy interventions are likely to increase the speed of convergence, as their main objective is to bring inflation down when it surpasses a certain threshold. Moreover, the nonlinear adjustment induced by policy actions may also be characterised by asymmetry, as policy makers are more concerned about increases in inflation than declines. Furthermore, as suggested by Killian and Taylor (2001) for the case of exchange rates, heterogeneity of economic agents' beliefs and expectations could induce nonlinearity. A similar argument may apply also in the case of inflation rates, given the crucial role played by inflation expectations, especially in the case of the European former transition economies. The potential for nonlinear convergence of CEE countries' inflation rates towards EU benchmarks is examined here in an attempt to shed more light on the results delivered by linear modelling frameworks used so far in this paper.

The investigation of nonlinear features in the inflation convergence of the case study countries considered in this paper is carried out for the inflation differentials calculated with respect to Germany. This choice is motivated by the arguments in favour of nonlinearity presented above, which suggest that German inflation is more likely to be viewed as a benchmark by the monetary authorities of the countries that aspire to become EMU members.

To examine the presence of nonlinearities, I apply a battery of linearity tests, developed by Luukkonen et al. (1988), Teräsvirta (1994) and Escribano and Jorda (1998, 2001). These tests are conducted to investigate a potential nonlinear adjustment of a Smooth Transition Auto Regressive (STAR) type. A linear specification, similar to those used by the univariate and panel unit root tests carried out in this paper, is assessed against the alternative of STAR-type nonlinearity. To avoid a spurious finding of nonlinearity that may be due to the presence of outliers, quite likely to exist given the inflation experiences of the CEE economies, I perform both the standard and the outlier-robust versions of these tests. For a thorough investigation, heteroscedasticity robust linearity tests are also conducted. The detailed results of this sequence of tests, not reported here due to space constraints, are available upon request.

The results of the battery of linearity tests conducted provide evidence in support of a nonlinear convergence in inflation rates for eight out of eleven countries included in the sample under scrutiny. Exceptions are the Czech Republic, Poland and Slovakia. In analysing the outcome of these tests, I place more emphasis on their outlier-robust versions, given the patterns in the evolution of inflation rates in CEE countries over the decade 1993-2004. An asymmetric, LSTAR-type nonlinear adjustment may provide an adequate description of the inflation convergence process in the cases of Hungary, Latvia, Malta and Romania. ESTAR models are suitable for Cyprus, Estonia, Lithuania, Romania and Slovenia. In the case of Hungary, the outcome of the linearity tests may explain why convergence was not unveiled by the univariate and panel unit root tests that adopted a linear specification. Furthermore, the case of Romania highlights the importance of performing outlier-robust linearity tests in order to avoid a spurious finding of nonlinearity. In terms of inflation experience, among the countries considered in this analysis, Romania stands out, with high and volatile inflation rates. However, the outlier-robust linearity tests performed here suggest that there is potential for nonlinear convergence in the case of the Romanian inflation rate.

5. The Inflation Convergence Record: a Look at Potential Explanatory Factors

The main finding of the empirical analysis performed above is that convergence in inflation rates of CEE countries to EU benchmarks occurs only in a limited number of cases. Moreover, the results are country-specific and benchmark-specific. An interpretation of the whole picture is difficult. This is not surprising, given the inflation experiences of the CEE economies during the period 1993 to 2004. While the established market economies of Cyprus and Malta make better candidates for convergence, the former transition economies from Central and Eastern Europe offer a rather mixed picture. To explain the results, I will evaluate a number of factors that may exert an impact on the convergence process.

First, the experience of current EMU members provides a very useful arena for examining the factors that underlie inflation convergence. In particular, the experience of the peripheral countries may help in drawing lessons for the CEE countries that aspire to join the monetary union.

In recent European economic history, two landmarks stand out. The first one corresponds to the establishment of the EMS in 1979, with the intention of stabilising exchange rate volatility among members. The second marks the adoption of a single currency and the introduction of a common monetary policy, in 1999, marking the last stage in the creation of the economic and monetary union.

The prospect of introducing a single currency within EU has required synchronisation of monetary decisions taken by the member states. This has provided the impetus for the establishment of a regulatory framework, which ranged from the EMS of 1979, with its own exchange rate mechanism (ERM I), to the Maastricht Treaty of 1992. Among other nominal convergence criteria, the Maastricht Treaty has defined explicit convergence goals for inflation rates. However, after the commencement of the Euro, a proliferating inflation divergence has been documented and significant cross-country differences have emerged. A large body of studies have addressed this topic, trying to shed light on the nature of the observed divergence (short or long lasting) and the factors that caused it. To explain this change in trend, it has been emphasised that inflation rates experienced a firm decrease as countries endeavoured to comply with the Maastricht inflation criterion. After that, the inception of a single monetary policy generated divergence in inflation rates, as a one size policy could not fit all experiences. If one looks at the developments discussed above in the light of the future EMU accession of the new EU member states, then more divergence can be expected to occur, as these countries will contribute to an increase in the already existing heterogeneity among member states.

Secondly, within the confines of the EMU, increased goods market integration and greater price transparency, generated by the Internal Market Programme and, ultimately, by the introduction of a single currency, aimed at stimulating price convergence. However, as documented by Maier and Cavelaars (2003), Euro area countries have adopted a common currency, but are still characterised by different price levels for similar products. The large body of literature that focuses on testing the validity of PPP offers an explanation for this, showing that price levels between countries tend to equalise, but the adjustment process is very slow[18] (see, for instance, Froot and Rogoff, 1995).

Within a monetary union, if prices expressed in a common currency reveal initial differences across countries, then convergence to a similar level entails higher inflation in countries with lower prices. Therefore, price level convergence, also labeled as "inflation catching up" may hinder the inflation convergence process by generating cross-country differences in inflation rates (Rogers et al., 2001; Rogers, 2002).

The differences in price levels between the euro area and the countries that aspire to join it are more pronounced than price differentials within the euro area. This suggests that the phenomenon of price convergence may constitute an important source of inflation differentials between current EMU members and aspiring countries.

[18] Price differences between countries tend to equalise, where these differences reflect certain costs.

Thirdly, an important aspect of the price convergence process concerns adjustments in the area of nontradable goods prices. The well-known Balassa Samuelson (BS) effect is often put forward in attempts to explain why prices of nontradable goods might increase faster in poorer members of a monetary union, therefore generating inflation differentials with respect to richer members. The process of economic integration witnessed by CEECs has created pressure for European-wide convergence of productivity levels in the tradable goods sector. In addition, productivity levels in the nontradable goods sector have converged at a much slower rate. Therefore, productivity increases in the tradable goods sector have outpaced those in the nontradables sector. Due to wage equalisation (an important assumption of the BS effect), the rise in wages in the tradables sector has determined an increase in wages, and hence prices, in the nontradables sector of CEECs, compared to the old EU members. The rise in inflation that has occurred due to high nontradable goods inflation explains, partly, the divergence in inflation between CEECs and old EU members.

Fourthly, the features of the monetary regime pursued by a country may be relevant for the inflation convergence process. This conjecture stems from the main tenet of the monetarist paradigm, which, in the words of Milton Friedman, upholds that inflation is always and everywhere a monetary phenomenon.

A fifth aspect that may shed some light on the inflation convergence performance of EMU accession countries is the design of fiscal policy. Kutan and Yigit (2004) argue that when CPI is used to calculate inflation rates, the stance of fiscal policy becomes relevant in interpreting inflation convergence results, since the CPI accounts for fiscal shocks.

6 Concluding Remarks

In this paper I have reported on a comprehensive econometric assessment of inflation convergence of CEE countries towards EU benchmarks and their group averages. After gaining the status of fully fledged market economies, these countries have been accepted as members of EU and intend eventually to subscribe to EMU, legitimating an assessment of their inflation performance. However, their participation in the monetary union is conditional upon complying with a strict inflation criterion. To meet this criterion, the CEE countries have strived to build the appropriate institutions and implement consistent, sound and coordinated monetary and fiscal policies. Containing inflation and maintaining price stability has become increasingly important for these countries. In this context, convergence of inflation becomes a topic of key importance.

The results reported in this paper suggest that while convergence can be revealed in a number of cases, there is some sensitivity associated with the testing framework, in particular whether time series or panel methods are used. Furthermore, the inflation convergence performance of the CEE countries is

conditional on the chosen inflation benchmark, the composition of the panel and the correlations among members. The highest degree of homogeneity was recorded for the panel comprising the three Baltic States. Poland and Slovenia were the other CEE countries with a good performance in terms of inflation convergence.

To complement the results derived from univariate and panel unit root tests, I have conducted a set of linearity tests on the inflation differentials with respect to Germany, chosen to represent EMU core. In this regard, the analysis performed in this paper was characterised by an element of novelty, compared with other existing studies. While accounting for the interplay between linearity and outliers, the findings of the linearity tests highlighted a potential nonlinear convergence process in all but one case, which may have been induced not only by policy interventions, but also by heterogeneity of inflation expectations among economic agents. This finding opens an interesting line of inquiry, suggesting that the process of inflation convergence in the CEE countries is characterised by nonlinear features, which cannot be captured by standard linear models. The results suggest that nonlinear convergence, which allows for more flexibility in comparison with linear specifications, is almost ubiquitous. Therefore, an accurate representation of the convergence process of the CEE economies towards EMU norms needs to accommodate the presence of nonlinear features.

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TIME DELAYS AND THE UNDERWRITING CYCLE

Ovidiu Solomon and Carmen Pricină*

Abstract

We shall consider the concept of time delays and the extent to which this is a common feature in many general insurance systems. We shall then present an example of a model of an insurance system with delays that helps to explain the phenomenon of underwriting cycles.

Keywords: *insurance, time delays, underwriting cycle, forecasting, rating formula.*

Delays in non-life insurance

The insurer's liability to pay a claim crystallizes at the time of the insured event. Many favors can lead to delays between the occurrence of the event and the actual payment of the claim Thus, Ackman et al. (1985)[1] identify five sets of factors:

1. The event covered by the insurance policy may not occur at a single instant - for example, workmen's compensation claims arising from industrial disease may relate to exposure over a long time period and may not be recognized as claimable events until many years have elapsed since the inception of the policy.
2. There may be delays before a claimable event is reported to the insurer.
3. The legal liability of the insurer may not always be dear-cut, and there may be considerable delays before the situation is clarified (possibly involving the courts).
4. It may not be possible to determine the magnitude of the claim until some time after the occurrence of the insured event - for example, in motor damage claims there may be a delay until the vehicle can be examined and the damage assessed, and more extreme examples may arise in personal injury cases which involve the courts.
5. There may be processing delays within the insurer's administration departments, in recording the necessary statistical information on the claim, managing and updating of the claims file, and payment of the claim.

Time delays are introduced also by the regulatory process (see, for example,

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Lemaire 1985)[10]. Insurance premium rates are regulated in many countries. Insurance companies may be required to have their rates ed by regulatory authorities prior to use (as in the US) or to approved by follow a uniform, national tariff (as in Switzerland). Regulation almost always creates additional delays between the experience period and the effective date of application of the revised rates. In addition, premium rates may be revised less frequently than under a competitive system (Cummins and Outreville, 1987)[7].

The process of collection and analysis of the data, the projection into the future and the effect of system delays have been well illustrated by Coutts (1984)[6], who demonstrates that, although motor insurance premiums may only be expected to be in force for one year and the length of each contact is only one year, the premium estimation process can involve projections of up to eight years. The presence of time delays in notification and settlement of claims and in data collection leads to this effect. Such an extension of the time frame under consideration then necessitates a number of important, subjective decisions, for example (Coutts, 1984)[6].

The underwriting cycle

A number of autors (for example, Cummins and Outreville (1987)[7] and Venezian (1985) [14]) have noted the existence of a cycle with a period of about six years in the profits of non-life insurance companies (or property-casualty companies, as they are named in North America).

The usual explanation for the existence of the cycle is that it is caused by increased profits leading to increased capably, leading to aggressive marketing and a decline in underwriting standards. This then leads to reduced profits, a decline in capacity, stricter underwriting and increased profits, and so the cycle is repeated Several other competing hypotheses have been proposed in the literature to explain the cycle: for example, Cummins and Outreville (1987)[7], Rantala (1988)[11] and Daykin et at. (1994)[9] provide more detailed reviews. For example, Venezian (1985)[14] puts forward an explanation in which he assumes that premiums as determined independently of the market by an insular, but he proposes a relationship between insurer behavior and the existence of cycles which is based on projections. Specifically Venezian points out that premium rating, at least as practiced in the US, relies on extrapolating past claim costs in order to predict future claim costs. These extrapolations tend to involve an estimation period of approximately three years, and an extrapolation period of about two years (Cummins and Outreville, 1987)[7].

Model based on time delays

We now turn to the specification of a model for explaining the existence of underwriting cycles. We exclude any consideration of expenses, taxes, investment income, interaction with the capital market or the methodology for fixing the premium rate. The main hypotheses is that the dynamics of the cycle come from the fact that profits feed back into surplus (or reserves) with a time delay.

A second-order autoregressive equation will generate a six-year cycle with particular values of the parameters, as in Venezian's (1985) analysis (see above). We shall describe a simple model that leads to such an equation and thus provides one possible explanation for the phenomenon of the underwriting cycle (see Berger, 1988[5], Daykin et al , 1994[9]). To reach this goal, it is necessary to assume two one-year delays in the structure of the business. In the presentation here, we follow the argument of Berger (1988)[5].

Thus, we assume that:

1. the insurer sets its underwriting policy for the forthcoming year on the basis of the end-of-year surplus (or reserves), so that the more financially secure is the insurer, the more walling it will be to underwrite the more marginal risks,

2. the profit and loss results follow from the underwriting policy with a one-year time delay;

3. the profit and loss results are passed directly into the surplus (or reserves) so that there are no distributions to policyholders or shareholders,

4. the effects of investment income, expenses and other cash flows can be honor.

We let P_t, Q_t, S_t and p_t respectively present market premium (or price), quantity, surplus (reserves) and economic profits for year t.

Given 1, we assume that the market supply or quantity is a function of the surplus in the immediately preceding period (since, as Berger (1988)[5] has shown, insurers will be more willing at any premium to underwrite marginal risks on the surplus is increased).

The resultant market premium and quantity will also depend on the surplus in immediately preceding period (since the position of the supply function will determine the intersection of the supply and demand functions): $(P_t, Q_t) = f(S_{t-1})$ for dome f.

We also assume (from 2.) that the profit in year t is a function of the premium (price) and quantity in year t - *1*, i.e.

$$p_t = g(P_{t-1}, Q_{t-1}) = gf(S_{t-2}) = h(S_{t-2})$$

for some functions g and h.

We thus have, from 3.,

$$S_t = p_t + S_{t-1} \quad (1)$$

by definition, and

$$p_t = h(S_{t-2}) = h(S_{t-3} + p_{t-2}) \quad (2)$$

If h is invertible, we have a second-order difference equation, possibly non-linear, for p, namely:

$$p_t = h(h^{-1}(p_{t-1}) + p_{t-2}) \quad (3)$$

When h is linear, $h(S) = aS + b$ and $h^{-1}(p) = (p-b)/a$, so we have:

$$p_t = p_{t-1} + ap_{t-2} \quad (4)$$

which is a homogeneous difference equation with general solution $p_t = k_1 c_1^t + k_2 c_2^t$ where c_1 and c_2 are solutions of $c^2 = c + a$, and k_1 and k_2 depend on the initial conditions p_0 and p_{-1}. Thus,

$$p_0 = k_1 + k_2 \text{ and } p_{-1} = \frac{k_1}{c_1} + \frac{k_2}{c_2}.$$

If $1 + 4a < 0$ (i.e. $a < -\frac{1}{4}$), c_1 and c_2 are complex conjugates, $c_1 = re^{i\theta}$, $c_2 = re^{-i\theta}$, where $r^2 = -a$ and $2r\cos\theta = 1$ so that $\cos\theta = 1/2\sqrt{-a}$.

Then

$$\begin{aligned} p_t &= k_1 c_1^t + k_2 c_2^t \\ &= r^t \left[(k_1 + k_2)\cos t\theta + i(k_1 - k_2)\sin t\theta \right] \\ &= r^t \left[p_0 \cos t\theta + \left(\frac{2ap_{-1} + p_0}{2r\sin\theta} \right) \sin t\theta \right] \end{aligned}$$

on eliminating k_1 and k_2.

So

$$\begin{aligned} p_t &= r^t \left[p_0 \cos t\theta + \left(\frac{2ap_{-1} + p_0}{\sqrt{-4a-1}} \right) \sin t\theta \right] \\ &= \alpha r^t \sin(t\theta + \beta) \end{aligned}$$

for some constants α and β that depend on a and the initial conditions.

The sine function has the property that $\sin(t_0\theta + \beta) = \sin(t_0\theta + 2\pi + \beta)$ for some t_0, which is equivalent to a cycle. To identify the period of the cycle T, we note that we would require

$$(t_0 + T)\theta + \beta = t_0\theta + 2\pi + \beta$$

i.e.

$$T = \frac{2\pi}{\theta}.$$

Thus, p_t follows a cycle with period:

$$T = \frac{2\pi}{\theta} = \frac{2\pi}{\cos^{-1}(\frac{1}{2\sqrt{-a}})}$$

If a= -1, then $T = 6$ years. Also, if a= -1 we note that, consistent with a six year cycle, $p_t + p_{t-3} = 0$.

We note also that the magnitude of r determine whether the cycles have an increasing (r >1), decreasing (r < 1) or constant (r = 1) amplitude.

Model based on forecasting and rating formula

In this section, we consider how the use of certain premium rating formulae can lead to damped sinusoidal variations in premiums, loss ratios and solvency ratios even if the claims process does not originally contain such elements. The result again would be the phenomenon of the underwriting cycle. The discussion here is based on the model of Balzer and Benjamin (1980)[3].

An intrinsic feature of insurance systems is the delay before claims are notified and settled. In some classes of business, 25% of the incurred claims may be unreported and/or unpaid after two years, while the situation could be more extreme with long-tailed classes of business like liability insurance.

We let C_t be the claims incurred for year t, and $1-e$ be the proportion of premiums absorbed by expenses, so that:

$$p_t = eP_t - C_t. \quad (5)$$

For the fixing of P_t, we shall analyze the effects of a 'wait and see' strategy. We shall relate P_t to B_t, the base premium for year t, and include (an element of profit-sharing so that premiums are reduced in year t, if recent business has been profitable to the insurance company. In practice, most insurers would experience difficulties in having final figures from year $t-1$ available for use in year t. Also, they may be a sufficient number of unpaid claims to render those figures undesirable for the purposes of purposes of profit-sharing feedback. The 'wait and see' or time-delayed strategy would be equivalent to saying that, for L time periods after the premium is paid, the accumulated surplus is unreliable and so for year t the value from year $t-L$ should be used for the profit sharing 'feedback' formulae, i.e.,

$$P_t = B_t - dS_{t-L} \quad 0 < d < 1 \quad (6)$$

So, from equations 5 and 6 we have

$$p_t = kB_t - C_t - deS_{t-L}$$

and, from equation 1, then

$$S_t - S_{t-L} + deS_{t-L} = A_t \quad (7)$$

where $A_t = eB_t - C_t$.

Equation 7 is a difference equation for S_t which can be solved to determine P_t via equation 6.

We note that if the solution for S_t converges as $t \to \infty$ to a specific value S and A_t similarly converges to A, then, in the limit

$$S = \frac{A}{de}. \quad (8)$$

If we require S > 0 then we would simply require $A > 0$ (or $eB > C$). If the sequence converges in the long run, it will converge to a positive value if, in the long run, the amount of base premium left after deducting expenses is greater than the claim amount. Of course, this does not guarantee convergence. We note that $A = 0$ would lead to a steady state solution of S = 0, if convergence occurs.

We follow Balzer and Benjamin (1980)[3] and consider some specific choices for L.

If L = 1, equation 7 becomes

$$S_t - mS_{t-1} = A \text{ where } m = 1 - de \quad (9)$$

With $S_0 = 0$, the solution is

$$S_t = \sum_{j=0}^{t-1} A_{t-j} m^j = \sum_{j=0}^{t-1} (eB_{t-j} - C_{t-j}) m^j \quad (10)$$

If $L = 2$, equation 7 becomes

$$S_t - S_{t-1} + deS_{t-2} = A_t \quad (11)$$

A trial solution of the form $S_t = x^t$ yields the quadratic $x^2 - x + q^2 = 0$ where $q^2 = de$, which has roots $x_{1,}x_2 = 1 \pm i\sqrt{4q^2 - 1}/2$ assuming that $4q^2 > 1$. For convenience, we rewrite x_1 and x_2 as $x_1 = qe^{i\varphi}$ and $x_2 = qe^{-i\varphi}$ and $\tan\varphi = \sqrt{4q^2 - 1}$. Then with $S_0 = 0$, the solution to 11 becomes, after some algebraic simplification,

$$S_t = \sum_{j=0}^{t-1} A_{t-j} q^j \frac{\sin(j+1)\varphi}{\sin\varphi} \quad (12)$$

Typical values of e and d might be 0.8 and 0.5 so that m = 0.6, q = 0.6325 and $\varphi = 0.659$.

Some insight can be gained by observing the reaction of accumulated surplus to a single pulse of incurred claims, C_1 .Consequently we put $B_t = 0$ and $C_2 = C_3 = ... = 0$, leaving C_1 = X, non-zero and positive. Under these conditions, for $L = 1$,

$$S_t = -m^{t-1}.X = -(0.6)^{t-1} X$$

which involves a simple decay factor of 0.6 per annum.

For L = 2,

$$S_t = -q^{t-1}\left(\frac{\sin t\varphi}{\sin \varphi}\right)X = \frac{-(0.6325)^{t-1}(\sin 0.659t)X}{0.612}$$

which is an oscillatory result with a period $T = 2\pi / \varphi = 9.5$ years and a decay factor of 0.6325 per annum.

For the case L = 1, the dynamic response of S_t to the isolated group of unpredicted claims is satisfactory although the effects of this disturbance still take approximately seven periods to be eliminated (for the case m = 0.6).

When the delay L is increased to two periods, the responses oscillatory and overshoots. No recovery of the loss is attempted for two periods. Then it is over-collected in the next four periods, resulting in the insurer having to repay some of it in the following periods. This is not a situation with which insured or insurer would be happy. The overall settling time is extended by about one or two periods relative to the L = 1 case (Balzer and Benjamin,1980)[3].

It is a general principle of control engineering that the introduction of time delays into a feedback loop leads to instability. When L = 5, numerical experiments with equation 7 show that the system becomes completely unstable watts ever-increasing oscillations in S_t . With S_t diverging as $t \to \infty$, it is clear that one or other of the parties to the contract would withdraw from the arrangement rather than suffer these dramatic oscillations.

The value of L does not necessarily imply a delay of L years. The use of quarterly feedback and a delay time of two years would correspond to L = 8, which again leads to high instability.

It is noteworthy that these particular results are quite general, and are independent of the type of insurance and the choice of base premiums. Further, stability and instability are properties of the system itself and are not related to the nature of the particular disturbance input we have used as an illustration.

These results have arisen from a positive 'spike' of unexpected claims. The insured may be more interested in the effect of lower than expected claims. This can be| similarly analyzed by considering the effect of a negative X as input.

Dagg (1995)[8] has exploded the properties of the model further by numerically analyzing the results for some more complicated cases, as follows.

Example 1

Consider *d=0.5* and *e=0.8* as before, and the effect of a stream of higher than expected claims i.e. $B_t = 1$ and $C_t = 1$ for each 1. Since $eB_t < C_t$, we would expect that, if convergence occurs, it leads to a negative long-run value. The results as shown in Figure1. We note that the amplitude of oscillation increases with the length of the lag, *L*, and that for $L = 1,...4$ the oscillations appear to be reducing over time and tending to a limit of about -0.5, as determined by equation 8. It is apparent that for L = 5 the curve is becoming increasingly unstable.

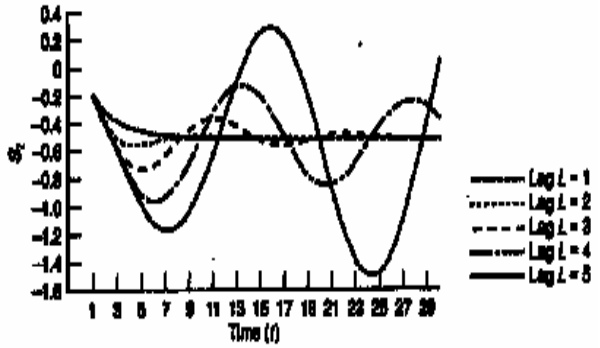

Fig. 1: Plot of accumulated surplus against time

Example 2

We consider $B_t = 1$ and $C_t = 1 + \sin(\pi t/3)$ so that the claims vary sinusoidally with a period of six years and upper and lower limits of 2 and 0 respectively. The patterns in Figure.2 for S_t are not as consistent as for Example 1. There is evidence that the amplitude increases with the delay L, but there is no clear evidence of convergence. We note that the increased complexity of the input has led to a more complex output.

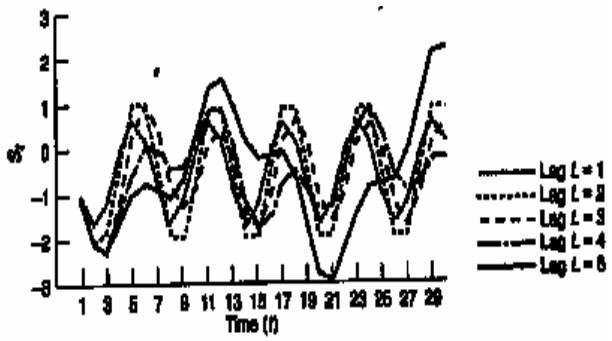

Fig 2. Plot of stimulated surplus against time.

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E-COMMERCE

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Abstract

E-commerce (Electronic Commerce or EC) is the buying and selling of goods and services on the Internet, especially the World Wide Web. In practice, this term and a newer term, e-business is often used interchangeably. For online retail selling, the term e-tailing sometimes used.

Keywords: *e-commerce, online retail, e-tailing*

Introduction

In 1886, a telegraph operator was able to obtain a shipment of watches that was refused by the local jeweler. Using the telegraph, he sold all the watches to fellow operators and railroad employees. Within a few months, he made enough money to quit his job and start his own store. The young man's name was Richard Sears. His company later became Sears, Roebuck.

The meaning of electronic commerce has changed over the last 30 years. Originally, electronic commerce meant the facilitation of commercial transactions electronically, using technology such as Electronic Data Interchange (EDI) and Electronic Funds Transfer (EFT). These were both introduced in the late 1970s, allowing businesses to send commercial documents like purchase orders or invoices electronically. The growth and acceptance of credit cards, automated teller machines (ATM) and telephone banking in the 1980s were also forms of electronic commerce. From the 1990s onwards, electronic commerce would additionally include enterprise resource planning systems (ERP), data mining and data warehousing.

Perhaps it is introduced from the Telephone Exchange Office, or maybe not. The earliest example of many-to-many electronic commerce in physical goods was the Boston Computer Exchange, a marketplace for used computers launched in 1982. The first online information marketplace, including online consulting, was likely the American Information Exchange, another pre-Internet online system introduced in 1991.

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Although the Internet became popular worldwide in 1994, it took about five years to introduce security protocols and DSL allowing continual connection to the Internet. And by the end of 2000, a lot of European and American business companies offered their services through the World Wide Web. Since then people began to associate a word "ecommerce" with the ability of purchasing various goods through the Internet using secure protocols and electronic payment services.

"Ecommerce services are the silver bullet that will enable companies to take advantage of the true business opportunities on the Web." (Traci Gere, Analyst, The New York Times).

E-Commerce is like any other business, developing a business over the Internet requires many of the same major activities as starting any other business. You should do some basic business planning. After all, you need a product. You may need funding to get your business going. You need customers. You need to market products to your customers. You need strong customer service. You need to manage purchases by customers, finances, staff and other resources.

Not all products are very compatible to sales over the Internet, but there are some features unique to e-commerce. Not all products are real compatible to be sold over the Internet. For example, they may require a lot of face-to-face selling. They may cost a lot to ship (a primary practice in e-commerce is that customers buy products, and you ship the products to them). You need to make sure that, because your product may be advertised to the world, that you remain in control of your ideas, or "intellectual property".

Think of E-Commerce and the first few features that strike any mind are – a global marketplace – increased sales – increased profits! Not that you start claiming better margin of profit online, but because various expenses relating to marketing, promotional material, order processing, customer care, inventory management, information storage, telecommunications, considerably slash down.

E-Commerce offers tempting but economical boost to any size or kind of business. By opting for E-Commerce, you can expand your market margins to global horizons or squeeze them to highly focused market segments, as per subjective business acumen and discretion.

Quality E-Commerce services collect and manage valuable customer-related information, including customer’s ordering patterns, to build a comprehensive customer database. This database vitally sharpens your marketing and promotion strategies to be remarkably on target.

E-Commerce aids you in minimizing supply chain inefficiencies, bringing about reduced inventory requirement and lessened delivery delays, thereby rendering you more confident about your business collaborations with your suppliers and service companies. E-Commerce inherently streamlines and

automates the entire backend business process, assimilating speed and efficiency to your business activities.

As you introduce E-Commerce facility to customers, you render their shopping experience highly fluent and convenient. E-Commerce seems all the more indispensable for your customers in the wake of consistently shrinking time with them to spare for shopping offline. What's more, online shopping lets your customers reap benefits of online economies, as they often pay lesser price for identical products/ services available offline.

E-Commerce-based business benefits the society as well! As your onsite manpower requirement reduces, it lessens the burden on infrastructure and lowers demand for elaborate office complexes and spacious parking lots.

As good as it may sound, E-Commerce has its own share of obstacles too that hold it back from assuming its full potential. To begin with, Internet in itself is still to touch the lives of a large chunk of people as an integral way of life. There is tangible privacy and security issues that keep people on guard, as they face a dilemma each time they need to divulge highly personal information online, as and when they transact online.

Non-standardized protocols for certain processes, insufficient telecommunications bandwidth and ever-evolving software tools (with incrementing versions), are some of the technical issues that contain E-Commerce from being a seamlessly integrated component of the contemporary organizational IT systems.

While technical limitations are completely resolvable, non-technical issues including people's resistance to change and lack of trust for faceless and paperless transactions, is bound to take its due time before it completely erodes. In fact, E-Commerce is fast catching up with the rest of the world, as USA online markets lead them by example.

E-commerce can be divided into:

- E-tailing or "virtual storefronts" on Web sites with online catalogs, sometimes gathered into a "virtual mall"
- The gathering and use of demographic data through Web contacts
- Electronic Data Interchange (EDI), the business-to-business exchange of data
- E-mail and fax and their use as media for reaching prospects and established customers (for example, with newsletters)
- Business-to-business buying and selling
- The security of business transactions

The Virtual Storefront and the Virtual Mall

As a place for direct retail shopping, with its 24-hour availability, a global reach, the ability to interact and provide custom information and ordering, and

multimedia prospects, the Web is rapidly becoming a multibillion dollar source of revenue for the world's businesses. A number of businesses already report considerable success. As early as the middle of 1997, Dell Computers reported orders of a million dollars a day. By early 1999, projected e-commerce revenues for business were in the billions of dollars and the stocks of companies deemed most adept at e-commerce were skyrocketing. Although many so-called dotcom retailers disappeared in the economic shakeout of 2000, Web retailing at sites such as Amazon.com, CDNow.com, and CompudataOnline.com continues to grow.

Market Research

Market research is the process of systematically gathering, recording and analyzing data and information about customers, competitors and the market. Its uses include helping create a business plan, launch a new product or service, fine tune existing products and services, and expand into new markets. Market research can be used to determine which portion of the population will purchase a product/service, based on variables like age, gender, location and income level.

In early 1999, it was widely recognized that because of the interactive nature of the Internet, companies could gather data about prospects and customers in unprecedented amounts -through site registration, questionnaires, and as part of taking orders. The issue of whether data was being collected with the knowledge and permission of market subjects had been raised. (Microsoft referred to its policy of data collection as "profiling" and a proposed standard has been developed that allows Internet users to decide who can have what personal information.)

Electronic Data Interchange (EDI)

EDI is the exchange of business data using an understood data format. It predates today's Internet. EDI involves data exchange among parties that know each other well and make arrangements for one-to-one (or point-to-point) connection, usually dial-up. EDI is expected to be replaced by one or more standard XML formats, such as ebXML.

The National Institute of Standards and Technology in a 1996 publication defines Electronic Data Interchange as "the computer-to-computer interchange of strictly formatted messages that represent documents other than monetary instruments. EDI implies a sequence of messages between two parties, either of whom may serve as originator or recipient. The formatted data representing the documents may be transmitted from originator to recipient via telecommunications or physically transported on electronic storage media." It goes on further to say that "In EDI, the usual processing of received messages is by computer only. Human intervention in the processing of a received message is typically intended only for error conditions, for quality review, and for special

situations. For example, the transmission of binary or textual data is not EDI as defined here unless the data are treated as one or more data elements of an EDI message and are not normally intended for human interpretation as part of online data processing." Kantor Michael; James H. Burrows. "ELECTRONIC DATA INTERCHANGE (EDI) ". National Institute of Standards and Technology.

E-Mail, Fax, and Internet Telephony

E-commerce is also conducted through the more limited electronic forms of communication called e-mail, facsimile or fax, and the emerging use of telephone calls over the Internet. Most of this is business-to-business, with some companies attempting to use e-mail and fax for unsolicited ads (usually viewed as online junk mail or spam) to consumers and other business prospects. An increasing number of business Web sites offer e-mail newsletters for subscribers. A new trend is opt-in e-mail in which Web users voluntarily sign up to receive e-mail, usually sponsored or containing ads, about product categories or other subjects they are interested in.

Business-to-Business Buying and Selling

Thousands of companies that sell products to other companies have discovered that the Web provides not only a 24-hour-a-day showcase for their products but a quick way to reach the right people in a company for more information.

The Security of Business Transactions

Security includes authenticating business transactors, controlling access to resources such as Web pages for registered or selected users, encrypting communications, and, in general, ensuring the privacy and effectiveness of transactions. Among the most widely-used security technologies is the Secure Sockets Layer (SSL), which is built into both of the leading Web browsers.

Secure Electronic Transaction (SET) is a standard protocol for securing credit card transactions over insecure networks, specifically, the Internet. SET is not itself a payment system, but rather a set of security protocols and formats that enables users to employ the existing credit card payment infrastructure on an open network in a secure fashion.

SET was developed by VISA and MasterCard (involving other companies such as GTE, IBM, Microsoft, Netscape, RSA and VeriSign) starting in 1996. SET is based on X.509 certificates with several extensions. SET makes use of cryptographic techniques such as digital certificates and public key cryptography to allow parties to identify themselves to each other and exchange information securely. SET uses a blinding algorithm that, in effect, lets merchants substitute a certificate for a user's credit-card number. This allows traders to credit funds from clients' credit cards without the need of the credit card numbers.

Combining a long history with the latest technology, e-commerce is the most popular application of the moment. Presales, encryption, customer support--they're all part of the mystique of electronic commerce. But the real lure is undoubtedly the money.

We're all in it for the money. Commercial interests are the largest segment of the Internet and will continue to fuel its growth. Think of all those documents with little dollar signs on them that companies deal with on a daily basis. Now imagine them all as bits flowing automatically in and out of their respective databases--no paper, no phone calls, no faxes. That was the promise of EDI.

R on Koskinen, marketing director for AT&T's SecureBuy service, explains: "Business-to-business e-commerce takes many different forms. So, as such, you can consider EDI business-to-business e-commerce. You can consider some types of message-enabled applications to be facilitated for business-to-business e-commerce. You can also look at Web-based catalogs that provide features of functions that are necessary for businesses to sell to other businesses as business-to-business e-commerce."

No matter how you slice it, your systems will have to exchange legal documents related to the transparent transfer of goods and services. The Internet provides ubiquitous, high-speed access to information. It offers a platform-independent means to exchange information with trading partners. Where EDI was primarily the exchange of documents between application subsystems, such as order entry or accounts payable, Internet-based e-commerce casts a wider net: Documents are exchan ged in real time; your customers or partners may be as likely to use their browsers to access your system as to use a local system; and transaction flow follows a matrix of user-to-application and application-to-application paths. EDI is faceless; no common user interface or mechanism addresses what the Web does so well: promotions links, editorial content, integration with internal systems and intensive personalization access. Customers can help themselves--and get fast responses to inquiries and access to complete information.

Conclusions

E-commerce has grown significantly during the past 5 years. E-commerce has not only changed the way consumers view their purchasing power but also help skyrocketed the economy. More and more businesses are during their business over the web. Business to business transactions are at their peak and it is predicted it will grow even more! E-commerce is a helpful technology take gives the consumer access to business and companies all over the country and the world but with this access there comes a price. Once consumers and businesses realize some of the dangers of e-commerce, there could be fewer incidents of identity theft and credit card fraud. Hopefully in the future, these issues can be rectified.

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GLOBALIZATION AND THE RISE OF MULTINATIONAL CORPORATIONS

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Abstract

Doing business around the world for multinational companies has implications for marketing to and communicating with consumers in different countries. Of course, the issue of culture has long been a factor. "Communication and culture are inseparable". This has not been lost on those who are involved in international business, in which communicating to business partners, clients and potential customers can be a complicated task. The digital revolution has truly changed the way the world does business. It allows companies to provide customized service to consumers, by actually enabling their customers to "serve themselves in their own way…according to their own tastes". There are companies who provide the infrastructure and hardware for this new technology, but there are also those companies that thrive on the very bonds that the Internet creates with every other part of the world. Examples include search engines like Google and Yahoo, auction sites like eBay, and networking sites like MySpace, whose products can include intangible things like knowledge or friendship. These companies too are taking advantage of global markets, as eBay now receives fifty-one percent of its revenue from outside the U.S., while seventy-five percent of Google's page views occur in other countries.

Keywords: *globalization, multinational companies, Internet, digital revolution*

1. Introduction

Even before the Dutch sailed to the East Indies or Marco Polo traveled to China, people have been interacting with other cultures in numerous ways, many of them for economic reasons. One would imagine it was quite difficult initially for these people to communicate and do business with each other, but even today obstacles in international business still exist. Although our world has certainly become much smaller in the last several centuries, cultural and geographical contexts still play a large part in shaping different societies and their methods of interaction with others. The term "globalization" is one heard of quite often in today's world, particularly in economic terms, referring to the expansion of free market capitalism. There are many other

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aspects that fit into the globalization process, ranging from political to social to technological, that are a part of this increasing interconnectivity of people around the world. Thomas Friedman, journalist for The New York Times and a popular scholar of globalization, breaks it down simply into three main time periods. The first of these began with the exploration of the New World followed by the development of the nation-state, as business between different parts of the world was organized and determined by the strength of entire countries. Friedman (2005) describes this period of time as "Globalization " when the units of interaction were primarily these countries. More recently, following the industrial revolution and innovations in transportation and communication, the units of international interaction became multinational corporations who were finding materials, labor, as well as clients in countries outside their own. Friedman calls this period "Globalization". This has been the period most familiar to people today, although in just the last several years, we have entered "Globalization" where interaction across nations can exist at the individual level and occur instantaneously (this will be addressed later). There are two types of theories on the effect that globalization has had on the world. The first is that of convergence, in which some degree of "universalization and homogeneity" results, as the differences that do exist are overshadowed by the similarities that are growing among countries. This is countered by the idea of divergence, which represents a drive to retain the unique qualities of individual cultures in the face of a globalized world. It would seem that although many similarities exist throughout the world, thanks to new technology as well as the spread of American culture, it would be naïve or perhaps even arrogant to believe that the world's population is becoming truly homogenous. McLuhan's "global village" idea means we are all in contact with one another, essentially neighbors, but it has certainly not meant that we have become fundamentally alike. Instead, globalization has "promoted diversity in interests, demands and values" (Sparks-Fitzgerald & Spagnolia, 1999). In the case of multinational companies doing business around the world, this certainly has implications for marketing to and communicating with consumers in different countries. Of course, the issue of culture has long been a factor. As communication scholar Alfred G. Smith proclaimed, "communication and culture are inseparable" (as quoted in Zaharna, 2000), since the way we as human beings communicate is inherently tied to the culture in which we were raised. This has not been lost on those who are involved in international business, in which communicating to business partners, clients and potential customers can be a complicated task. This seems to be especially true for American companies, who tend to assume that their business models, which are highly successful in the U.S., will be equally successful when transferred to another country. Cushman and King, however, suggest that "cultural settings not only determine much of behavior, but also require varying avenues for success within the diverse environments" (as cited in Packman & Casmir, 1999). Thus, due to cultural differences, one cannot take for granted that practices in one country will bring about the same results in another.

2. Looking ahead

We suggest some trends that exist now and will persist in the future in the field of international business communication. There is no doubt that everything done in the world today can be viewed in a larger global context, and this is particularly true for business activities. Harris Diamond, CEO of the international public relations firm Weber Shandwick, suggests that "companies need to make their brands relevant in ways that are faithful to the core attributes of the brand, yet flexible enough to accommodate diverse trading patterns, differing consumer tastes and behavior, and a variety of businesses, media and political cultures". As this paper will demonstrate, a thorough understanding of this global context and a willingness to embrace change are essential for the continued success of any organization operating in today's world. Having seen examples from the past of failures in international business communication, we now turn toward the future to examine what one can reasonably expect to encounter from a globalized world. There are two major trends that are already ever-present in today's world and only stand to increase in the next few decades. The first is the move toward digitalization, with the Internet becoming the new medium of choice. Secondly, we are seeing a rise of activity from developing economies, as they strive not only to join but also succeed in the global market.

3. The future lies in the internet

We have now entered the era that Thomas Friedman calls "Globalization 3.0," where "thanks to digitization, miniaturization, virtualization, personalization, and wireless, [anyone] can be processing, collecting, or transmitting voice or data from anywhere to anywhere" (2005). The digital revolution has truly changed the way the world does business. In the beginning, companies set up websites, which gradually became more extensive and elaborate and allowed users from all over the world to buy products and services online. Furthermore, the Internet has allowed these companies to control and track every aspect of their business with the click of a mouse. The most adept of these companies have realized that this allows them to provide customized service to consumers, by actually enabling their customers to "serve themselves in their own way…according to their own tastes" (for a simple example, think of Dell computers), creating what Friedman (2005) calls the "self-directed consumer". Companies are thus able to meet the needs of their clients, as well as their own needs, in ways never before thought possible. In addition to these uses by more traditional organizations, a number of businesses have sprung up as a direct result of the digitalization of the world to offer services that would also be unthinkable otherwise. There are those who provide the infrastructure and hardware for this new technology, but there are also those companies that thrive on the very bonds that the Internet creates with every other part of the world. Examples include search engines like Google and Yahoo, auction sites like eBay, and networking sites like MySpace, whose products can

include intangible things like knowledge or friendship (Battelle, 2005). These companies too are taking advantage of global markets, as eBay now receives fifty-one percent of its revenue from outside the U.S., while seventy-five percent of Google's page views occur in other countries (Hof, 2006). In terms of communication, this age of digitalization is an unbelievable boon, particularly for business corporations. First off, the Internet allows "unfiltered positions" to be heard by bypassing the traditional agenda setting conducted by media gatekeepers (Sparks-Fitzgerald & Spagnolia, 1999). In addition, the two-way flow of communication it offers allows for significant feedback, often almost instantaneously, as is the case with blogs and discussion boards. This speed of the Internet is also greatly beneficial to corporations, particularly in the case of a crisis, as it allows quicker reaction times as well as wide dissemination of information (Sparks-Fitzgerald & Spagnolia, 1999). At the same time, however, this also opens up access to new users from completely different cultures whose needs may need to be addressed, as with any company doing business outside of its home market.

4. The future lies in markets of growing economies

In the last decade of the twentieth century, several parts of the world were making the transition from a closed economy to a free market system, such as China, India, Russia, and Eastern Europe. By 2000, the "global economic world," the amount of the world's population participating in global trade, reached six billion people, compared to 2.5 billion in 1985. As it happened, this coincided with the digital revolution that was "flattening" the world, thus not only leveling the playing field, but also bringing that field directly to these new players (Friedman, 2005). The one country that seems as if it will have the greatest effect on the world's future is the most populous nation, China. Like many of these new economies, China is experiencing an "emerging capitalist class," one that possesses an ambitious and positive attitude toward the future (O'Leary). This is still a small segment of Chinese society, concentrated in major cities like Shanghai and Beijing, which are in the first tier of China's four-tier economic classification system. The main growth in consumption in the long run will actually come from those in the lower tiers as they undergo a rapid urbanization and industrialization as China prepares to create a multitude of new landmark cities in the next few decades (O'Leary). As a nation with a strong history of innovation and prominence, China seems to be exhibiting "ambitions to catch up to its rightful place in modern consumer society" (O'Leary, 2007), and there are many indicators of the takeoff of middle class consumer spending. Credit card ownership is at twelve million compared to three million two years ago; meanwhile, 4.1 million of China's 100 million cars were sold in 2006. Another important consideration is that this is the generation of "Little Emperors," the single children born out of Mao's population control policies, who have been raised "with a sense of consumer entitlement" (O'Leary). Chinese consumers are particularly attracted to luxury items, considering them to be marks of status, especially in a country where the idea of "face" is very

important. Goldman Sachs has reported that China will pass Japan as the largest luxury market in 2015, with a twenty-nine percent share (O'Leary). However, there is still a demand for "culturally relevant products" (Fowler & Marr, 2005). Thus the reason for the trend toward conducting research and development in China itself, as Proctor & Gamble has done through an affiliation with the prestigious Tsinghua University in Beijing, while L'Oreal has set up its own R&D facility in Shanghai to focus solely on the Chinese consumer (O'Leary). China's budding consumers are also merging with the Internet, which is enabling them to do a wide variety of things with an even wider amount of information. The Internet has certainly contributed to the growing capitalism among the Chinese, as $36 billion was spent online in 2006 (O'Leary). Furthermore, it has a great democratizing power in a still authoritarian nation; Google's Kai-Fu Lee, head of Chinese operations, predicts that the Internet will "level the playing field for China's enormous rural underclass" (Thompson, 2006), particularly for students, who can access educational materials from around the globe. Chinese Internet use grew by twenty three percent in 2006 to 137 million users, which is 10.5 percent of the population, and it is predicted to surpass the U.S. in the next two years to become the largest Internet market in the world (O'Leary). Many Chinese also believe that the Internet will change Chinese politics, making the process more transparent (Schrage, 2006). According to Kai-Fu Lee, however, the Internet's ability for public speech appeals more on the level of personal expression rather than political expression (Thompson, 2006). Although there may be a growing sense of individualism, it is a "peer-endorsed individualism," tying back to that concept of "face" (O'Leary, 2007). Even with politics aside, the Internet revolution in China can at least be described as one of "self-actualization," with the new ability to speak publicly about a variety of topics becoming part of a "daily act" (Thompson, 2006). China certainly presents a very complex case, however, for any corporation that desires to do business with it, as it is considered to have as many as 31 different markets (Chang, 2007), although these are also spending more than $700 billion (O'Leary, 2007). China's authoritarian structure also poses a moral quandary for many firms, but the country's economic stature and promise usually leave little choice, even for a company like Google whose motto is "Don't be evil.

5. Conclusions

No matter how strong a corporation is, however, if it does not understand the basics of intercultural communication or chooses to ignore them, it can find itself in serious trouble when things go awry and it needs to inform and reassure its various publics.For instance, Google has reached worldwide recognition in a remarkably short timeframe, and the technological nature of its products and services has not left much of a national stamp upon it. Indeed, it is committed to innovation, which should give it great flexibility as it continues to expand in new markets.

As a final note, although globalization may be bringing about a divergence effect, cultures will be just as imprudent as businesses if they refuse to allow their interactions on the world stage to bring about a modicum of change. As the digital age continues to advance, and nascent economies join in with the rest of the world, that world will only shrink further. Great will be those companies that take advantage of this, who are flexible enough to appeal to the various markets now just a mouse click away. Even greater still, however, will be those companies that reflect the needs and values of these markets' individual cultures, not simply existing alongside them, but finding ways to merge with and become a part of them.

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KNOWLEDGE AND MODELS OF CORPORATE GOVERNANCE

Flavia Anghel and Bogdan Glăvan*

Abstract

The issue of corporate governance has been largely debated in the literature. Conventionally, corporate governance is viewed either from a stakeholder or a shareholder perspective. This paper discusses the informational aspects of the two models of corporate governance.

The role information plays in corporate governance cannot be overstated. Agents involved in corporate governance acquire, create, use and transmit information. Therefore, how the notion of knowledge is conceived is important for the analysis of alternative systems of corporate governance. Basically, there are two types of information processing: internalization and externalization. The internalization-based information processing system corresponds to the stakeholder model of corporate governance. A shareholder model of corporate governance relies on information externalization. Externalization of information is made via the market price system.

Keywords: knowledge, economics of information, information processing, corporate governance, market-based corporate governance

1. Introduction

The issue of corporate governance has been largely debated in the literature. The role information plays in corporate governance cannot be overstated. Agents involved in corporate governance acquire, create, use and transmit information. Therefore how the notion of knowledge is conceived is important for the analysis of alternative systems of corporate governance.

The distribution of information is of general importance for the economy. But it is particularly important in the context of financial relationships. The problems of asymmetric information and moral hazard are particularly severe in financial relationships.

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In this paper we analyze the relation between information processing and systems of corporate governance. We begin by pointing out what is the major informational problem, namely moral hazard. Then we see how corporate governance systems attempt to mitigate the consequences of moral hazard and ensure that managers act in the best interest of shareholders. We distinguish between two large systems, information internalization – stakeholder approach – bank-based governance and information externalization – shareholder approach – market-based governance, and attempt to evaluate how they manage to alleviate the problem of moral hazard.

2. The economics of information and moral hazard

So extensive is the discussion of information in the analysis of economic systems that we already have a discipline – the economics of information. The origins of this field of science can be traced back to 1945, when Hayek published his seminal work "The use of knowledge in society". Later, Arrow, Nelson and others continued to fuel an increasing and fascinating debate about how knowledge is produced and distributed among economic agents.

One of the central issues in the economics of knowledge is the asymmetric information problem. It points to a situation in which one party in a transaction has more information than another. The party that is insulated from risk generally has more information about its actions and intentions than the party paying for the negative consequences of the risk.

Moral hazard is related to asymmetric information, and occurs when the party with more information about its actions or intentions has a tendency or incentive to behave inappropriately from the perspective of the party with less information. More precisely, moral hazard arises because an individual or institution does not bear the full consequences of its actions, and therefore has a tendency to act less carefully than it otherwise would, leaving another party to bear some responsibility for the consequences of those actions. For example, an individual with insurance against automobile theft may be less vigilant about locking his car, because the negative consequences of automobile theft are (partially) borne by the insurance company.

However a moral hazard problem occurs in making sure that managers put forth appropriate effort and make decisions aligned with the interests of shareholders. Specifically, shareholders worry that managers may overpay themselves, give themselves extravagant perks, carry out unprofitable but power-enhancing investments, and be reluctant to lay off workers that are no longer productive. In this sense, managers may make decisions based on their own interests. The moral hazard problem is then that managers may deceive investors to pursue their own goals.

There are also many other situations when upper management is shielded from the consequences of poor decision-making. This can occur for example when: a manager has a sinecure position from which they cannot be readily removed; the manager is protected by someone higher in the corporate structure, such as in cases of nepotism or pet projects; funding and/or managerial status for a project is independent of the project's success; the failure of the project is of minimal overall consequence to the firm, regardless of the local impact on the managed division; there is no clear means of determining who is accountable for a given project.

3. Corporate governance and moral hazard

From a financial point of view, "Corporate governance deals with the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment". (Schleifer and Vichny, p. 2) Corporate governance was first established to combat the moral hazard issue of ensuring that managers act in the best interest of shareholders that arises as a result of the structure of corporations and the market in which they exist.

If shareholders are in fact seeking assurance that management is acting in their best interest, then the concerned shareholder should have the incentive to monitor the corporation themselves. However, Hart believes that monitoring is a public good, saying that "if one shareholder's monitoring leads to improved company performance, all shareholders benefit" (Hart 1995). The idea is that all shareholders will look to the other shareholders to do the monitoring for them. In this case, no one investor has the incentive to monitor because any benefits they receive will be received by all investors, regardless of whether they invest in monitoring themselves. This is a free-rider problem for monitoring among some shareholders; resulting in none of those shareholders choosing to monitor their companies. In addition, the lack of information that shareholders have about performance is an impediment to enforcing accountability. Shareholders have only the information presented in the financial statements and the shareholders generally do not have the tools to make those statements useful in monitoring.

Hayek (1945) pointed out that the efficiency of an economic system should be assessed on the basis of how well that system performs in transmitting information among its agents. The same thing is true with regard to systems of corporate governance. Basically, there are two types of information processing: internalization and externalization.

Internalizing information means resolving the problems of non-appropriability, non-tradability and credibility by maintaining a close social distance (proximity) among all the factors involved in the functioning of the firm. As Schmidt and Tyrell (2005, p. 488) explain, "the problems resulting from the public good character of information are also less acute if the information is kept

within a close relationship, or more precisely, within a network of several long lasting relationships". The internalization-based information processing system corresponds to the stakeholder model of corporate governance. In such a system we cannot speak about a clear fundamental goal of the company. Rather, company's management seeks to achieve a harmonization of stakeholders' interests.

In the stakeholder model of corporate governance, managerial decisions are overseen by a supervisory board, which includes representatives of all significant interests groups related to the company's activity. This board is an essential element in a internalization-based information processing system or insider control system, because includes individuals and institutions who, given their close ties with the company, posses critical information which is not publicly available. The existence of this supervisory board suggest "what kind of information the board members can contribute… It is largely non-public, sometimes soft, and confidential and internal or inside information which relates, for instance, to the question of what certain management decisions would imply for the respective constituencies with which board members are affiliated." (Schmidt and Tyrell, p. 492).

Schmidt and Tyrell (p. 495) define the relation between information processing, corporate governance and financial systems as follows: "The capital market-based financial system and the outsider control system are complements and are consistent, and both rely on the externalization of information. The converse features make up a ban-based financial system. An insider control system of corporate governance belongs to and complements this system, which also relies on the internalization of information. Thus the nature of information is not only the key to understand specific corporate governance systems and their differences, but also the systems at large to which they belong."

4. Information and corporate governance systems

Since the 19th century, many economists have argued that bank-based systems are better at mobilizing savings, identifying good investments, and exerting sound corporate control. Others, however, emphasize the advantages of markets in allocating capital, providing risk management tools, and mitigating the problems associated with excessively powerful banks. Reflecting these schisms, economists and policymakers continue to struggle with the relative merits of bank-based versus market-based financial systems in making policy decisions.

a. The bank-based view. The bank-based financial system emphasizes the role of banking institutions in allocating capital. In economies like Germany and Japan banks are the main source of funds for corporations. The bank-based view highlights the positive role of banks in (i) acquiring information about firms and managers and thereby improving capital allocation and corporate governance.

Furthermore, powerful banks can more effectively force firms to re-pay their debts than atomistic markets, especially in countries with weak contract enforcement capabilities. Thus, the bank-based view holds that banks -- unhampered by regulatory restrictions on their activities -- can exploit scale economies in information processing, ameliorate moral hazard through effective monitoring, form long-run relationships with firms to ease asymmetric information distortions, and thereby boost economic growth. Also, it can be argued that banks – as coordinated coalitions of investors – are better than uncoordinated markets at monitoring firms and reducing post-lending moral hazard (asset substitution).

The bank-based view also stresses the shortcomings of market-based systems. Stiglitz (1985), for instance, argues that well-developed markets quickly and publicly reveal information, which reduces the incentives for individual investors to acquire information. Banks, however, mitigate this problem since they form long-run relationships with firms and do not reveal information immediately in public markets. Banks avoid the free rider problem by holding the loans they make. Thus, investors cannot observe banks' activities and profit by mimicking them. By mainly holding loans that are not traded in financial markets, banks earn a profit on information collection. Although banks reduce information costs for savers, savers realize that banks have private information about the quality and the risk of the bank's loan portfolio, and that a bank might use this information in a way that jeopardizes savers' deposits.

Proponents of the bank-based view also stress that liquid markets create a myopic investor climate. In liquid markets, investors can inexpensively sell their shares, so that they have fewer incentives to exert rigorous corporate control.

There exists a widespread consensus that an 'insider system' of corporate governance, dominated by universal banks engaging in the full range of intermediation services (including brokerage and investment banking) and being allowed to hold equity in borrowing firms may bring a number of advantages. The use of strip finance (debt-equity finance) is regarded as an effective strategy for a bank willing to lessen moral hazard (controlling riskiness of firms' strategy, monitoring and influencing managerial effort, as well as preventing distribution of assets to shareholders at the disadvantage of creditors and innaccuracy in reported return realizations), obtain access to insider information (also through interlocking directorates) and commit the firm to longterm, exclusive business relationship (especially useful in case of restructuring).

The bank-based corporate finance and governance has a number of shortcomings. Most importantly, potential for conflict of interest in this system is endemic. A list of possible conflict-of-interest situations should include: (a) stuffing fiduciary accounts. A bank acting as an underwriter and unable to place securities in a public offering (therefore exposed to potential underwriting loss) may seek to ameliorate this loss by 'stuffing' unwanted securities into accounts

managed by its investment department. (b) bankruptcy-risk transfer. A bank with loans to a firm whose bankruptcy risk has increased (to the private knowledge of the banker), may induce the firm to issue bond or equities (underwritten by its securities unit) to an unsuspecting public; proceeds are then used to pay-down the bank loan. In this case the bank transfers debt-related risk to outside investors. (c) third-party loans. To ensure successful underwriting, a bank may make favourable loans to third-party investors on condition that funds are used to purchase securities underwritten by the bank itself. (d) tie-ins. A bank may force a firm to buy its securities products under threat of credit-rationing. The problem is therefore that universal banks may well be able to get better information, but also have incentives to exploit information asymmetries to misrepresent this information to the market or to extract extra surplus from client firms.

b. The market-based view. In contrast, the market-based view highlights the growth enhancing role of well-functioning markets in (i) fostering greater incentives to research firms since it is easier to profit from this information. by trading in big, liquid markets, (ii) enhancing corporate governance by easing takeovers and making it easier to tie managerial compensation to firm performance, and (iii) facilitating risk management. Moreover, the market-based view stresses problems with banks. Specifically, powerful banks can stymie innovation by extracting informational rents and protecting established firms with close bank-firm ties from competition. Furthermore, powerful banks with few regulatory restrictions on their activities may collude with firm managers against other creditors and impede efficient corporate governance. In contrast, competitive capital markets play a positive role in aggregating diffuse information signals and effectively transmitting this information to investors, with beneficial implications for firm financing and economic performance.

The market-based view of corporate finance and governance stresses how corporate management is constrained to follow closely the interests of shareholders by using the concept of “market discipline”. We can explain the relevance of this notion thus: if stock prices are low it is hard to get external financing. It is also more costly to raise new funds through new share issues. Managers want to manage big companies with exciting business prospects so want easier financing. If stock price is too low it’s easier to be taken over. If internal control mechanisms such as the monitoring by board of directors fail, shareholders suffer and the company would become a takeover target. This situation arises as the company is not performing well and has a poor governance structure. Therefore post merger/acquisition, improved performance will surface coupled with a more effective governance structure. New people and new ideas enter the company that in essence, may make it a better company

If the merger is successful, the bidder will most probably bring in new directors and CEO’s. These new individuals within the new firm will not have a link with managers and hence, will not act in their interests. This helps to

eliminate conflicts of interests, which are seen in the principal-agent problem. Therefore, businesses will be more effectively directed and controlled leading to a better governance structure. Even if the takeover is unsuccessful, the fear of a takeover can result in top management and the CEO fearing dismissal if they know their behavior and past action has been in conflict with shareholder interests.

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RETHINKING THE "PREVENTION INNOVATION" IN THE HISPANIC CULTURE

Mihaela Moldovan*

Abstract

In 1997, due to high rates of diabetes and increasing treatment and management costs, the Centers for Disease Control and Prevention (CDC) introduced the largest national campaign to prevent diabetes. Despite the wide availability and accessibility of campaign materials and information, Hispanics still lack awareness and knowledge about healthy behaviors to prevent diabetes and fail to adopt physical activity and healthy eating habits as part of their daily routine. This proposal will focus on the re-invention and re-introduction of the health fair and other demonstrations as health promotion resources in areas with large number of Hispanic population. This report will highlight a hypothetical health campaign among Hispanics. The diffusion of innovations theory will serve as the foundation for developing this campaign.

Keywords: *diffusion of innovation, social change, hispanic culture, health fair*

I. Introduction

In 1997, due to high rates of diabetes and increasing treatment and management costs, the Centers for Disease Control and Prevention (CDC) introduced the largest national campaign to prevent diabetes (the National Diabetes Educational Program – NDEP) (National Diabetes Education Program, 2007). Concurrently, other health organizations and groups such as the American Diabetes Association (ADA) and the American Heart Association (AHA) have developed campaigns focusing on prevention, management and treatment of diabetes (American Diabetes Association(a), 2008, American Diabetes Association(b), 2008; Hispanic PrWire, 2007). Despite the wide availability and accessibility of campaign materials and information, Hispanics still lack awareness and knowledge about healthy behaviors to prevent diabetes and fail to

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adopt physical activity and healthy eating habits as part of their daily routine (CDC, 2004).

This proposal will focus on the re-invention and re-introduction of the health fair and other demonstrations as health promotion resources in areas with large number of Hispanic population. This report will highlight a hypothetical health campaign among Hispanics. The diffusion of innovations theory will serve as the foundation for developing this campaign. Diffusion of innovations is a theory of social change. The process begins when a new idea, product, service or behavior is diffused into the society (Rogers, 2003). It then continues with the adoption or rejection of the innovation which in turn will lead to certain consequences that will end with the alteration of the social structure. The process includes five steps that follow a certain rationality and sequence of purposes and behaviors. It starts with knowledge, continues with persuasion, decision, implementation and confirmation. In addition, the innovation itself is characterized by five attributes including relative advantage, compatibility, complexity, trialability and observability, which are expected to influence the rate of adoption (Rogers, 2003).

To overcome some of the weaknesses of the diffusion of innovations theory, other elements from communication theories and health campaign planning will be employed to develop a culturally significant and individual relevant heath promotion campaign against diabetes.

II. Hispanic Cultural Characteristics

Familismo and collectivism are important traits of the Hispanic culture. In Latin America, there is a strong sense of interdependence among members of a family or a group. Most chores, activities and celebrations are done in a group-like fashion. There is also a deep feeling of loyalty and reciprocity among individuals (Korzenny and Korzenny, 2005). The young are responsible to take care and to provide for the old while the old are responsible to spread their knowledge to the young (Korzenny and Korzenny, 2005). Because of this reliance on family to provide for each other in times of need and illness, prevention and planning are not common practices among Hispanics. Consequently, the relative advantage of the adoption of the prevention innovation should emphasize other benefits than prevention such as health activities that are group oriented and that emphasize a strong feeling of belonging and respect for the group and the family.

Closely related to collectivism, Hispanic culture can also be viewed as a relatively homophilous society. Language, history, religion and food are some of the elements that bring Hispanics together into a homogenous community (Korzenny and Korzenny, 2005). Rogers (2003) indicates that homophily can represent an obstacle to the acceptance of an innovation as new ideas usually enter the community through more innovative individuals. Individuals in a homophilious group usually interact with other individuals within their own

system rather than with individuals outside their system, making it difficult for the innovation to get recognized (Rogers, 2003). Finding community and opinion leaders that can introduce the innovation in the system without being considered a threat to Hispanics' own traditions and customs will facilitate the adoption of the innovation.

Another consequence of the homophilious nature of the Hispanic community as well as their strong family ties and close neighborhood relationships, is Hispanics' tendency to seek advice through interpersonal channels of communication rather than though mediated channels (Korzenny and Korzenny, 2005). Group or community membership provides a venue where large numbers of individuals come together to exchange information. Group affiliations can also facilitate the dissemination of information in a more comfortable setting as materials and messages that come from the community will be received with greater level of trust and lower level of threat (Stephens, Rimal & Flora, 2004). The selection of communication medium thus, has important implications in the allocation of campaign resources to media versus interpersonal communication channels and in choosing community opinion leaders that help the target audience adopt the innovation.

Opinion leaders and their network have very influential roles in the system of communication structure (Rogers, 2003). In Latin America, elders represent knowledge, experience and expertise. Younger family members and individuals look up to elders for guidance and support (Korzenny and Korzenny, 2005). Similarly, individuals who become sick will turn first to the elders in the family for support and advice before they turn to more distant sources such as doctors. Thus, elders have the necessary prestige, communication network, social acceptability and competence to sway other individuals in the system towards adoption of innovations. They are potential gatekeepers that can introduce the innovation in the community.

The goal of the social norms approach, introduced by Perkins and Berkowitz (1986), is to correct the negative misconceptions about what is socially correct. Using this framework, Perkins and Berkowitz (1986) conducted a study among college students and their perception of peer frequency and amount of drinking. They concluded that students overestimate peer's frequency and amount of drinking as well as peer's positive attitudes towards drinking. Correcting these misconceptions will help reduce heavy drinking on campuses.

Applying the social norms approach to the Hispanic community to correct their negative misconceptions about food, physical activity, health ideal and prevention promotes and establishes positive social norms towards healthy eating and exercising. Thus, if the preventive innovation becomes more acceptable and more strongly related to what is considered an acceptable social norm, Hispanics will be more likely to find the new behavior less complex and in opposition with cultural values.

Concurrently, Naumer, Fisher and Dervin indicate that a person is viewed as "embedded in a context-laden situation, bounded in time and space" (p. 2). When community resources (presence of bike trail and parks in the community) are supportive of the campaign goals and establish leisure and regular physical activity as a social norm, the promotional materials are more likely to be persuasive and convince Hispanics to adopt regular physical activity. When planning a health campaign cultural similarities as well as system characteristics and norms should be taken into consideration.

III. Campaign Development

There are two central goals of this hypothetical campaign include: increasing physical activity and improving eating habits among Hispanics. The objectives will be achieved through participation in community activities and being exposed to community actions which will raise awareness and knowledge as well as encourage members to actively engage in physical activity and healthy eating. The campaign will run year long with evaluations conducted throughout and at the end of the campaign. The health fair concept is based on the transmission of persuasive educational messages about health issues to the target population in an entertaining environment where individuals will not feel vulnerable. The persuasive messages of the proposed campaign will be presented during a Hispanic social event.

An advisory committee will be created that will be responsible for gathering all the resources necessary for the implementation of the campaign. In addition to the committee, community volunteers and health professionals will also participate in running the campaign. Latin American food experts will also be contacted to develop healthier recipes for the participants. In addition, volunteer dance instructors will be contacted to participate in the fair to teach participants dance styles that are less well-known.

The campaign will have three phrases and will be conducted as a pilot study in a city in Texas that is largely Hispanic. The first phase will last between two to three months and it will include exposure to campaign materials through media outlets that will increase awareness about the benefits of physical activity and healthy eating. During this stage the Hispanic community will also receive information that will increase their awareness about the second phase of the campaign. For the most part, brochures and radio announcements and PSAs will be used to accomplish the objectives for this segment of the campaign. In addition, minimum television interviews, radio interview and grassroots promotional activities will also be implemented. At this stage, the communication efforts are focused on delivering a uniform message to the large Hispanic community.

The second phase of the campaign which is the most complex one, aspires to increase Hispanics' intentions to engage in physical activity and encourage them to adopt healthy eating habits. The promotional materials and persuasive messages will be presented during traditional fiestas, health fairs and various community socials and celebrations organized by campaign planners in collaboration with community volunteer and organizations. Health campaign planners and change agents will identify community leaders that would help diffuse the innovation into the larger Hispanic community. Through community funding as well as sponsorships and partnerships, campaign planners will fund and organize 18 traditional celebrations that will take place in the community during six month duration.

During each of the six months of the second phase, there will be three social events in the community. The first and the second one will be considered regular celebrations while the third one will consist of a community competition. When appropriate, community celebrations will integrate traditional fiestas and holidays such as Cinco de Mayo, Dia de la Raza, Dia de Los Ninos, Hispanic Heritage Month, the Three Kings and others (Florida Department of Education, 2008).

Hispanics will attend community gatherings that will offer them an opportunity to dance, play traditional games, eat traditional food and interact with other members of the community. The set up of the celebration will include booths that will provide traditional foods cooked in healthier ways along with recipes to learn how to cook the meals themselves. In addition, designated dance areas will also be set up. In each health fair, there will be multiple themes across the same social gathering: Mexican, Cuban, Puerto Rican and others to include all Central and South American countries. Each of these theme areas will exhibit dances and foods that are specific for each country. Each social event will feature different countries. When all countries exhibited their traditional foods, the themes will be reintroduced. Thus, both cultural similarities and differences will be incorporated in the campaign implementation.

Few hours before the start of each fair, Hispanic women that are innovative opinion leaders (mother-daughter involvement will be encouraged though not required) in the community will participate in free demonstrational workshops that will teach them how to cook healthy traditional foods. They will be assisted by food and health experts. Once the workshop is over similar foods like the ones that they cooked will be served as meal options during the social along with their recipes. Local vendors and restaurants who wish to affirm themselves and gain Hispanic market share, will provide meals that will satisfy the guidelines of healthy diet promoted in this campaign. The food stands and dance areas will also exhibit posters and brochures to inform participants about the health benefits of eating healthy and participating in regular physical activity.

This workshop followed by the health fair will hopefully diffuse the innovation of tasty and healthy traditional foods to the rest of the community

while giving innovative women the chance to experience themselves the advantages of these new recipes. The celebration will offer the opinion leaders the chance to experience cooking healthy foods themselves, in addition to providing them with a social context to interact and influence other individuals within their personal network. Thus, the spreading of the innovation takes place in a relaxed setting where individuals are more open to change and acceptance of new ideas.

The dynamic component of the health fair will present physical activity as a fun, enjoyable and social exercise. Adults will engage in dancing and walking sessions as forms of physical activity. Similarly with the food booths, there will be dance areas specific to each country of origin (four traditional dance areas per social event) thus, conferring each individual a sense of belonging.

Salsa is probably one of the most well-known and practiced Latino dance, however, informal instructors will also be available to teach participants less known dances from other areas in Latin America such as Gato, Zamba and Cumbia (Bensusan and Carlisle, 1978). In addition, children will be reintroduced to old traditional childhood games such as soccer, escondidas[19], el bote[20] or el chicote[21] (Castillo, 2008). Limited playground would be designed for children to play as well. However, due to limitations of space the traditional childhood games would be somewhat modified to fit the available play areas.

There will be no specific promotional material designed for the Hispanic children. The campaign will indirectly target children through the social learning approach. The social learning theory indicates that people can learn by observing and modeling the behaviors of others and the outcomes of those behaviors (Bandura, 1977). Based on this theory, having parents and guardians adopt healthy behaviors, the campaign attempts to provide children with a standard model of healthy lifestyle as well as inspire them to imitate a model that is consistent with their culture and the environment. This will allow children to develop healthy eating habits and regular levels of physical activity that would persist during their adult life.

Reshaping the concept of physical activity will perhaps improve Hispanics' attitude towards exercising. Some of these options have been tried before, although the burden of initiating these activities rested solely on the Hispanic

[19] Escondidas is the equivalent of hide and seek in English.

[20] El bote begins when the person who is "it" takes a can and slams it down on the street. Another child then kicks the can out into the street as far as possible. While the can is flying in the air, all other children scatter to find a safe place to hide. Once the child who is "it" and who retrieves the can goes to look for the other children. Once he finds someone, then the race is on between the two to reach the can and slam it down first. If he doesn't, he becomes "it," and all the other children are called in safe and the game is repeated.

[21] El Chicote (the whip) begins with the children, facing opposite directions, holding each other's hands or wrists. The front person of the chain runs as fast as possible with the group of children holding on for dear life. As the group runs in a serpent-like fashion, the last person of the chain gets the most action, often half-running, half-flying in the air.

individual. The proposed project creates an environment that is familiar, open and conductive to adoption of physical activity without extensive effort from the Hispanic individual. In addition, dancing is portrayed as a social event that is not limited to certain age ranges.

Every third social event of the month during the second phase of the campaign will consist of a community competition, more precisely a mother-daughter and father-son competition. The set up of the gathering will be similar, except each booth will represent families competing for a general prize. Thus, each pair that will enter the competition will have to prepare a traditional food following one of the recipes given throughout the summer during previous socials. The making of the healthy traditional food will take place before the official start of the competition and will be assisted by food experts to confirm the truthfulness of the recipes. The best recipes will win an event prize. Similarly, Hispanic fathers and their sons will engage in low to moderate level sporting events such as mini-walking marathons and other mini-games. The winning pair will also receive a price.

The third phase of the campaign will return to the same characteristics of the first phase. This phase will last two to three months. During these three months brochures and radio announcements will be designed to remind community members of the healthy habits promoted during the summer time through the health fairs. Even though each part of the campaign targets the Hispanic individual, the overarching goal is to change the community in a way that it accepts and views physical activity and healthy eating habits as part of its cultural customs.

The proposed campaign has taken into consideration some of the most defining characteristics of the Hispanic culture, in an attempt to facilitate the dispersion and adoption of healthy behaviors such as regular physical activity and healthy eating habits. Creating an environment that welcomes change and innovation, the campaign hopes to provide individuals with enough practical experience and knowledge to confidently adopt the new behaviors.

Collectivism was highly emphasized in this campaign. The games, the dance, the social concept were all supportive of collectivism. The preventive innovations were introduced in a cultural environment that was familiar to the members of the Hispanic community. A compatible relationship could emerge between the healthy behaviors and the cultural background. Physical activity and healthy eating would not be perceived as a threat to the Hispanic customs anymore. In addition, framing prevention within the context of a festival could synchronize it with beliefs about celebrating life rather than emphasize the contradiction with beliefs about fatalism. The compatibility between health and celebration would only grow stronger. The campaign subtly emphasized the respect for the elders as well. Having mother-daughter and father-son competitions strengthen the older-younger relationship. Thus, the relative advantage of the campaign will be

highlighted through the respect for the family and elderly individuals in the community as well as the importance of group membership.

Campaign communication channels were also consistent with the cultural characteristics, the structure of the system and the preferences of the Hispanic individual. Considering, the high level of social interaction between family members and the homophilous nature of the Hispanic community, the campaign allocated more resources towards communicating through interpersonal rather than mediated channels. Hispanic individuals were exposed to campaign messages in a social context and through the personal networks of the opinion leaders in the community. Less emphasis was put on mediated channels. Nevertheless, mass messages were distributed through radio and brochures during the first and last phase of the campaign. The first part raised awareness about the campaign and healthy behaviors and the last part reminded participants of the already experienced behaviors. Opinion leaders' polymorphic style also helped to diffuse the prevention innovation through their personal network influences more rapidly than if an external change agent came into the community promoting the behaviors.

In terms of complexity, women were offered onsite workshops to practice methods of cooking healthy foods while being assisted by professionals. These new recipes used existing traditional and available food items that were inexpensive and very easy to acquire. In addition, a sense of identification could be established with the dance instructors who were members of the community themselves which reduced Hispanics' degree of perceived complexity of implementing physical activity in daily routine. Taking advantage of community resources, Hispanics did not feel strained to allocate money from their already low income to purchase gym passes or expensive foods. The campaign was design to attract active participation of all members of the community while employing existing community resources to reduce the attitude behavior gap.

The advantages of the innovation as presented in the campaign are obvious and more immediate. The prevention aspect of the innovation becomes a secondary purpose in the eyes of the Hispanic participant, while pride, social acceptance, prestige and fun became the primary goals.

Lastly, observability was also somewhat present in this campaign but under a different form. Through the social learning theory, children are able to observe and hopefully model the healthy behaviors of their parents and other members in the community thus creating a strong foundation of a healthy lifestyle later in their adult life.

From a social marketing perspective, the campaign has addressed all of the important Cs: convenience, cost, communication and consumer. The consumer was at the forefront of all campaign decisions. Campaign promotional and educational materials were presented in a convenient and comfortable setting, the cost inferred to the consumer to conduct the promoted behaviors was minimal and

the communication channels fit target audience's cultural and individual preferences.

More importantly, the project attempts to overcome the major limitation of the diffusion of innovations theory by implementing other concepts from health communication theory and practices. The campaign tries to surpass the pro-innovation bias by using existing research to explore some of the reasons for the rejections of past innovations. Based on those conclusions, the campaign re-invents some of the previously implemented ideas. In addition, the individual-blame bias and the inequality concern are also taken into consideration. Showing Hispanics how they can take advantage of the existing resources regardless of their socioeconomic status, the innovation did not favor individuals with higher education, social status and opportunities.

IV. Partnerships and Sponsorships[22]

Partnership and sponsorships will be sought in the private sector, the food and beverage industry as well as health organizations and NGOs. In addition, the healthy meals exhibited at the fair will be made available through possible contracts with food and beverage vendors that are interested in attracting the Hispanic market. The foods and drinks provided through this venue will have to correspond to certain health standards that are consistent with the message of the health fair. Community and Hispanic organizations will be encouraged to participate with monetary allowances or volunteers. City official will also be sought to assure universal support. Lastly, the campaign will seek the financial and practical support of advertising and public relations agencies.

V. Evaluation and Monitoring Design

The final stage of the health campaign includes the monitoring and evaluation of the campaign effort. Lefebvre, Olander and Levine (1999) suggest several components of evaluation and monitoring including what are the outcomes the campaign measures, how and when will the outcomes be measured and how will the results be reported.

The measure of the main outcomes include determining the change in awareness and knowledge levels about healthy behaviors as well as the change in behavioral intent. In addition, the evaluation will also consist of several process measures such as participation and contributions from outside sources including partnerships and sponsorships. Other measures consist of evaluations of participants' satisfaction in and with the social events. Campaign outcomes will be assessed through quantitative methods of evaluations. However, qualitative

[22] In a real context situation, this section will also include the budget of the campaign.

methods such as in-depth interviewing will also be employed to determine areas where the campaign could improve and whether and why participants found the campaign a success or a failure.

The campaign will be measured in the beginning, throughout its course as well at the end of the cycle. The beginning measures will focus on people's awareness of the campaign. More specifically, at the end of the first phase surveys will be distributed to Hispanics individuals in the community to assess their familiarity with the upcoming social event, their current knowledge about the benefits of the healthy behaviors promoted in the campaign materials and their current health behaviors.

The measures employed throughout the campaign will assess community and individuals' immediate feedback about the effectiveness of the campaign and will direct campaign planners to potential changes or adjustments. During the second phased of the campaign qualitative evaluation method will be used to determine perceptions and attitudes towards the campaign. Every two months, researchers will conduct multiple short interviews. The findings will serves as indications of any immediate changes that need to be made to the ongoing campaign. In addition, at the end of the second phase of the campaign, campaign researchers will conduct focus groups to get a better understanding of the strength and weaknesses of the social event segment of the project.

After all campaign materials are distributed and all mid-campaign components are completed, a final overall evaluation will take place. At the end of the third phase, campaign evaluators will administer surveys again to determine campaign recall, behavioral intention as well as after-campaign eating and physical activity habits. The results will serve to the betterment of future campaigns.

This hypothetical campaign proposal introduces a new approach to marketing health to Hispanics. The campaign takes into considerations the deeply rooted Hispanic cultural beliefs as well as the socioeconomic shortcomings associated with being a minority, immigrant and having low income levels. A thorough understanding of a wide array of factors that impact Hispanics' lifestyle choices can help campaign marketers develop materials and programs that connect with the Hispanic individual at both the emotional and practical levels.

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FEATURES CONCERNING COMPETITIVE PERFORMANCE MEASUREMENT

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Abstract

Innovation and competitiveness are the main vectors of social-economic progress of every country. Starting from this general context and considering the particular context wherein Romania is, which strongly impose the growth of economic competitiveness for realize the convergence to EU countries, in this item we propose to put in evidence the kinds of competitive performance measurement. For this, we'll study from economic development point, competitiveness index contained in Global Competitiveness Report of World Economy Forum (WEF). We'll also comparatively show features linked to the index elaborated by the Institute of Management Development (IMD) in Global Competitiveness Report.

Keywords: *competitiveness, innovation, creativity, competitiveness indices*

Introduction

Many politicians make clear remarks about national competitiveness. Such remarks aren't new. What is new, is intensity and spread, response to globalization, fast economic change, economic distance decay and liberalization spread.

The view over competitiveness brought to a large industry, aiming to politicians, analysts and enterprising men. It has a different output, varying from studies of productivity or cost to specific activities and institutional analysis from national strategy documents, group studies and so on. Its well-known product is however, competitiveness index, a composed indicator that classifies the countries in rapport to selected criteria and measuring national competitive courage.

While competitiveness indices have become essential in political speeches from many developed countries, there is surprisingly less known about the foundation of their economies, how sturdy they are relied on theory and they are build in practice. Academy economists mostly ignored competitiveness "industry"

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and disclaimed its output: the products of the schools of businesses relied on weak or inexistent economic foundations.

Every competitiveness index must start from a measure of national competitiveness performance (variable depending on analysis) bordered by activities which imply the competition with other countries. Bordering of activities in this kind isn't easy.

Numerous economic activities clearly imply competition between nations (such as tradable industry activities, agriculture or service' ones). Others are indirectly fit in competition as inputs in trade activities (for example, parts of infrastructure, of financial or transport services, or the price of a terrain) but there is difficult to separate the relevant elements for competitiveness.

Even others don't trouble trade activities' competitiveness too (as home helping, shareholders, entertainment staff, or restorers) though ones, troubling life quality, can influence the place of investments which trouble the competitiveness.

However the theory suggests that a competitiveness index must make the difference between relevant activities and those irrelevant, this is very difficult in practice. No easy solution shows them while the aim is to measure national competitiveness as a whole.

Competitiveness indices

In the followings, we'll study, from the perspective of economic development, competitiveness index contained in Global Competitiveness Report of World Economy Forum (WEF). We'll also comparatively show features linked to the index elaborated by the Institute of Management Development (IMD) in Global Competitiveness Report. WEF Report is published by an outstanding academic press organism (Oxford University Press) and smoothed by prominent academicians from Harward: Jeffrey Sachs and Michael Porter. IMD Report wholly remains a product of business school and doesn't stay as a claim of academic consideration.

The last WEF report contains two competitiveness indices:

- Current Competitiveness Index (CCI)
- Growth Competitiveness Index (GCI)

For ease the analysis we'll base on this set of indices which make clear range differences between countries. The difference between the two indices is as how it follows: CCI "aims to identify the factors which are on the base of productivity and hence current economic performance, measured by GDP per inhabitant" and GCI "desires to measure the factors which contribute to the further growth of an economy measured by the change rate of GDP per inhabitant".

Income level, in WEF model, depends on capital reserves (including human capital) and on "current technology level". This growth depends on the additions to capital and technology reserves.

Current Competitiveness Index (CCI)

CCI is WEF measure of microeconomic base of the competitiveness between countries. It consists of two components:

- Microeconomic business environment quality

- Complexity wherewith companies or subsidiaries relied on international competition.

Both are relied on Porter's work (1990) about national competitive advantage, the former deriving from his famous `diamond of competitiveness".

Business environment quality measures the quality of firm inputs gained from outside while strategy complexity measures internal variable within firms.

There are 64 variables making up CCI on which 49 comprise the business environment and 15, company operations and strategy.

There are two sets of (connected) problems with the calculation of CCI. The first set is about the measures used to capture the determinants supposed to determine current competitiveness. The second relates to its underlying analytical framework. .

Economic model based on CCI. The main product per capita of the big nations is proportional to the size of capital per inhabitant:

$$y = A * k$$

where:

A – represents technology level added with a simple number which measures average productivity of a capital unit.

k – the dimension of national capital per inhabitant.

Income level is then determined by capital size and technology level. WEF largely defines "capital stock" and "technology level". Unlike physical capital pushed into equipments, buildings and physical infrastructure, capital stock includes education level, manpower's skills and attitudes and managers' skillfulness.

Also, parts of the "capital" stock within an economy, are interventions set and the practices of regulation government activities. Social capital (bigger trusting levels and the presence of networks) also contribute to the quality of the reserves of cluster of capital. Technology includes not only technological

knowledge pushed into scientific and technical institutions of a nation but also firm-based technology. Technology is put in every activity that a firm operates like strategies that firms use for concur.

Therefore, technologies can be also viewed as a stock of: knowledge, capacities, institute and company strategies.

When it is for calculate CCI, however WEF doesn't use measures stocks for physical, human, technological or strategic capital. While there are well-known inherent problems for quantifying such stocks for countries, several attempts were made for win them.

There are evaluations of the stock of physical capital for several countries and they are largely used for productivity and growth analysis. There are also evaluations of human capital stock and R&D stocks (though data belong only to some developed countries).

Therefore there is no way to measure the stocks of "technological capacities" in all firms from an economy. There is even difficult to conceive what "stocks" of social capital, linked systems or regulation practices (i.e. government politic having effect over the businesses) can have sense in quantitative terms or how enterprise practices can be aggregated in a national "stock" of business strategy.

This doesn't impeach WEF to classify the countries in rapport with the 64 variables for microeconomic competitiveness. All these fluxes except one (for patents) are better relied on quality in business viewing then on strong data. The measures are those interesting.

For instance, physical capital is approximated by a variable set for "availability of capital" on its turn, based on qualitative measures of "financial market complexity", "access to market stock", "availability of risk capital" and of other the like. None of this says anything about capital stock. WEF doesn't use even available data at current investment rates. It is a measure of investment rate but this appears in its turn, with other 21 variables in a "financial index" which is a determinant of GCI.

Therefore, there is unusual that "capital availability" catches better the differences between countries in the investment skill or considers human capital other critical determinant of competitiveness. This is caught in CCI by qualitative response to two questions: if "local public schools are of high quality" and "business schools are locally available". As a flux of measures, these are a transfiguration of the literature linked to human capital.

Growth Competitiveness Index (GCI)

There are three subindices making up GCI: the economic creativity index, the finance index and the international index.

1. **the economic creativity index** consists of variables for current technological effort and technology imports;

2. **The finance index** has variables for financial market sophistication and accessibility, interest rates, financial supervision and so on. The current state of the capital market;

3. **The international index** measures import barriers exchange rate alignment and volatility and capital account liberalization.

Economic creativity index (ECI) is a new entrant to the WEF stable of indices. But the attempt to measure innovation under a separate index was in fact introduced in 1999, when it was called the "Capacity for Innovation" (CAP). However, CAP did not form part of the final competitiveness index in 1999. In the following year, WEF replaced CAP by the (very different) ECI, which plays a prominent role in GCI.

The premises of this index were that patents were a good indicator of innovative capacity and that domestic innovative capacity was the most important technological variable in competitiveness.

Both premises are questionable. Patents are only a rough proxy for commercially relevant innovation, and do not capture the minor, incremental technological effort that accounts for the bulk of productivity increase in most economies. Domestic innovation is a misleading indicator of competitive (technological) capabilities because it ignores the inflow and use of foreign innovation. Technology diffuses today with growing rapidity, especially within multinational corporations setting up integrated production systems spanning the world.

This does not mean that local technological capabilities are irrelevant since the ability to use new technologies efficiently entails significant technological effort. But such effort may not generally result in patentable (i.e. frontier) technologies. R&D expenditures perhaps together with stocks of technical manpower would be better indicators of competitive technological capability. But the innovation index uses R&D as an explanatory rather than dependent variable in the analysis of innovative capacity.

Apart from R&D spending, the innovation index used the following independent variables: per capita income, R&D staff, economic "openness", strength of intellectual property regimes, share in GDP of secondary and tertiary education spending, share of R&D funded by industry and the share funded by universities.

The rationale for some of these variables and the causal links between them are difficult to understand. For instance, the use of per capita GDP as an explanatory variable for innovation is strange. The causation is normally taken by the other way around; in some cases, incomes are highly correlated with all technological and skill measures. Variables such R&D staff, R7D spending and skills are also highly intercorrelated. The obvious problems that arise from multiple regression analysis are ignored the coefficients yielded by multiple regressions are used to assign wrights to the variables in the index.

The share of total R7D funded by private industry is supposed to measure the strength of local "innovation clusters" while the share of university R&D is meant to measure the strength of linkage between research and industry.

Both are strange measures. The share of business-financed R&D has nothing to do with its geographical or industrial clustering. The share of university-funded R&D has little to do with how closely universities link with industry in technology creation. In most countries, the governments largely determine R&D budgets. In developing countries, a high share of R&D emanating from universities may actually indicate low links between academia and industry. The measure of skills ((the share of GDP spent on secondary and tertiary education) does not reflect the availability of skilled manpower: enrollment or graduation rates at higher levels, particularly of technical staff, would be better indicators.

Both qualitative and patent measures if innovation ability, are positively related to incomes (and so to competitiveness). While the correlations with income are wholly expected, the causal link with competitiveness is tenuous. It is not clear that frontier innovation is a good measure of relevant technological effort in "follower" countries in the developing and even developed world. The appropriate variable would be a combination of technology import and technological effort. WEF ignores this problem and proceeds to generalize about links between frontier innovation and incomes.

Conclusions

National competitiveness has taken a hold on the government and corporate imagination though professional economists tend to be skeptical of the concept and its applications. Economists are also skeptical of attempts to quantify competitiveness. Here the skepticism seems more justified, though there is a strong case for constructing indices that reliably and objectively benchmark national performance. While many institutions make such indices, the task is more difficult than may appear.

Our examination of the WEF index shows that it suffers from several analytical, methodological and quantitative weakness. Moreover, its presentation conceals these weaknesses, giving a misleading impression of precision, robustness and sophistication. At the general level, the WEF index has two problems. The first is its underlying assumption that markets are efficient and that policy intervention, where necessary, must be "market friendly".

This removes from consideration a large, important set of issues, particularly in developing countries, where market failures call for selective responses. The assumption of efficient markets also goes against its stress on innovation, which is prone to many market failures.

The second is that its broad definition "competitiveness" diverts it from its legitimate focus on direct competition between countries, taking it into areas

where competitiveness analysis is both unwarranted and has little analytical advantage**.**

The strong point of WEF analysis is its emphasis on the micro-economy as the vital determinant of competitive performance. WEF is correct that getting the macroeconomic situation right, while necessary, cannot by itself lead to sustained growth in countries with serious structural deficiencies.

Many development economists have argued that the economic structure has to be changed and improved and that the classic Washington consensus is inadequate to this task. Many have also argued that there is a large and positive role for government in doing this – by improving markets, remedying market failures and strengthening institutions.

How interventionist the government should be, remains controversial, but it is wrong to assume, as the WEF apparently does, that the case against targeted policies is firmly established. The weaknesses of these approaches are epitomized by its trite conclusions on how least developed countries can cope with globalization.

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ASSESSMENT OF THE LEBANESE REAL ESTATE MARKET: A CONTENT ANALYSIS APPROACH

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Abstract

The purpose of this study is to assess the real estate market in Lebanon. The study was conducted by a group of MBA students at the Lebanese American University. A content analysis of the classified advertisements of the Lebanese Real Estate was conducted. Results identified four major elements that affect the Lebanese Real Estate market: Advertisements (R^2=0.795559), Season of the advertisements (R^2=0.741338), Location of the advertisement (R^2= 0.594345), and Area of the advertisement (R^2= 0.099588).The variable, advertisements, was most affected by the other variables. A recursive system test was conducted to show the relationship between advertisements, and the rest of the variables. (P43= 0.628947)

Keywords: *real estate market, Lebanon, content analysis*

Introduction

The purpose of this research is to report about the real estate market in Lebanon. Lebanon has been experiencing severe political instability for the past couple of years. The instability has reached a dead-end political situation, an economic stagnation, a disastrous touristic season (Ramco Real Estate). It all began with the assassination of late prime minister Rafic Al-Hariri. The instability was followed by a war in July 2006, inter community violence, strikes, and sit-ins. Similarly, a war struck out between the Lebanese army and Fateh Al Islam, a terrorist group in Nahr El Bared took place in the summer of 2007. Such a situation has not only lead tourists to avoid Lebanon, but has also pushed the Lebanese themselves to escape and leave the country in search of safety and better quality of life. Most departing Lebanese have gone to Europe, the U.K. or the oil

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rich regions of the Middle East. The exodus of the highly skilled Lebanese became a positive aspect when it came to investments or real estate. (Batbiche, H., 2006)

Currently, the real-estate market in Lebanon is a mature sector that is barley affected by the political situation occurring in the country. "The market has seen resumption in real estate sales transactions in Beirut at the same prices negotiated before July war. This indicates that despite the long term effects of the war, confidence investor's in the local real estate has not shaken." said Raja Mokarem of Ramco Real Estate Brokers and Consultant to Lebanese Opportunities, a local investment journal. Some brokers still have confidence in the Lebanese real-estate market and feel that the rich Gulf Arab investors and the Lebanese working and living abroad will continue to upwardly drive market prices.

There is a growing demand for real estate in Lebanon. Most investments are taking place in land, residential and/or commercial developments, which became a major reason for the price increase. Since the assassination of Rafic Al-Hariri and up to present time, apartment prices have gone up by an average of 20-30%, and it has become increasingly difficult to find a new apartment in Beirut even for the price of $200,000 while some years ago, such an amount would have been enough for a middle class couple to purchase a decent flat. Today, however, this same couple must pay about $400,000-$800,000 to purchase the same apartment. Moreover, land prices have doubled where the land price at the sea front has increased from $3,000/m^2 to $4,000/m^2. While some buyers are looking to snatch up properties at bargain prices, few sellers are willing to lower their prices even though brokers advice a 10% reduction in the asking price in order to increase sales. (Raja Makarem, 2007)

A major reason behind the growth in the real estate sector is the increased interest shown by the Lebanese expatriates and investors from the oil rich Arab countries. According to Lebanese Opportunities in 2005, the government issued 7,499 construction permits, compared to 7,232 permits in 2003, resulting in a 5% increase. According to Nabil Sawabini, chairman and CEO of Mena Capital, the annual real estate transactions have increased in value by 88% from 2001 to 2005. In addition to high interest of the Gulf nationals in the real estate in Lebanon, the increasing wealth of the Lebanese expatriates has a great impact on the real estate market. Moreover, Lebanon's climate attracts Gulf nationals to buy second summer homes in the Lebanese mountains. Lebanese living abroad are also looking to buy homes in their villages and/or second homes in the city of Beirut.

According to Lebanon Opportunities (2006), of the 160 new building permits for private residence in Mount Lebanon, only 95 permits are for Gulf investors. Almost 72% of land purchases were in Mount Lebanon, mainly Baabda, Aley and Metn, and 95% of these purchases were made by Gulf investors. The amount of these investors has definitely decreased. Yet, Gulf buyers have always been a major source of demand for Lebanon's property. Clearly they are the main source

of demand for large-size apartments (500-1500 m^2) which is available at a price between $2 and $10 million. These clients are generally buying luxury seafront units. (Dana Chatila, 2006)

The number of Lebanese expatriates' has been growing fast in the last few years. Their incomes and buying power have also increased significantly as the Gulf region entered into a global boom. There are, however, two categories of expatriates. The first category is the upper segment which may come to the market with a budget of one million USD, and is willing to buy at 2000-2500 USD per m^2 in newly developed buildings. However, the mainstay of expatriate market is the category of salaried couples seeking apartments of 200-300 m^2 with a budget of up to 500,000 USD. (Raja Makarem, 2007)

Moreover, local buyers remain a very important segment of the market. They generally consist of couples with children seeking apartments priced at 150,000-250,000 USD with sizes between 150 and 200 m^2. This category is learning to limit their expectations regarding features such as view or calmness as they realize how difficult it has become to maintain a foothold in fast appreciating Beirut. In other words, such people want to be in Beirut, but they know very well that, with their budget, they have more limited choices.

To assess the real estate market in Lebanon, one must provide an overview of the business environment surrounding the topic. Since Lebanon has a market-based economy, we must have an understanding of Lebanon's economy along the past years, up to our current situation.

Literature Review

Lebanese Real-estate market

As 2000 unfolds, all predictions for the Lebanese real estate market have been positive and upward. As indicated by surveys and interviews with leading authorities, investments in real estate are becoming closer to the peak of the investment cycle. Investment in real estate is not only growing, but also becoming much more diverse. Real estate markets now provide less risk, higher return, better supply/demand balance, and improved development prospects. (Badih Abu Abdallah, 2007)

Real Estate in U.S.A., Europe, and Australia

Concerning America's housing market, the past year has witnessed the largest slowdown in growth rate since 1975. The average price of a house went up by only 1.2% in the second quarter, the smallest gain since 1999. Average prices were still up by 10.1% since previous year.

The number of unsold homes is likely to bring down prices. The housing futures contract traded on the Chicago Mercantile Exchange predicts a 5% decrease in the following year.

European housing markets, especially Belgium, Denmark, France, Ireland, and Sweden, are now on top of the league. A noticeable change is arising as the German market now starts to wake up after more than a decade of declining prices.

Several economists have suggested that Australia and Britain are “the canaries in the coal mine”, giving out early warnings to America's real estate fate. In both countries, the annual growth rate in real estate, especially house prices, dropped down from 20% in 2003 to zero in the summer of 2006. However, house prices in both countries, now referred to as the "canaries", have started to rise again. Over the past year, Australia’s average prices have improved by 6.4%. This is partially due to a 35% increase in Perth, a company in Australia, at the expense of the commodity boom. Similarly, British home prices have witnessed an average increase of 6.6% than the previous year. It is thus claimed that housing markets in Australia and Britain have had a soft landing.

The impact of home prices' flattening is considered to be tougher on the Americans than on the British and the Australians. America's saving rate has sunk, while consumer spending has pitched as homeowners borrow against their capital gains, enhancing the impact on consumers. Britain's saving rate fell down more humbly, so that as prices flattened, the effect on consumer spending was less profound than that of the United States. In Australia, the slowdown in housing made a big dent in construction and consumer spending. However, it was veiled by the commodity boom and exports to China. The risk lies in the fact that the flattening of U.S. home prices could prove much more painful than it has ever been in Australia or Britain.

Real Estate in the Middle East:

The governments in the Gulf are heavily focusing their interests on real estate projects. Entire Cities are being developed and large projects are to be done. And example is the King Abdullah City will cost $26 billion and will be comprised of 592 million square feet of Greenfield will stretch 22 miles along Saudi Arabia’s western coastline. Another development is the $15 billion Blue City in Oman, which has been designed to accommodate 2 million tourists each year along with 250,000 permanent residents; other projects are the New Town and the Industrial Projects in Bahrain, which cost more than $2.2 billion and are being constructed on reclaimed land; not to mention Qatar’s $5 billion Lusail development, which will hold 200,000 inhabitants. Moreover, Kuwait is considering a new project: a 1,001-meter-tall Mubarak al-Kabir Tower. (Natalie Visele, 2007)

We still haven't mentioned the most outstanding country in the Gulf concerning real estate, Dubai, with projects valued at $200 billion. Dubai has four major projects that have been popular all around the world and have attracted the richest, most famous and powerful men in the world. The $9.5 billion land theme park is to be completed in 2010. Regarding the World and Palm Islands developments, these two land reclamation projects including hundreds of islands, will extend the United Arab Emirates' beachfront by more than 160 %. They are being developed by a variety of real estate consortia to construct a mixture of exclusive residential, leisure and commercial developments. The half-mile high Dubai Burj comes at the top of the list and is expected to be the world's tallest and largest building. For it will contain a hotel, luxury apartments and a 12 million square feet shopping mall.

Real estate is not far from the hotel development of tourist infrastructure. The boom in real-estate in the Middle East has greatly aided tourism to substantially boom as well. Christian Portman, the World Bank vice-president for the MENA region, said, "With rising oil prices contributing to surging liquidity, the efficiency with which the region can manage these resources and channel them to productive uses will depend critically upon the region's financial sectors. It is thus particularly opportune that this report highlights the state of the region's financial systems, to understand how they are poised to meet some of the region's development objectives."

Methodology

The study was conducted by a group of MBA students at the Lebanese American University. The students conducted a content analysis study of the classified advertisements of real state in Lebanon. Information generated from the study was obtained from three major daily published Lebanese newspapers, Al-Nahar, Al-Safir, Addiyyar, and one magazine monthly published Lebanon Opportunities. Additionally, personal interviews were conducted with Mr. Rajha Makarem, owner of Ramco, a local real estate firm, and Mr. Badih Bou Abdallah, representator of Coldwell Lebanon. This study was conducted to obtain information about major trends in the real estate market in Lebanon. The study analyses the Lebanese real estate market for the period between 2001 and 2007.

Results

Building the recursive system:

This procedure aims toward a complete diagnosis of the effects of each of the independent variables on the dependent variables (Advertisments) and wether this effect is a direct effect or indirect one. It is a significant way, where some

variables are dependent at times and independent at other times, until we reach the final most effected dependent.

The study examined the dependency of each of the variables on the others by undergoing regression statistics to figure out which of the dependents has the highest R, R^2, and ratio of the explained variation of the dependent variable with respect to the independent variable. Accordingly, the variables were arranged from highest to lowest scores. A correlation analysis between each of the highest and lowest score was conducted.

Data was categorized into four groups:

Group one: consists of the count of all the terminologies that refer to advertisements of real estate

Group two:refers to the count of all the terminologies that refer to the season of the advertisements of real estate

Group three: refers to the count of all the terminologies that refer to the location

of the real estate

Group four: consists of the count of all the terminologies that refer to the area of the real estate

Table 1

Data Categorization

Year	Group One	Group Two	Group Three	Group Four
2001	207	130	132	120
2002	195	170	120	157
2003	254	195	172	140
2004	302	248	150	135
2005	280	230	170	210
2006	225	110	130	216
2007	280	260	160	170

In 2001, 207 terminologies referred to advertisement of real estate (group one), 195 in 2002, 254 in 2003, 302 in 2004, 280 in 2005, 225 in 2006 and 280 in 2007. In 2001, 130 terminologies referred to the season of the ads of real estate (group two), 132 terminologies that refer to the location of the real estate (group three) and 120 terminologies that refer to the area of the real estate (group four).

Results of the regression model in Table 4 show that the dependent variable (group one), which represents the advertisements of real estate, has deviations that are 79% explained by the deviation in the independents variable (group two, three and four).

Table 4

Regression Statistics of Group 1 (advertisements)	
Multiple R	0.891941
R Square	0.795559
Adjusted R Square	0.591117
Standard Error	26.120669
Observations	7.000000
F	3.891375
Significance F	0.146921

Results of the regression model in table 6 shows that the dependent variable (group two), has deviations that are 74% explained by the deviation of the independent variables (groups one, three and four).

Table 6

Multiple R	0.861010
R Square	0.741338
Adjusted R Square	0.482677
Standard Error	41.800087
Observations	7
F	1.465152
Significance F	0.380592

Results of the regression model in table 8 show that the dependent variable (group three) has a 59% deviations that is explained by the independent variable (groups 1, 2 and 4).

Table 8

Regression Statistics of Group 2 (season of advertisements)	
Multiple R	0.770938
R Square	0.594345
Adjusted R Square	0.188691
Standard Error	18.646820
Observations	7.000000
F	0.110603
Significance F	0.948270

Results of the regression model in table 10 shows the dependent variable (group four), has deviations that are less than 1% explained by the deviation of the independent variables (groups one, two and three).

Table 10

Regression Statistics of Group 3 (location)	
Multiple R	0.315576
R Square	0.099588
Adjusted R Square	-0.800824
Standard Error	49.784880
Observations	7.000000
F	2.866054
Significance F	0.205106

Table 11

Correlation between the first group and the remaining Groups

	P4	*P1*	*P2*	*P3*
P4	1	0.102608605	0.767840995	0.844495483
P1	0.102608605	1	0.089841226	-0.071272453
P2	0.767840995	0.089841226	1	0.681523563
P3	0.844495483	-0.071272453	0.681523563	1

Table 12 represents the internal force that affect the R equatio

Table 12

R Inverse		
1.042596	-0.26948	0.257962
-0.26948	1.936974	-1.3393
0.257962	-1.3393	1.93115
P Values		
P41	0.117912927	
P42	0.328605179	
P43	0.628947255	

Further, the highest variable scores were eliminated the same procedure was repeated twice.

Then Mmult and Minverse calculations for each of the results of the correlations were applied. Internal forces P43, P42, etc. were obtained. These Forces were then used to calculate the whole set of reaction between the variables

By applying a calculation of Minverse to get the inverse of R(table colored in blue) and then MMult (multiplying the inverse of r with V(table in blue) for each of the results in the correlations table as shown above we can get the internal forces P43 , P42…….that constitute the Relations between the different variables. (R43,R42,R41)

$\mathbf{R_{41} = P_{41} + P_{42}P_{21} + P_{43}P_{31} + P_{43}P_{32}P_{21}}$ = 0.1026

Where 0.1179 comes from the endogenous relation and -0.0153 Comes from the exdogenous relation.

R41 represents the relation between advertisements and area where we found that the effect of the area on the number of ads through the years 2000 and 2007 is not large 0.102 according to the recursive system but what is significant is that this relation comes mainly from the direct effect (endogenous relation) of the area on the # of ads.

$\mathbf{R_{42} = P_{42} + P_{41}P_{21} + P_{43}P_{32} + P_{43}P_{31}P_{21}}$ = 0.767

Where 0.3286 comes from the endogenous relations and 0.439 comes from the exogenous relations.

R42 represents the relation between advertisements and location where we found that the effect of the location on the number of ads through the years 2000 and 2007, is large 0.767 according to the recursive system but what is significant is that this relation is divided between the direct effect of the location on the # of ads 0.328 and the indirect effect 0.439.

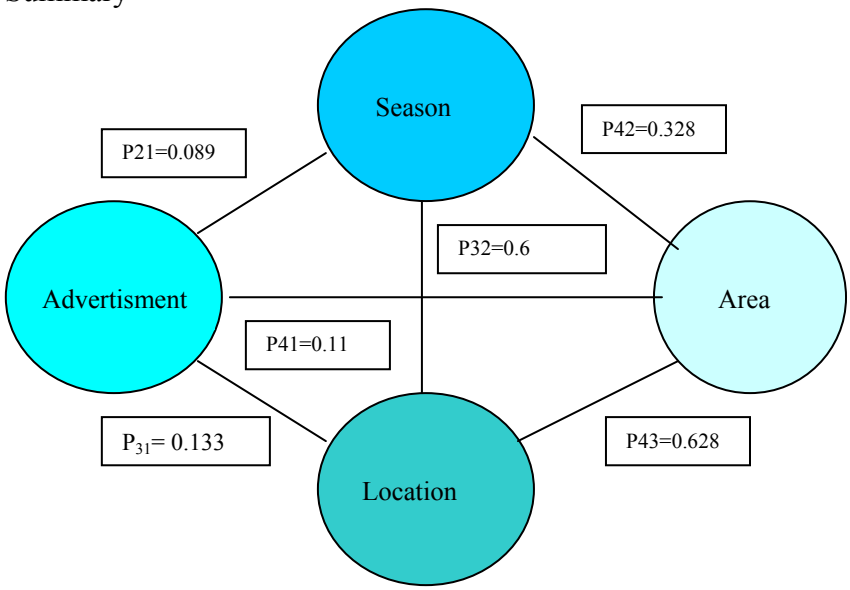
$\mathbf{R_{43} = P_{43} + P_{41}P_{31} + P_{42}P_{32} + P_{41}P_{32}P_{21} + P_{42}P_{31}P_{21}}$ = 0.84

Where 0.6289 comes from the endogenous relations and 0.2155 comes from the exogenous relation.

R43 represents the relation between advertisements and location where we found that the effect of the location on the number of ads through the years 2000 and 2007, is large 0.844 according to the recursive system but what is significant is that this relation is divided between the direct effect of the location on the # of ads 0.628 and the indirect effect 0.2155.

Figure 1

Summary



Discussion

Lebanon's marketing-based economy is driven by services, banking and tourism sectors.

The banking sector in Lebanon acts as a magnet for locals and foreign investors because there are no restrictions on foreign exchange and capital movement and most importantly, bank secrecy is strictly enforced. Another aspect that nourishes tourism and creates spillover to the banking sector is the lack of restrictions concerning foreign investment. As a result, people from all around the world are allowed to own property in Lebanon and create investments which consequently make them feel at home.

The real estate sector is one of the major components of the Lebanese economy. So for the last for couple of years, real estate has been considered among the top investment priorities of all people. A discussion about the importance of real estate and its advancement over the years is presented.

RAMCO, a leader in the Lebanese real estate market with a portfolio of more than 20 million dollars composed of lands, apartments and villas distributed all over the country. Mr. Makarem said that the trend in the Lebanese market concerning the real estate has been upwardly sloping since 1994. However, this increase is negatively affected, to a great extent, by the instable political and security situation, where the continuous Israeli attacks on Lebanon severely discourage investors.

At the same time, Mr. Makarem said that the over all performance of this sector was good and that we can distinguish between the three stages the real estate sector has passed through:

1) The first stage is the period following the war from 1990 till 1994. In this period, the sector started to grow little by little, people started to regain confidence in the country, and lots of them wanted to return from aboard, thus increasing the market demand and giving the green light to contactors to aggressively buy lands to build apartments and satisfy the increasing demand.

2) The second stage was from 1994 to 2005, where the Prime Minister Rafic Hariri launched the plane of "Rebuilding Lebanon". According to Mr. Makarem, this stage was considered as the golden phase of the Lebanese real estate, where huge amounts of money, particularly from Gulf investors rushing to own properties in Lebanon, were injected in this sector.

3) The third stage starts from 2005, when Prime Minister Hariri was assassinated, and continues till the present time. As Mr. Raja commented, this stage is the most critical and complicated phase in the real estate life cycle, where the growth continued in spite of all the instability of the political and security situation. This growth, however, only targeted certain areas in the country such as Beirut and its suburbs. As for the future, Mr. Raja stated that the political

situation is the key player for the market. Therefore, we are facing two scenarios. The first is a boom, meant to happen for the first time if the political complex is resolved. This is due to the great amounts of money, particularly from the gulf region due to increase in oil prices, waiting to be invested in the real estate sector. The other scenario is a steep decline caused by either a war or an economical break down in the country. (Raja Makarem, 2007)

The Coldwell ,which is another leading real estate firm in Lebanon, represented by Mr. Badih Abu Abdallah, considers the real estate sector as one of the treasures that Lebanon possesses. It attracts investors due to the beautiful mild weather and short distances. In his opinion, the trend in the Lebanese R.E. will continue to increase in the future. Even in the worse case scenario, this increase will be, on average, around 8% per year. After all, the country has been unstable for the past 25 years and this didn't hinder growth. The Variety of land found in Lebanon, and the limited areas are all factors supporting this sector and making it more valuable. Moreover, the demand on real estate in Beirut and its suburbs is very high and is considered as the main reason for the growth in real estate.

The prices in the real estate sector were still increasing. According to Mr. Simman, the head of the mortgage publishing in the Addiyar news paper, this was due to the intervention of e-buying, where the internet revolution has reached its peak. This had caused people to shift away from the traditional news paper ads.

These major categories in real estate (lands, buildings, and Villas) were depicted as different categories in order to determine important trends and where demand is concentrated.

The reason for this discrepancy can be explained by the shift towards on line advertising. It is also due to the aggressive strategies implemented by the real estate firms. According to Mr. Badih Bou abdallah, Coldwell has employed more than 100 young people to work as real estate brokers and to conduct market research through site visiting and personal interviews with buyers and sellers in order to identify the needs and opportunities away from advertising and the traditional publishing of real estate. According to Mr. Bou Abdallah, this strategy is successful since these brokers as playing the role of intermediaries between the buyer and the seller and directly matching their needs. (Badih Abu Abdallah, 2007)

Limitations:

- We were not able to link between the increase in prices and increase in ads, so we had to interview experts and conduct research and read many article in order for us to determine the trend of prices.
- The real trend was not represented only through ads, which drew a real image till end of 2003, but after that there was a decrease in the number of ads for

real estate sector, while the price were going up. So this was explained later by tracing some interviews and conducting research analysis.

Conclusion

By adopting the content analysis strategy and following its steps, we were able to draw out a conclusion to our topic which is reasonable matter and can be repeated again. By applying the funnel method starting from the general economy in Lebanon, then targeting real estate sector as a whole and after that determining the main components of this sector and the key factors behind its growth, in addition to main locations that the investors are seeking (Beirut).All this was achieved by tracing the ads in several sources, and by locating them into categories and sub categories using the coding process. Our findings matched our research questions where we were able to determine that the trend of real estate in Lebanon is upward and the economical and political factories didn't severely affect this area where prices are still increasing as well as demand. Moreover, we observed the effect of seasonality on real estate which is changing from season to season, except for Beirut; where demand is approximately the same all over the year. Based on the sources we were targeting and on the interviews that we conducted no one can deny that there is, undoubtedly, some risk linked to the current situation, but we consider this as a calculated risk.

Real Estate in Lebanon remains a sure value.

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A COMPARISON OF THE MOST POPULAR ELECTRONIC MICROPAYMENT SYSTEMS

Alexandru Pîrjan and Dana-Mihaela Petroşanu*

Abstract

The buying and selling of products or services over electronic systems such as the Internet and other computer networks is known as electronic commerce. In order to reduce the costs of electronic transactions, when one exchanges cheaper goods and services, specific payment protocols must be used. These protocols are actually the foundation for electronic micropayments, which implement simplified and cheaper schemes intended for small value transactions. In this paper we shall present and compare the main characteristics of the most popular micropayment systems used in both face-to-face and remote commerce.

Keywords: *e-commerce, micropayment, security, encryption, Chipper, GeldKarte, Mondex, Proton, First Virtual, NetBill, KLELine, Odysseo, MicroMint.*

Introduction

The evolution from traditional commerce and marketing methods to the electronic modern ones, alongside the Internet represents tremendous opportunities and succeeds in breaking time and space obstacles materializing in electronic commerce (e-commerce), electronic business (e-business) and mobile commerce and business (m-commerce and m-business). Software applications designed for such services have a great need for an efficient, robust, trustful security framework, binding both informatics and legal security elements. In order to design and implement an efficient business model, informatics, economics and juridical experts must work together and this gives electronic commerce a multidisciplinary feature.

According to FACEE (French Association for Commerce and Electronic Exchanges) electronic commerce is represented by all the dematerialized relations, which are established. Electronic commerce includes both material and

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virtual goods (software, music, movies, books) and users` profiles on which the business model can be designed taking into account the pieces of information gathered during online transactions. The means of payment for all these transactions can be both classic (cash, cheques, credit transfers etc) and electronic (electronic or virtual purses, electronic or virtual cheques and digital money). Electronic commerce applications can be analyzed from four perspectives, depending on the nature of economic factors and the type of relations between them:

Business-to-Business : the client is another company or a different department from the same company and the main trait of this type of relations is the long term commitment.

Business-to-Consumer which is usually achieved through telecommunication networks. Neighborhood or contact commerce, which implies a face-to-face interaction between the supplier and the buyer. Peer-to-peer which takes place without an intermediary.

Electronic transactions can have significant costs, which are acceptable when great values are exchanged (DigiCash, Open Market, CyberCash, First Virtual, NetBill). For example, at a 5-10 $ value per transaction the cost value represents several cents plus a percentage from the transaction's value. If the transaction value were under 50 cents, the above-mentioned cost would be significant and so it will not be profitable. This is the reason why, when one exchanges cheaper goods and services specific payment protocols must be used. These protocols are actually the foundation for electronic micropayments, which implement simplified and cheaper schemes intended for transactions of small value (several dollars, cents or even fractions of a cent). The most popular micropayment systems for face-to-face commerce are Chipper (Netherland), GeldKarte (Germany, Austria, Netherland, Switzerland, France), Mondex, Proton (Belgium and others).

Some of the most popular sytems of the first generation are: First Virtual, NetBill, KLELine/Odysseo, Millicent, eCoin (virtual tokens), PayWord, MicroMint , while the second generation is represented by prepaid card based systems (for example Smartcode, Easycode), e-mail based systems (for example Pay Pal) and Minitel like systems.

From this point, forward we will depict some characteristics of the most popular micropayment systems.

Electronic micropayment systems used in face-to-face commerce

Some of the most common applications of this type of e-commerce is in public transportation systems, parking meters, bakeries, news standings and vending machines. In most of the countries, cash is the preferred mean of payment regarding face-to-face commerce, with a percentage of 90-100% of people who use fiduciary money. Because of their costs and some degree of risk, cheques and

bankcards are seldom used. The physical support of these means of payment are integrated-circuit cards, which are the heart for the electronic purses that are used in face-to-face commerce. The main goal of these systems is the replacement of cash and a certain degree of personalization for the services offered. These electronic purses do not depend on special software installed on client's machine, in contrast with virtual purses. The quantity of fiduciary money is given by the electronic value no mater the type of the purse. In order to recharge the electronic value of the purse a financial institution has to step in. The term "micropayment" refers to transactions which reside within a value between 10 cents and US 10 $, while "picopayment" represents values of less then 10 cents. Some of the most important electronic micropayment systems in face-to-face commerce are:

Chipper

Chipper is an electronic purse developed in the Netherlands by KPN a telecommunication operator with the help of Postbank. CyberChipper represents the commercial offer and it allows also Internet payment. The architecture of Chipper-System is depicted in figure 1.

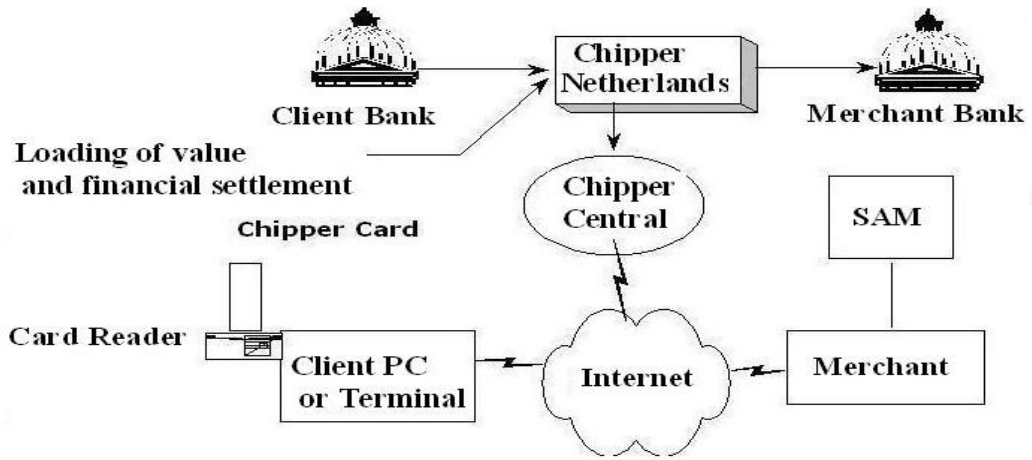

Figure 1. The architecture of Chipper system

The electronic purse is identified and authenticated by Chipper Central, which acts as an intermediary of all the transactions. The same procedures are applied in respect with the merchant terminal. Chipper Central is connected to the payment portal, Chipper Netherlands.

The Security Application Modules (SAM) controls the exchanges between the merchant's server and Chipper Central on one hand and the merchant's server and client's server on the other hand. The details of the protocol security have been kept secret, but it is a known fact that it uses symmetric encription by using

triple DES (Data Encryption Standard), and the key exchange is done using the public key criptography RSA.

The electronic purse Chippper uses the multi purpose IBM card with the specification ISO/IEC 7816-4 and ETSI TE9 (1993). The implemented protocol is IBM Smartcard Identification (ISI) a proprietary protocol which has also been used in many universitary projects in the Netherlands. It includes the ST 16SF48 chip made by SGS Thomson, with the following specifications : 19 KB ROM, 288 B RAM, 8 KB EEPROM. The card reader consists of a keyboard, a screen and specific applications for the electronic purse, applications that allow seeing the remaining value on the card. Swiss Telecom has implemented Chipper specification in his electronic purse Smart Scope

GeldKarte

GeldKarte was first used in 1968 and it reprezented an enhaced version of the Eurocheque card due to the use of a microcip. GeldKarte can be used both in face-to-face commerce and where there is a need for remote Internet payments (in this case the user must have a terminal or a PC with a card reader and the necessary software). The software displays the available value from the card, the transactions' value, the conection status, and it also logs all the transactions which have taken place.

There are many products based on GeldKarte. Deutsche Telekom, in partenership with the railway german company Deutsche Bundesbahn and VDV (The Municipal Transport Association) implemented PayCard, in 1996, Modeus/Moneo was also based on the GeldKarte technology when it replaced the paper tickets for public transportation systems with wireless payments in 2004. The cards were read at the entrance, where the card reader was integrated, from a distance of 10 cm. The antenna transmits at a frequency of 13.56 MHz and is integrated in the surface of the card. Gemplus or Giesecke & Devrient and other smart-card manufacturers based their products on GeldKarte specifications. The microcip is made by Infineon (ex Siemens) or Motorola, with the following specifications 12 KB ROM, 256 B RAM, 8 KB EEPROM (Kirschner, 1998) complying to ISO/IEC 7816-4 (1995). The GeldKarte protocol uses cryptographic algorithms in order to verify the identity of both the cardholder and the merchant.

The integrity of the messages is achieved with a symmetric encryption algorithms DES or triple and comply with the ANSI standards X9.19. The digest of the message has 128 bits and is obtained by aplying a hash function which complies to ISO/IEC 10118-2. The card holder's identification is achieved using a personal identification number (PIN). The PIN is necessary for recharging the card but not for payment.

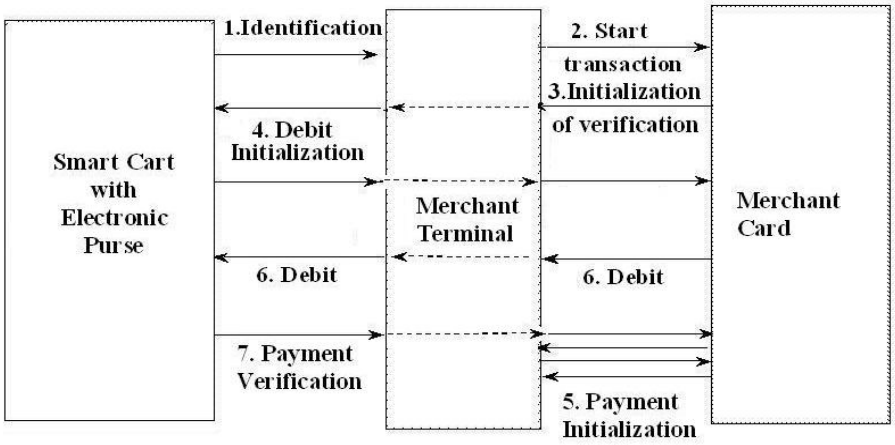

Figure 2. GeldKarte – message exchange.

The client has full anonymity regarding the merchant but not in respect to the financial authorities. Every GeldKarte has a unique identification number and a symmetric key used for encryption. The card's serial number, encryption keys and the pin are stored in a "private-protected" zone of the card. These pieces of information can also be found in an encrypted file kept under high security at the issuing bank. Each transaction has a unique identification number which prevents replay attack. The exchanges during a payment with GeldKarte are depicted in Figure 2.

Mondex

Eversince its beginning Mondex tried to replace classic money. The companies involved in the project were: Dai Nippon Printing Co for the card, Hitachi Panasonic and Oki Electric Industry for integrated circuits, BT (ex British Telecom) and Natwest became interested in obtaining the approval from the Bank of England for recognizing Mondex as a new authentic mean of payment. In the summer of 1996 Mondex International was established as an independent company, MasterCard being the main shareholder along with other 17 multinational corporations. Even if the specifications of the project are kept secret, some important details have been make public: the microchip has 16 KB ROM, 512 B RAM, 8 KB EEPROM (Kirschner 1998); the card can store up to 5 different currencies; the exchange protocol allows also the exchange of value between 2 Mondex cards, remotely (this is a unique feature of Mondex among all other electronic purses); a new type of MIME e-mail messages is used in Mondex exchanges; a Mondex transaction can resume if a break occurs right from its break point.

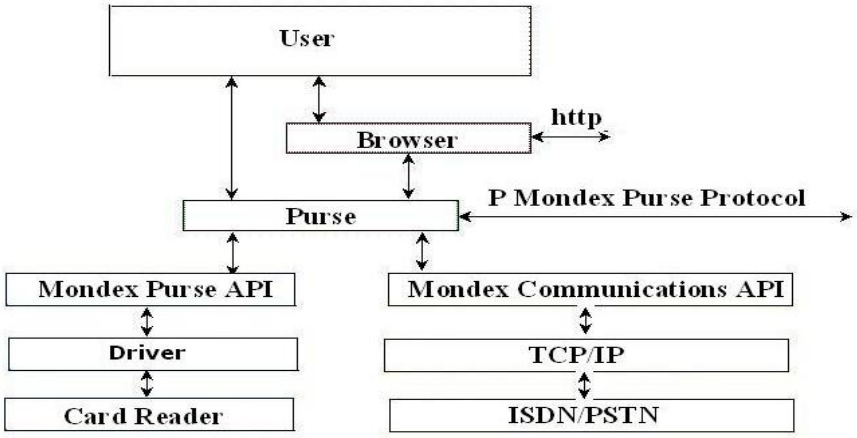

Figure 3. Configuration of a Mondex Client

The Mondex protocols can bind Internet remote payments with those specific to an electronic purse. Two different protocol stacks, which merge in the electronic purse, support the user's interface. The first one assures the Internet access through a HTTP protocol and the second one refers to the electronic purse's performance using a card reader. The intermediate layers between the browser on one side and the TCP\IP layer on the other side are proprietary. The protocols, which control the Mondex electronic purse, are also proprietary. As a consequence of trial testing in some countries (Great Britain, USA, Canada, Hong Kong) Mondex proved to be better suited for remote micropayments. Figure 3 depicts the configuration of a Mondex client.

Proton

Banksys, an inter-banking company, responsible for electronic payments in Belgium initiated in 1993 the project Proton, which was later implemented, in 1995. This electronic purse has been available all over Belgium since 1996 and it gained international success being the second after GeldKarte regarding the number of its users.

The card used by Proton is manufactured by CP8-Oberthur and Phillips. The microcips are from GS Thomson (ST16 601), Infineon (ex Siemens), Motorola (SC46). Their memory size varies between 6 KB and 16 KB ROM and between 1 and 8 KB of EEPROM (Kirschner, 1998). In order to verify the card and to assure the authentication of both the card and the terminal the merchant terminal is equipped with a Security Application Module. The transactions` security is achieved by using the DES algorithm, for confidentiality and RSA for authentication. The security framework and the electronic purse's functionality is based on the specifications of the EN 1546 standard. Proton is also used for the

payment of parking spaces in Belgium and for the access in Banksys or the French Hospital from Ganshoren.

The electronic purse Proton is available in Germany, Sweden, Switzerland, Australia, Hong Kong, New Zealand, Canada, and Brazil.

Electronic Purses Standardization

The main technical and commercial characteristics of electronic purses used in face-to-face commerce are depicted in Figure 4. A big inconvennient for these services is represented by the lack of compatibility regarding protocols and services. A major inconvenient for clients is that they must have more micropayment systems from different providers especially for payments made in foreign countries. A possible solution for this problem could be an intermediary who would handle valutary exchanges under the close supervision of a bank.

The great number of electronic purses and their lack of interoperability are discouraging the market, represents an impediment for their users and creates a lot of operational problems for services providers and an increase of the production cost. The new EMV (EuroPay, MasterCard, Visa) specifications are targeting these specific problems.

The micropayment system		Chipper	GeldKarte	Mondex	Proton
Country where is used		The Netherlands	Germany, France	UK, Australia, Canada etc	Belgium Australia Brazil Sweden
Number of currencies		1	1	5	Several
Card manufacturer		Bull, Phillips	Gemplus, Giesecke & Devrient, ODS	Dai Nippon Printing	CP8 Oberthur, Phillips
Chip manufacturer		SGS Thomson	Infineon (ex Siemens), Motorola	Hitachi	SGS Thomson, Infineon (ex Siemens), Motorola
Memory size	EPROM ROM RAM	8-16 K 288 1-8 K	12 K 256 8 K	16 K 512 8 K	6-16 K - 8 K
Security		RSA, 3DES, SAM	SAM DES	Proprietary	SAM 3DES RSA
Anonymity		yes	yes	yes	yes

Figure 4. A comparison of the main electronic purses in face-to-face commerce

Remote Electronic Micropayment Systems

Remote electronic micropayment systems have evolved in two generations. The first generation once brought many technical innovations regarding cryptography and new types of electronic money have emerged. These systems lacked a lot of practical aspects and this was the reason why they have been surclassed by a new generation of products, which were meant to satisfy the needs of their potential users. In order to support the exchanges between the two sides involved in the transaction and to assure the required security level a third thrust party had to interfere. The exchanged products of these systems are non-material (information, newspaper archive, online games, zodiac and multimedia content).

We will present some of the most popular remote micropayment systems of the first generation: First Virtual, NetBill, KLELine/Odysseo, Millicent, eCoin, PayWord, MicroMint .

First Virtual

First Virtual was the first commercial offer which used secure payments for digital information and services throughout the Internet. This system didn't use cryptography for assuring the confidentiality and authentication. It was based on two independent networks which were managing the exchanges: the PSTN (Public Switched Telephone Network) and the Internet, which needed simple telematics methods like a browser and a e-mail client whithout any other additional software.

A client could subscribe to this service by means of post, telephone, fax or Internet. The First Virtual server sent a virtual personal identification number (PIN) to the client with which the client could access the payment server.

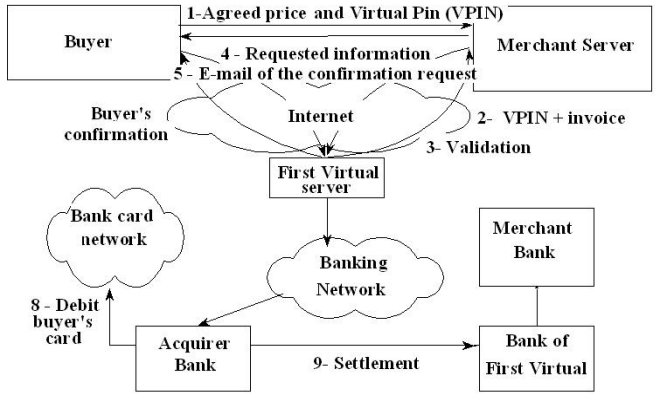

Figure 5. First Virtual

The exchanges which take place in the buying protocol, presented in Figure 5, are as follows:

1. By accessing the order form whithin the browser, the client was sending his PIN

Using the First Virtual application, the merchand verified the client and the invoiced details.

The First Virtual server would respond to the merchant's server after having verified the requested details.

The merchant's server would send the requested information back to the client if it received a positive answer.

The transaction was about to been settled after the client had been asked for an e-mail confirmation by the First Virtual server .

If the client confirmed, First Virtual would send the credit card number to the First USA bank, in order to debit his account.

The business could be settled by an interbanking exchange or through the credit card network.

Due to its simplicity, the procedure was one of the main advantages of this system and proved capable of avoiding cryptographic problems allowing the online selling of images and text. This system wasn't compatible with all the transaction types (for example for buying physical goods) so it had a limited applicability.

NetBill

NetBill consists of a set of protocols, rules and software specially designed for the selling of images, text and software through the Internet. The billing of the client takes place only after he has received the encrypted information and the decryption key which allows him to access the information is sent only after the payment has been made. These are the main characteristics and the advantages of this system.

Both the CA-function (certification authority) and that of a third trusted party is assured by the NetBill server, which also handles both the public and private RSA keys and the session key which are used to encrypt the exchanges which take place between the client and the merchant. In order to subscribe the client sends his payment coordinates encrypted with a downloadable security module (Money Tool) and after he received from the NetBill server an identifier and a pair of public and private RSA keys. The merchant receives the Product Server software and a pair of public and private RSA keys. The client prepays the service from his banking account.

In order to accomplish the four major transaction phases (negotiation, order, delivering and payment) the buying protocol uses 8 HTTP messages. Both the client and the merchant along with a payment intermediary (the NetBill server)

are involved in the transaction. The NetBill server is actually a third thrust party which communicates directly with the merchant, and through him, indirectly with the client. The exchanges can be observed in Figure 6.

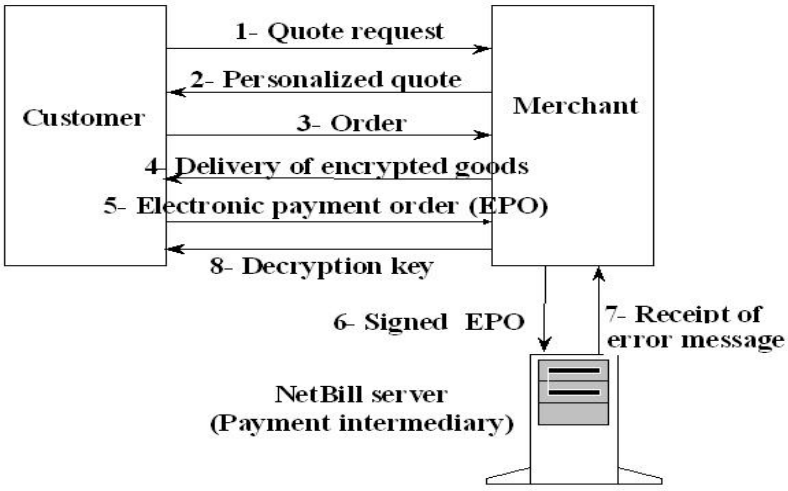

Figure 6. NetBill

Although NetBill has a lot of potential like the managing of the electronic order, the encryption of the information and the fact that the decryption occurs only after the payment has been made, this system's performance is reduced by the frequent use of digital signatures and the number of transactions which can take place simultaneously is limited by the server's technical specifications.

KLELine

The electronic micropayment system KLELine was buit from three main elements: a platform for securing the payments, a virtual store and also a payment system named Global ID, under a bank's management which handled the economic exchanges. KLELine used many payment instruments: a virtual purse (recharged from a bank account) for purchases less then 15$, a bank card for purchases of over 75 $, and for values between 15 $ and 75 $ you could have chosen whatever method you preferred. Over 183 currencies where supported and the exchange rate was updated every 6 hours. For every trasaction KLELine deducted its commision

The client received a personal identificaton number (PIN), a client identifier (CID), a software named Klebox or PACK (Personal Autenthication and Confirmation Kit). The software was actually a plugin of the browser, which granted access at the virtual purse. The customer had to use his PIN in order to identify himself to the server. The security of the exchanged messages was assured by a pair of 512 bits RSA keys. The merchant's kit named SACK (Server Authentication and Certification Kit) was securing the communication with

KLELine by using asymmetric encryption with certification and assured the offer's customization depending on the user's profile, received and logged the receipts and also updated the exchange rate.

The KLELine server was in the same time an intermediary between the customer and the merchant, assured the communication between the banking network and the Internet, a third trusted party, a virtual store, and also guaranted the confidentiality of the client's banking details.

The different phases of the transaction, including the payment, were described in the CPTP protocol (Customer Payment Server Transaction Protocol). The transaction was composed from different stages as depicted in Figure 7.

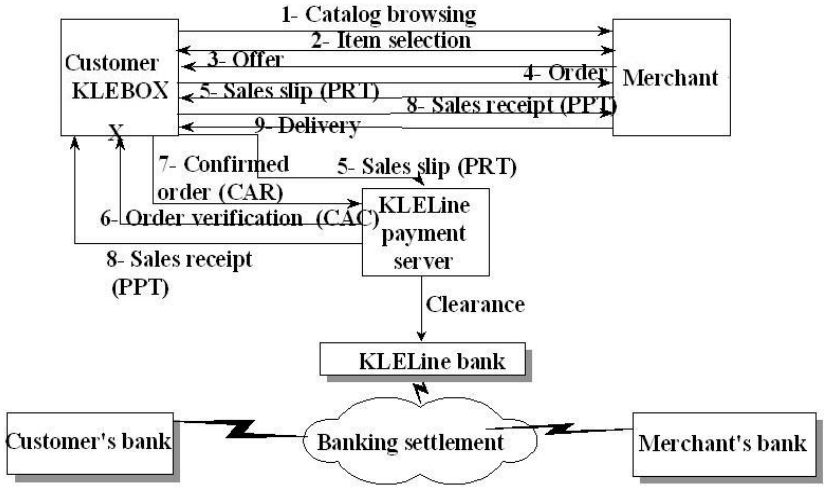

Figure 7. KLELine

KLELine used public key encryption using the RSA algorithm with a key length of 512 bits, MD5 hashing, and a symmetric unspecified algorythm for the merchant's authentication and the messages integrity.

KLELine didn't assure anonymity because all transactions were being logged and so the identity of the client was revealed. Many elements of the CPTP protocol have not been made public (for example we do not know what was the meaning of the signature, what exchanges where encrypted with the session key or what was the algorithm used), so we can't completely evaluate this system.

From the ashes of KLEline a new electronic micropayment system was born, Odysseo, wich supported multiple cards and currencies. In contrast with KLELine, Odysseo didn't require for the client to make use of dedicated software. When it comes to client authentication, KLEline uses the RSA algorithm with a key length of 512 bits, while Odysseo is basing it's infrastructure on public key encryption algorithm whose key-length is unknown. Regarding the security protocol KLEline used a proprietary CPTP protocol which

hasn't been released to the public, and Odysseo used 128 bits SSL. While KLELine couldn't assure nonrepudiation, Odysseo is assuring it through the use of time-stamping.

MicroMint

MicroMint is an electronic micropayment system developed by Ronald R. Rivest si Adi Shamir, and the economic value is represented by tokens called Micromint coins. They can be validated very easily as they include a sequence of bits but their production is very expensive. The more coins are produced, the more will the unitary price decrease and the cost of their counterfeiting will be unprofitable. The necessary computation loud is greatly diminguished because it avoids the use of public key encryption. The exchange of coins can be observed in Figure 8.

MicroMint coins can be purchased from a broker by means of banking payment (credit cards, cheques, etc). The broker, which acts as an intermediary in the transaction, keeps track of all the coins he sold.

Because the security mechanism's costs are very expensive, they focus on systematic frauds. Forging of the coins is not profitable because of the small values which are exchanged and the fact that new coins are minted periodically.

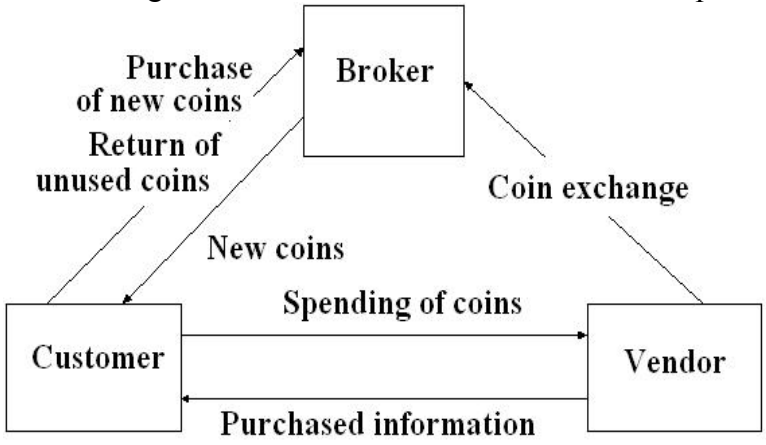

Figure 8. MicroMint cycle of coins.

The security measures include: a monthly change of the validity criteria and the broker produces new coins a few months before putting them on the market, which makes their forging more difficult. If the MicroMint server is hacked an extreme measure is taken, all the coins are withdrawn from the market and replaced with new ones.

Conclusions

The first generation micropayment systems that were discussed above are compared in Figure 9. Although extremely ambitious from the technical point of view, the first generation remote micropayment electronic systems proved to be unrealistic when they have been implemented, so the need for new remote electronic micropayment systems has arisen. From the technical point of view, these systems were supposed to be as simple as possible and not to request the client's details each time a transaction has occurred. This has been the starting point for the second generation remote micropayment systems: prepaid card-based systems, e-mail and Minitel like systems.

The micropayment system	NetBill	KLELine	Micromint
Services offered	Payment system	Commercial mall, banking gateway, payment intermediary	Payment system
Authorization	Online	Online	Offline
Role of intermediary	Trusted third party, notary	Trusted third party, notary	Notary
Security protocols	Public-key Kerberos	Proprietary (CPTP)	No encription, hashing, no protection against double spending
Storage of the secrets by the customers	The payment intermediary keeps a copy of the decription key of the items; the session keys are stored on the client machines	PIN to memorized	-
Instruments for loading value	Credit card, direct debit, fund transfer	Under direct control of a bank	Credit card, cheques
Nature of the money	Legal tender	Legal tender	Jeton
Subscription	Prepayment	Prepayment	Credit

Figure 9. Comparison among a few systems of remote micropayment

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DATA MINING AND THE PROCESS OF TAKING DECISIONS IN E-BUSINESS

Ana Maria Mihaela Tudorache*

Abstract

Data mining software allows users to analyze large databases to solve business decision problems. Data mining is, in some ways, an extension of statistics, with a few artificial intelligence and machine learning twists thrown in. Like statistics, data mining is not a business solution, it is just a technology. For example, consider a catalog retailer who needs to decide who should receive information about a new product. The information operated on by the data mining process is contained in a historical database of previous interactions with customers and the features associated with the customers, such as age, zip code, their responses. The data mining software would use this historical information to build a model of customer behavior that could be used to predict which customers would be likely to respond to the new product. By using this information a marketing manager can select only the customers who are most likely to respond. The operational business software can then feed the results of the decision to the appropriate touch point systems (call centers, direct mail, web servers, email systems, etc.) so that the right customers receive the right offers.

Keywords: *data mining, business decisions, data analysis, cluster analysis, decision strategy*

1. Introduction

Data mining identifies trends within data that go beyond simple analysis. Through the use of sophisticated algorithms, non-statistician users have the opportunity to identify key attributes of business processes and target opportunities. However, abdicating control of this process from the statistician to the machine may result in false-positives or no useful results at all.

Although data mining is a relatively new term, the technology is not. For many years, businesses have used powerful computers to sift through volumes of data such as supermarket scanner data to produce market research reports (although reporting is not considered to be data mining). Continuous innovations

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in computer processing power, disk storage, and statistical software are dramatically increasing the accuracy and usefulness of data analysis.

The term data mining is often used to apply to the two separate processes of knowledge discovery and prediction. Knowledge discovery provides explicit information that has a readable form and can be understood by a user. Forecasting, or predictive modeling provides predictions of future events and may be transparent and readable in some approaches (e.g., rule-based systems) and opaque in others such as neural networks. Moreover, some data-mining systems such as neural networks are inherently geared towards prediction and pattern recognition, rather than knowledge discovery.

Metadata, or data about a given data set, are often expressed in a condensed data-minable format, or one that facilitates the practice of data mining. Common examples include executive summaries and scientific abstracts.

Data mining relies on the use of real world data. This data is extremely vulnerable to collinearity precisely because data from the real world may have unknown interrelations. An unavoidable weakness of data mining is that the critical data that may expose any relationship might have never been observed. Alternative approaches using an experiment-based approach such as Choice Modelling for human-generated data may be used. Inherent correlations are either controlled for or removed altogether through the construction of an experimental design.

2. The algorithm used in data mining

Data Mining is an analytic process designed to explore data (usually large amounts of data - typically business or market related) in search of consistent patterns and/or systematic relationships between variables, and then to validate the findings by applying the detected patterns to new subsets of data. The ultimate goal of data mining is prediction - and predictive data mining is the most common type of data mining and one that has the most direct business applications. The process of data mining consists of three stages: (1) the initial exploration, (2) model building or pattern identification with validation/verification, and (3) deployment (i.e., the application of the model to new data in order to generate predictions).

Stage 1: Exploration. This stage usually starts with data preparation which may involve cleaning data, data transformations, selecting subsets of records and - in case of data sets with large numbers of variables ("fields") - performing some preliminary feature selection operations to bring the number of variables to a manageable range (depending on the statistical methods which are being considered). Then, depending on the nature of the analytic problem, this first stage of the process of data mining may involve anywhere between a simple choice of straightforward predictors for a regression model, to elaborate exploratory

analyses using a wide variety of graphical and statistical methods (see Exploratory Data Analysis (EDA)) in order to identify the most relevant variables and determine the complexity and/or the general nature of models that can be taken into account in the next stage.

Stage 2: Model building and validation. This stage involves considering various models and choosing the best one based on their predictive performance (i.e., explaining the variability in question and producing stable results across samples). This may sound like a simple operation, but in fact, it sometimes involves a very elaborate process. There are a variety of techniques developed to achieve that goal - many of which are based on so-called "competitive evaluation of models," that is, applying different models to the same data set and then comparing their performance to choose the best. These techniques - which are often considered the core of predictive data mining - include: Bagging (Voting, Averaging), Boosting, Stacking (Stacked Generalizations), and Meta-Learning.

Stage 3: Deployment. That final stage involves using the model selected as best in the previous stage and applying it to new data in order to generate predictions or estimates of the expected outcome.

The concept of Data Mining is becoming increasingly popular as a business information management tool where it is expected to reveal knowledge structures that can guide decisions in conditions of limited certainty. Recently, there has been increased interest in developing new analytic techniques specifically designed to address the issues relevant to business Data Mining (e.g., Classification Trees), but Data Mining is still based on the conceptual principles of statistics including the traditional Exploratory Data Analysis (EDA) and modeling and it shares with them both some components of its general approaches and specific techniques.

3. Data mining in business

Data mining in customer relationship management applications can contribute significantly to the bottom line. Rather than contacting a prospect or customer through a call center or sending mail, only prospects that are predicted to have a high likelihood of responding to an offer are contacted. More sophisticated methods may be used to optimize across campaigns so that we can predict which channel and which offer an individual is most likely to respond to - across all potential offers. Finally, in cases where many people will take an action without an offer, uplift modeling can be used to determine which people will have the greatest increase in responding if given an offer. Data clustering can also be used to automatically discover the segments or groups within a customer data set.

Businesses employing data mining quickly see a return on investment, but also they recognize that the number of predictive models can quickly become very large. Rather than one model to predict which customers will churn, a business

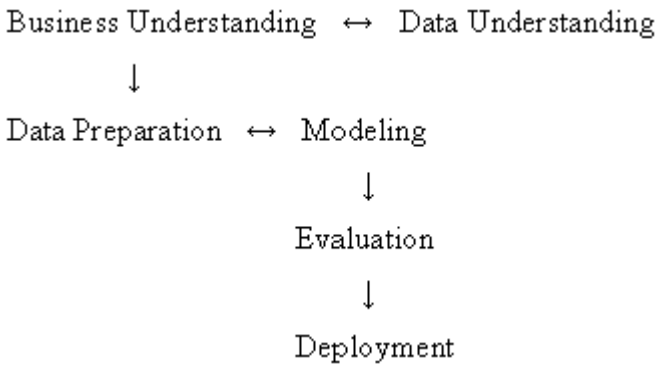
could build a separate model for each region and customer type. Then instead of sending an offer to all people that are likely to churn, it may only want to send offers to customers that will likely take to offer. And finally, it may also want to determine which customers are going to be profitable over a window of time and only send the offers to those that are likely to be profitable. In order to maintain this quantity of models, they need to manage model versions and move to automated data mining.

Data mining can also be helpful to human-resources departments in identifying the characteristics of their most successful employees. Information obtained, such as universities attended by highly successful employees, can help HR focus recruiting efforts accordingly. Additionally, Strategic Enterprise Management applications help a company translate corporate-level goals, such as profit and margin share targets, into operational decisions, such as production plans and workforce levels.

4. A model for data mining

In the business environment, complex data mining projects may require the coordinate efforts of various experts, stakeholders, or departments throughout an entire organization. In the data mining literature, various "general frameworks" have been proposed to serve as blueprints for how to organize the process of gathering data, analyzing data, disseminating results, implementing results, and monitoring improvements.

One such model, CRISP (Cross-Industry Standard Process for data mining) was proposed in the mid-1990s by a European consortium of companies to serve as a non-proprietary standard process model for data mining. This general approach postulates the following (perhaps not particularly controversial) general sequence of steps for data mining projects:



5. Predictive data mining

The term Predictive Data Mining is usually applied to identify data mining projects with the goal to identify a statistical or neural network model or set of models that can be used to predict some response of interest. For example, a credit card company may want to engage in predictive data mining, to derive a (trained) model or set of models (e.g., neural networks, meta-learner) that can quickly identify transactions which have a high probability of being fraudulent. Other types of data mining projects may be more exploratory in nature (e.g., to identify cluster or segments of customers), in which case drill-down descriptive and exploratory methods would be applied. Data reduction is another possible objective for data mining (e.g., to aggregate or amalgamate the information in very large data sets into useful and manageable chunks).

6. Conclusions

The purpose of data visualization is to give the user an understanding of what is going on. Since data mining usually involves extracting "hidden" information from a database, this understanding process can get somewhat complicated. Because the user does not know beforehand what the data mining process has discovered, it is a much bigger leap to take the output of the system and translate it into an actionable solution to a business problem.

Data mining is the process of sorting through large amounts of data and picking out relevant information. It is usually used by business intelligence organizations, and financial analysts, but is increasingly being used in the sciences to extract information from the enormous data sets generated by modern experimental and observational methods. It has been described as "the nontrivial extraction of implicit, previously unknown, and potentially useful information from data"and "the science of extracting useful information from large data sets or databases." Data mining in relation to enterprise resource planning is the statistical and logical analysis of large sets of transaction data, looking for patterns that can aid decision making.

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