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Table of Contents

1. Global City or Ordinary City? Rome as a case study	91
Roberta Gemmiti, Luca Salvati, Silvia Ciccarelli	
2. An Incentive Model of Corruption in the Mediterranean and Balkan Region	99
Konstantinos Rontos, Petros Sioussiouras, Ioannis S. Vavouras	
3. Kuhn-Tucker's Theorem - the Fundamental Result in Convex Programming Applied to Finance and Economic Sciences	111
Manuel Alberto M. Ferreira, Marina Andrade, Maria Cristina Peixoto Matos, José António Filipe, Manuel Pacheco Coelho	
4. FDI Political Risks: The New International Context	117
José António Filipe, Manuel Alberto M. Ferreira, Manuel Pacheco Coelho, Diogo Moura	
5. High Employment Generating Sectors in Portugal: an Interindustry Approach	125
João Carlos Lopes	
6. Catastrophe in Stock Market of Bangladesh: Impacts and Consequences (A study on recent crash of Stock Market with a Reference to DSE)	136
Eman Hossain, Md. Nazrul Islam	
7. Are American and European Companies Returning Back from China?.....	148
José António Filipe	
8. Testing the Efficiency of Indian Stock Market Vis-À-Vis Merger and Acquisitions - A Study of Indian Banking Sector.....	155
Azeem Ahmad khan, Sana Ikram	

Global City or Ordinary City? Rome as a case study

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Abstract - The present paper debates on the factors of urban competitiveness in 'ordinary cities' and their links with urban planning. By analyzing the case of Rome (Italy), we examine the impact that planning practices, deriving from the mainstream literature centered on 'global cities', may have on cities that are not supported by an advanced system of governance. In Rome, policies promoting urban development were mainly focused on 'global' city models which result in the oversimplification of urban competitiveness issues. Planning strategies divorced from the present territorial context may have social and environmental effects and prove the importance of policies facing with 'ordinary cities' and referring to 'ordinary geographies'.

Keywords - Urban competitiveness, Ordinary cities, Global Cities, Governance, Rome

1. Introduction

Cities and urban regions are considered the most important territorial organizations in the post-industrial era (e.g. Hall, 1966; Sassen, 1991; Scott, 2001a). A number of studies dealing with urban competitiveness have addressed the relationship between post-industrial capitalism and regionalization processes (Friedmann and Wolff, 1982; Taylor et al., 2002; Townsend, 2009; Gonzales, 2011). Research has increasingly related the economic success of firms to specific territorial traits, including face-to-face interactions, knowledge spill over, original social networks, and relationships based on trust (OECD, 2006). The 'Global City Regions' and 'Mega City Regions' have been seen as the leaders of the global urban hierarchy (Taylor, 2004). These regions concentrate hard and soft infrastructures, multi-cultural life, talent, and tolerance, within a production network formed up by several Marshall nodes of production (Jonas and Ward, 2007).

How the recent urban development of Rome, a

southern European capital, may contribute to the international debate upon urban competitiveness? What are the strengths and weaknesses of its economic structure and governance system? These questions offer the input to investigate on the role of planning strategies promoting competitiveness in 'ordinary' cities (Amin and Graham, 1997) and contrasting with planning practices designed for 'global' cities. Rome is a Mediterranean city with a fairly increasing population, a tertiary-oriented economy, a relatively low unemployment level, a wealthy society although with marked social segregation (Mudu, 2006; Munafò et al., 2010; Ciccarelli et al., 2011). However, Rome ranks low in the global urban hierarchy (Beavenstock et al., 1999; Taylor et al., 2002; OECD, 2006; European Commission, 2007). This is probably due to the fact that, after the second world war, the City's development was driven by policies supporting the traditional tertiary sector and depressing the industrial growth at the same time (Seronde Babonaux, 1983; Costa et al., 1991; Krumholtz, 1992; Insolera, 1993; Fratini, 2000).

During the last two decades, however, the local institutions¹ have promoted a new development based on tourism and cultural industries (Gemmiti, 2008). At the same time, the undertaken policies impacted weakly the traditional socioeconomic structure of the city, mitigating only partially the existing gap between the inner city and the suburbs (Fratini, 2001).

In the light of the debate on 'ordinary' and 'global' cities, the present paper comments upon the current Rome's social context, its production and territorial structure. This paper also identifies and possibly criticizes the planning strategies undertaken

¹ With special reference to the municipality of Rome, which is one of the largest municipalities in Europe (1285 km²).

in Rome that point out the possible contrast between policies facing with 'ordinary' and 'global' cities. The negative effects produced by this kind of policies on Rome's competitiveness were partially due to the oversimplification through which the complex city/economy/development relationship was (sometimes rhetorically) presented and addressed at local scale (Gargiulo Morelli and Salvati, 2010). At the same time, the geographical category of the 'global' city seems to be meaningful to formulate guidelines to promote Rome (and other 'ordinary' cities) competitiveness in the coming years.

2. Global cities. Inputs from the literature

The relationship between cities and economic development has been increasingly interpreted using the metaphor of the global city (Ward and Jonas, 2004; Jonas and Ward, 2007; Neuman and Hull, 2009). Globalization processes and ICT development have recently added to the traditional concepts of concentration, hierarchy, spatial agglomeration, and inner scale economies (Harrison, 2007). Although even during the industrial era the international profile of some cities emerged from the political, cultural, economic, and media perspective, these cities remained undoubtedly linked to their countries (Hall, 1966). During the 1980s, however, a change in the urban paradigms to tackle with the on-going drastic challenge arose.

This challenge dealt with the creation of a global system of production and trade exchange among a large network of cities (and, in some cases, large urban regions). The ability a city has to dominate this system depends on its economic, production, and social capitals (Friedmann and Wolff, 1982). These urban poles also acted as coordination nodes of the entrepreneurial, social, and cultural networks scattered across the space of global flows (Sassen, 1991; Castells, 1996). As a consequence, studies upon 'territorialized' production networks and the globalization processes focused on the global cities, seen as nodes capable to orient the economy and society (Hall, 2009). These territories assumed the physiognomy of 'global-city regions' or 'mega-city regions' in the XXI century (Scott, 2001a).

These geographical categories contributed to the analysis of urban agglomerations formed by a network of Marshall local economies capable to attract and maintain relevant functions including i) financial and production services, ii) command and control functions, iii) cultural and creative industries,

and iv) tourism (Scott, 2001b; Hall and Pain, 2006). Obviously, the socioeconomic profile of top-ranking global city regions contrasted with that observed in the traditional Fordist city. On the one hand, their economic functions have changed into a different, wider range of production sectors (Celant, 2007). On the other hand, they also undergo transformations in their urban form towards polycentricism, with a possible positive impact on firms attractiveness, and the economic development in general (Davoudi, 2003; McCann, 2007; Davoudi, 2008; Rodriguez-Pose, 2008).

Hall and Pain (2006) described the polycentric mega-city region as "a series of anything between ten and fifteen cities and towns, physically separated but functionally networked, clustered around one or more larger central cities, and drawing enormous economic strength from a new functional division of labour. [...] It is no exaggeration to say that this is the emerging urban form at the start of the 21st century".

Polycentric growth thus became one of the most relevant issues in urban planning for the (supposed positive) link to urban competitiveness (OECD, 2006) and territorial sustainability (Krueger and Savage, 2007). A polycentric region is characterized by three attributes: i) a rapidly changing urban form and a diversified economic structure, ii) a thick inner network of functional relations based on local specialization and, finally, iii) the willingness of a number of urban nodes to cooperate for 'catching' the opportunities offered by globalization, according to their own identity and socioeconomic attributes (Deas and Giordano, 2003; Etherington and Jones, 2009; Neuman and Hull, 2009).

3. Rome and the global cities

Although urban systems are often analyzed using the robustness of the internal relations, their position in the urban hierarchy is measured by the intensity of international relations. By looking at several city ranking exercises (both those evaluating assets (Hall, 1966; Friedmann and Wolf, 1982; Sassen, 1991; Scott, 2001) and those estimating flows and relationships between nodes (Castells, 1996; Hall and Pain, 2006; Taylor, 2004)), it became clear how Rome always occupied a relatively low position. Studies evaluating urban competitiveness through performance indicators confirmed its ranking (Turok and Mykhnenko, 2007).

As an example, in the study conducted by Loughborough Globalization and World Cities Group (Taylor et al., 2002; Taylor, 2004), Rome was

classified as a 'Gamma World City', i.e. a group of 'sub-global cities' characterized by intermediate population size, stable demographic performances, and endowments capable to influence the regional (or even national) economic system due to the presence of some global services (e.g. banking, fashion, culture, media). However, Rome was still far from the most dynamic and globalized cities. This result emerged from an urban competitiveness report (OECD, 2006) where Rome ranked 41st in economic competitiveness, 20th in short-term economic growth, 27th in work productivity, and 5th in wealth disparities.

Although these findings depict Rome as a city with moderately high demographic dimension and economic performances similar to other European cities, they also reflect the uneven difficulty for local firms to connect to the global networks. The poor degree of internationalization observed in Rome's economy emerges also from a recent classification elaborated by the European Commission (2007). Rome was classified as an 'International Hub', namely a city sharing a European influence. Rome, however, was also labeled as 'established Capital' and ranked below Milan, the second city of Italy forming one of the largest urban agglomerations in southern Europe, which was classified as a 'Knowledge Hub' (a key node in the global economy and a leader city at national scale, characterized by the presence of international firms, high level of talent and creativity, and high connectivity with the rest of the world).

In summary, Rome maintains the political and cultural centrality typical of a capital city, while losing the economic centrality. A report profiling the polycentric regions in the European Union (Espo, 2006) offered similar results. By defining Functional Urban Areas (FUAs) in Europe, ESPON elaborated a city rank based on competitiveness, connectivity, and knowledge indicators. Rome was classified as a 'Metropolitan European Growth Area', belonging to the (wide) group of cities with a relatively good score in all considered indicators but with a subordinate role in the global world.

4. Global does not mean all cities

The Rome's economy is based upon different assets from those typically observed in the 'global' cities. According to the latest available data provided by Istituto Tagliacarne (2007), the market openness and the export propensity indicators confirmed the weak economic performance of Rome in the global arena. The market openness indicator is almost four

times lower than Milan, and even lower than that observed in Latium and in central Italy². The same pattern was found in the export propensity indicator, with a very low value recorded in Rome (5%) compared to Milan (30%), Latium (10%) and Italy as a whole (25%).

The relatively modest performances depend on the 'traditional' production structure already existing in the urban region of Rome. As a matter of fact, up to the early 1990s, the country-wide centrality of Rome was mainly based on the public sector (Clementi and Perego, 1983; Seronde Babonaux, 1983; Insolera, 1993). Of course, Rome has played an increasingly important role in the international arena as a tourism pole (Celant, 2007). In 2008, the total arrivals have been almost 10 millions, two third of which was represented by foreigners, over than one fourth of whom coming from the United States. Rome attracted 8% of the international tourism flows, a share similar to that observed in other European Capitals but lower than the two main international gateways, London (35%) and Paris (19%). Nowadays, however, it is still the public sector (together with commerce and construction) to create the majority of (low-salary) job opportunities in the area (Ciccarelli et al., 2011)³.

Nevertheless, the share of tertiary sector in Rome product (87.6% in 2007) indicates a comparable performance with the most advanced economies. Services consolidated during the last years, particularly in some innovative segments such as informatics, research and development, finance, and banking. Other sectors such as entertainment, culture and sport have also been acquiring relevance, providing evidence that the city is (slowly) evolving towards post-modern economy (Beriato and Gospodini, 2004). However, occupation still grew in traditional sectors such as health, education, and

² Rome municipality belongs to the administrative (NUTS-2) region of Latium and to the geographical (NUTS-1) region of central Italy. Latium is a moderate industrial and agricultural region with some service-oriented local districts localized around Rome and Latina.

³ It is not surprising that in the ranking exercise proposed by Richard Florida and the Creative Cities group for the Italian cities, Rome ranked at the top. This was mainly due to the contribution of the 'Talent' component. Talent estimation, indeed, was based on indicators such as the density of population with a high level of education and the number of public and private researchers (Tinagli and Florida, 2005), that was strongly influenced by policies oriented to promote concentration of public research institutes in Rome.

constructions. In summary, the economic base in Rome remains 'traditional' and, in some aspects, similar to that observed in other semi-peripheral, Mediterranean cities (e.g. Clementi and Perego, 1983; Leontidou, 1990, 1993; Barata Salgueiro, 2001; Busquets, 2006).

5. Coming back to the centre-periphery relationship in Rome: a likely unsolved issue?

As said previously, the polycentric spatial organization may result as a more competitive urban form compared to the mono-centric model (Klosterman and Musterd, 2001; Davoudi, 2003; Longhi and Musolesi, 2007). Increasing competitiveness in the polycentric region could derive from the contribution of the different production nodes (Hall, 1997; Lambooy, 1998; Scott, 2001a).

On the contrary, Rome has been often proposed as a model for urban concentration and economic polarization (Seronde Babonaux, 1983). More than 66% of the population residing in the Rome province, and about half of the whole Latium population actually lives within the Rome municipality boundaries⁴. However, as occurred in other Mediterranean cities (Dura Guimera, 2003; Couch et al., 2007; Chorianopoulos et al., 2010; Gargiulo Morelli and Salvati, 2010), population has recently decreased in the core area (Salvati and Sabbi, 2011). It is therefore interesting to focus on the existing centre-periphery gap in Rome and on the recently adopted policies aimed at mitigating this gap (Phelps et al., 2006).

Rome's municipality is subdivided into nineteen municipi (i.e. sub-municipal districts) with a population similar to many middle-size Italian cities (i.e. 100.000 - 200.000 inhabitants). These districts are endorsed with restricted governance functions (social services, culture, local entertainment, handicraft, and local police). The territorial complexity described above was neither faced by an efficient local governance system, nor by effective forms of cooperation that could be considered as an expression of polycentrism (Tewdwr-Jones and McNeill, 2000; Feiock, 2004).

⁴ As said, the surface area under the municipality of Rome is 1.285 km², compared to the much small figures from Milan (182 km²), Naples (117 km²) and Turin (130 km²). Rome municipality (NUTs5) covers 25% of the whole NUTs-3 province of Rome and over 7% of NUTs-2 Latium Region.

This planning strategy reflects the uneven difficulty showed by local and regional institutions to identify and border the Rome metropolitan area. According to the Law no 142/1990, the Italian administrative regions were engaged to identify their metropolitan areas. During the following twenty years, Latium institutions failed to identify the border of the Rome's metropolitan area. Only in 2010 Rome has been acknowledged as the 'Capital City of the Italian State' with special power (Law no. 42/2009), and the boundaries of this area were chosen as corresponding to the Rome municipal borders.

The attitude showed by local institutions to consider the metropolitan area of Rome as coinciding with Rome's municipality conflicts with indications coming from the mainstream literature and the orientations of European policy (Giannakourou, 2005). As a matter of fact, it was suggested to establish political, social, and economic cooperation across the widest possible urban region, in order to maximize the territorial assets of specialization (Brenner, 2003; Salet et al., 2003. Bongaerts et al., 2009; Townsend, 2009). Unfortunately, government institutions in Rome missed the opportunity to set up a territorial system capable to support innovative planning strategies at regional scale (Jessop, 2005; Deas and Lord, 2006; Gualini, 2006). The main issue, also emerging from the comparison between Rome and top-ranking cities, thus stands in the governance weakness at all planning levels in Italy (i.e. national, regional, and local level).

In addition, during the last twenty years, planning choices addressed public (and sometimes private) investments towards the city centre of Rome, with the possible effect of disregarding the development potential existing in peripheral areas (Gonzales, 2009). The Rome Master Plan (1993-2008) and the New Strategic Plan (2008) identified tourism and culture as the two main sectors affecting urban development. According to this approach, the central area was mainly considered for measures promoting these two sectors (Gemmiti, 2008). Large hotels, congress centers, shopping malls, often designed by famous architects, have been concentrated in the 'consolidated' city (Gospodini, 2001, 2009). Through these architectural symbols, planners have tried to renovate the traditional image of the city centre by creating a conventional landscape, which is one of the essential attributes of 'global' cities (Gospodini, 2006).

Doing so, urban planning in Rome has been oriented towards measures unable to radically modify

the economic structure of the urban region and to alter in-depth the traditional city-economy relationship (Delladetsima, 2006). Measures were not designed to promote local specialization and economic relations within the city region. The construction of a new urban landscape, in Rome as in other 'ordinary' cities, could have the effect of consolidating the gap between inner city and suburbs.

6. Conclusion

If you look at the new architectural symbols of the city centre, you could suppose that Rome has partially gained the image of an international, post-modern city. However, its economic role hardly exceeds the national borders excepting for tourist attractiveness. The modest Rome's economic performances were mainly due to the preservation of traditional production sectors. The limited international role definitely stands on the lack of innovative firms in the investigated urban region.

Besides that, the governance system in Italy was not able to promote strategies facing with the specificity of Rome's territorial context. Urban competitiveness, social cohesion, and environmental sustainability cannot be fulfilled when policies fail to support local economies outside the inner city (Krugman, 1997; Amin and Thrift, 2000; Kresl, 2006). The decision to identify the metropolitan area as overlapping with the municipal borders is only an example demonstrating how the (few) opportunities to implement innovative governance solutions have been systematically missed in Rome. This claims for rethinking the role of Rome as a city capital. This is a tricky issue when reshaping a network of towns autonomous from the capital, in the light of a really polycentric development. To promote urban competitiveness in Rome definitely means to replace the 'centre-periphery' vision with a really systemic and holistic 'city-region' vision.

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An Incentive Model of Corruption in the Mediterranean and Balkan Region

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Abstract - The study considers the determinants of corruption in the 23 Mediterranean and Balkan countries where it is widely recognized that this phenomenon is widespread. Starting from the general hypothesis that the extent of corruption in any country is a combination of motives and opportunities, our scope is to examine the most important economic, political and social factors that determine corruption in this region. We accept that motives are determined by the level of human development, while opportunities by the degree of government effectiveness, which in turn is determined by the level of economic development and the existing political system. We show that the level of corruption is affected by the degree of human development, while the degree of government effectiveness affects crucially the level of corruption. On its turn, government effectiveness is mainly determined by the level of economic development and the existing political system. Improving government effectiveness, increasing the levels of human and economic development and establishing a more democratic political system form therefore the pillars of any anticorruption strategies in these countries.

Keywords - *Corruption motives; Corruption opportunities; Governance; Political rights; Human development; Balkans; Mediterranean countries.*

1. Introduction

The fact that whoever is in a place to exercise power may be in the position to use public office for personal gain, has been acknowledged from the first stages of human civilization (Caiden, 2001) or from the very first instances of organized human life (Klitgaard, 1988). Although the phenomenon of corruption dates as back as the very beginning of human existence, it is only in the last decades that it has become a major concern for theoretical and empirical research. The most significant reasons for this are the end of the cold war that reduced the

geopolitical importance of many regions considered as corrupted and intensified pressures upon international aid, the increased global liberalization and integration and the shifts in the ways the public and the private sectors are viewed (Johnston, 2005). While the private sector is also affected by corruption¹, the vast bulk of economic literature examines only public sector corruption for two main reasons. First, the phenomenon is mainly associated with the public sector. In this context corruption is considered as a disease of public power and an indication of bad governance (Tiihonen, 2003). Second, widely accepted private sector corruption indices have not yet been constructed, rendering empirical research on the issue extremely difficult.

Public sector corruption is usually defined as the abuse of public power, office or authority for private benefit, interest or gain (World Bank, 1997; Tanzi, 1998, 2000; Rose-Ackerman, 1999)². Corruption can take up several facets, such as bribery, embezzlement, fraud, extortion and nepotism (Amundsen, 1999). It must be admitted however that corruption is a deeply normative concept and its definitions are a matter of long-running debate (Johnston, 2005). It should be pointed out that corruption does not always relate to personal gain. More often than not, the benefited

¹ Private sector corruption, which manifests itself in various forms -such as the adoption of "bad practices"- by many large privately owned corporations in relation to the transparency of their data, publishing false accounting statements and the deception of stock-holders are extremely hard to measure, and there are no indicators allowing international comparisons. [For an analysis of private sector corruption see Transparency International (2009)]. As a result, the study of this phenomenon is limited to the public sphere.

² A definition that covers corruption in sectors, public and the private, is the misuse of trusted power for own profit (Transparency International, 2011).

from the phenomenon are the so-called third parties, namely families, friends or political parties. It has been established that in many countries the proceeds from corruption end up in financing political parties³.

The determining factors of corruption are numerous. The most important ones according to the relevant theoretical and empirical research are the level of economic development (Lalountas, Manolas, and Vavouras, 2011), the level of poverty and the degree of income inequality (Salvatore, 2004; Salvatore, 2007), the specific type of political authority, the quality of governance, the quality of the institutional framework (Salinas-Jiménez and Salinas-Jiménez, 2007), the degree of globalization (Bonaglia, Braga de Macedo and Bussolo, 2001), the level of competition, the structure and the size of public sector, the cultural qualities, the geographic location and history (Goel and Nelson, 2010; Rontos, Sioussiouras, and Vavouras, 2012)⁴. Widespread corruption largely unveils the existence of institutional and political weaknesses as well as economic and social underdevelopment. It is recognized that corruption may be the single most significant barrier to both democratization and economic development (Rose-Ackerman, 1999).

The analysis of corruption should not focus exclusively on its economic, political and social aspects. The general attitude towards this phenomenon is also determined by the prevailing system of individual behavioral and moral attributes, since not all people facing the same socioeconomic environment are equally prone to corruption exhibiting identical opportunistic behavior. However, the phenomenon seems to depend less on the individual psychological or personality characteristics of public employees and more on the cultural, institutional and political basis on which the specific nation is constructed (Sung, 2002), not ignoring of course and the level of its economic development. The extent of corruption varies therefore among countries and because corruption operates in a certain cultural and political context that influences its growth (Benson and Cullen, 1998). In the end corruption could be considered rather as a social problem than a problem of human nature (Bracking, 2007). And as a social problem it is inevitable but variable as well, while it is

evaluated in terms of structure, process and resultant (Girling, 1997).

Generally, the determinants of corruption could be distinguished between those that affect the motivations or incentives of agents to engage in corruption and those that create opportunities for corrupt activities (Martinez-Vazquez, Arze del Granado and Boex, 2007). The opportunities available for corruption in various societies are mainly the product of economic and political forces. It is on this theoretical background that we develop our theoretical and empirical model of public sector corruption in the Mediterranean and Balkan region.

Referring to the analysis of the phenomenon of corruption, the most important issue that has emerged in the recent decades is the relation between corruption and economic development. In this context, corruption is considered to be a cause as well as a consequence of poverty. In a sense, corruption is a deficiency that is responsible for low levels of economic development by reducing the chances for long-term economic growth (Lambsdorff, 2007; Aidt, 2009). It should also be pointed out that it is commonly accepted that corruption is a barrier to the implementation of the necessary for development political, economic and social reforms (Transparency International, 2008). The extent, however, of the consequences corruption has on economic development is largely determined by the existing institutional framework (de Vaal & Ebben, 2011). On another account, corruption is a “disease” which is caused by poverty, that is controlled only when economies develop (Treisman, 2000; Paldam, 2002). Hence, there is a “corruption transition” (Gundlach and Paldam, 2008).

The direction of causality between corruption and per capita income as an approximation of the level of economic development has already been under scrutiny in relevant empirical literature. Recent studies show that the direction of causality is mainly from income towards corruption. In this manner, one can reach the conclusion that the levels of corruption become lower when countries become richer and that there can be a transition from poverty to honesty and straightforwardness (Gundlach and Paldam, 2008). However, corruption control should not be considered as a “luxury good” that citizens demand automatically once their average income reaches a certain level. It is achieved only through the adoption and the efficient implementation of the appropriate long-run policies. Moreover, we must point out that corruption is extensive in low income countries, not because their

³ See relevant analysis in Tanzi (2000).

⁴ For an analysis of the determinant factors of corruption see among others Lambsdorff (2006) and Treisman (2000).

inhabitants present a natural proclivity towards the said phenomenon, but because the conditions of life make them prone to that (Lalountas et al., 2011). That is it is not because people in low income countries are more corruptible than their counterparts in high income countries, but it is simply because conditions in poor countries are more conducive for the growth of corruption (Myint, 2000). The motive for the increase of personal income is indeed intense and is becoming more so due to widespread poverty and the low salaries of the public sector (Gray and Kaufmann, 1998). In low income economies, corruption can prove to be a “survival strategy” (Rose-Ackerman, 1999).

It is also widely accepted that the political system and the phenomenon of corruption are closely related. Corruption is widely considered to be both a symptom and a cause for the malfunctioning of democratic institutions (Warren, 2004). According to the mainstream view political development and, especially, democracy prove restrictive for the proliferation of corruption, especially political corruption, mainly because of the competition they set as a precondition for the acquisition of political office, which in turn presupposes widespread democratic participation. In a sense, the political system or the “political macrostructure” is responsible for determining the political motivation of all players in a state system and it is the very reaction of these factors that determines the behavior of state bureaucracy (Lederman, Loayza and Soares, 2005). As a result, a highly developed and well-functioning democracy serves to block the spread of corruption (Zhang, Cao and Vaughn, 2009).

The relevant empirical analysis has established the view that democracy reduces corruption, without necessarily immediate results. A long democratic period seems to be a determining factor for reducing the scale of corruption (Treisman, 2000). In this sense, one can easily assume that it is the democratic tradition or the time exposure to democracy and not just the adoption of a democratic regime that reduces corruption. Besides, limited forms of democracy do not seem to affect corruption⁵. It is only after a certain level that democratic practices seem to contribute to corruption control (Montinola and Jackman, 2002)⁶.

⁵ According to certain empirical analyses, limited democratic regimes are associated with higher levels of corruption compared to autocratic regimes. See relevant presentation in Lambsdorff (2006).

⁶ For an analysis of the correlation between democracy and corruption see Vavouras, Manolas and Sirmali (2010).

We argue that the level of economic development and the existing political system establish the degree of government effectiveness that determines the opportunities open to corruption activities in a given country. Government effectiveness generally refers to governance quality and performance or to the degree that the public sector achieves the objectives it is supposed to meet.

We accept moreover that corruption is also affected by the level of human development that determines the motives to engage in corruption activities. Human development is defined as the process of enlarging or expanding people’s choices (UNDP, 1990). That is human development refers to the expansion of people’s freedoms and capabilities to live their lives as they choose (UNDP, 2009)⁷. The most critical of these choices are to leave a long and healthy life, to be educated and to enjoy a decent standard of living. We argue that the chances open to individuals to live a long and healthy life, their accessibility to knowledge and their expectations to enjoy a decent standard of living define their corruption boundaries. However, it is sometimes suggested that there are some potential feedback links between corruption and human development or even that the opposite direction of causality might also exist. That is the level of human development could be affected by corruption as well, if we accept that corruption reduces the rate of economic growth and government expenditure on education and health, factors that exert negative influence on standards of living, life expectancy and human capital accumulation (Akçay, 2006).

The scope of the present paper is to examine the above opportunities and motives as the main causes of corruption in the Mediterranean and Balkan region. Our analysis focuses on the study of the impacts that government effectiveness and human development have on corruption in this region, while we accept that government effectiveness is mainly determined by the level of economic development and the existing political system.

Our analysis shows that in this region government effectiveness is actually the most important determining factor of corruption and that this factor is indeed determined by the level of economic development and the existing political system. As a result improving government effectiveness, increasing the levels of human and economic development and establishing a more

⁷ For an analysis of the evolution of the definitions of human development, see in Alkire (2010).

democratic political system form the pillars of any anticorruption strategies in the Mediterranean and Balkan region, given the fact that the countries belonging to this region are characterized by lack of homogeneity as far as the level of their economic development and their extent of democratic institutions.

2. Methodology, data and analysis

2.1. Model specification

Following the analysis presented above, we argue that the most important factors that determine corruption are government effectiveness and human development, while government effectiveness is determined by the level of economic development and the existing political system.

We must point out at this stage that it seems that there is a strong correlation between two of the selected independent variables, namely between human development and economic development, since the level of economic development determines to a large extent the level of human development⁸. This multicollinearity problem reveals a difficulty to model effectively the factors that determine corruption by using OLS method of one equation, that is in the case that we would consider and the four explanatory variables as independent. Mainly for this reason we use a two equation model.

Very often the complexity of the real world is better explained by quantitative techniques which employ more than one relationship among the involved variables. In fact the real world could be effectively explained by a model with numerous well defined equations simultaneously existing. Of course a great number of equations causes problems to the logical explanation of the phenomenon through the model results. Problems of this kind are more serious when prediction is the target of the model's construction.

To express corruption, the corruption perceptions index (CPI) is used as a predicted variable. The CPI is an international index measured annually by the nongovernmental organization Transparency International (2010) for 178 countries or regions. CPI is the most extensively used index for relevant empirical studies. It is a composite indicator, based on a variety of data derived from 13 different surveys carried out by 10 independent and reputable organizations. It measures corruption in a scale from 0 to 10, where 0 represents the highest possible corruption level, while as the scale increases there is the perception that corruption does not exist in a given country. Despite the fact that the index is not the outcome of an objective quantitative measurement of corruption, it

is of great importance since it reveals how this phenomenon is being perceived.

To express government effectiveness the relevant World Bank government effectiveness indicator (GE) is used. This indicator is very useful because it aims at capturing the quality of public services provided, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies (Kaufmann, Kraay and Mastruzzi, 2010). The aim of the indicator is therefore to capture the capacity of the public sector to implement sound policies. GE is one of the six composite indicators of broad dimensions of governance, the so called worldwide governance indicators (WGI) covering over 200 countries since 1996 and produced by Kaufmann, Kraay and Mastruzzi (World Bank, 2010b). The values of GE lie between -2.5 and 2.5. Actually, the variable has been transformed to a standard normal one (with mean 0 and standard deviation 1), so that cross-country and over time differences in the measurement scale are avoided. Higher values correspond to better governance. Although this indicator measures subjective perceptions regarding government effectiveness and it is not the outcome of a quantitative objective measurement, it is of a great importance since it reveals how government effectiveness is being perceived.

As a summary measure of the level of human development we use the non-income value of the human development index (HDI). The HDI is estimated by the UNDP (2010) and it measures the average achievements in a given country in three dimensions of human development: a long and healthy life, access to knowledge and a decent standard of living. It is a composite index with life expectancy in birth, mean years of schooling, expected years of schooling and gross national income (GNI) per capita as its main components. Since there is a strong correlation between HDI and GNI per capita which is included in the model as a separate explanatory variable, we use the non-income HDI value as it is estimated by UNDP. Despite its inherent limitations this index is a useful comparative measure of the level of human development. According to HDI countries are classified in three categories: High human development if the value of the index is higher than 0.800, medium human development if the value of the index is between 0.500 and 0.799 and low human development, if the value of the index is lower than 0.500.

The level of economic development is approximated by gross national income (GNI) per capita in thousand US\$. The World Bank (2010a) data for GNI per capita in US\$ are used. GNI per capita is the gross national income converted to US\$ using the World Bank Atlas method, divided by the midyear population⁹.

⁸ The appearance of a strong correlation between these independent variables is examined in Rontos et al. (2012).

⁹ For the methodology used to estimate GNI per capita, see World Bank (2011).

The existing political system is approximated by the political rights index (PR). PR is a measure of the democracy level in each country as it is estimated by the organization Freedom House (2011). The PR index is an extensively used index for the measurement of democracy. The index measures from 1, which ranks a country as very free, up to 7, which ranks a country as not free. Freedom House classifies countries according to PR in 3 categories adopted in the present study: free countries (F) with score 1-3 in the 1-7 scale, partly free countries (PF) with score 4-5 in the 1-7 scale and not free countries (NF) with score 6-7 in the 1-7 scale.

The values of all the variables used in the model are presented in table 1.

Table 1. Countries, variables and data of the model

Country (1)	CPI 2010 (2)	PR 2010 (3)	GNI pc 2009 (in 000 \$) (4)	HDI 2010 (non- income value) (5)	GE 2009 (6)
Albania	3.3	3	4	0.787	-0,2
Algeria	2.9	6	4.42	0.716	-0.59
Bosnia & Herzegovina	3.2	4	4.70	0.771	-0.65
Bulgaria	3.6	2	6.06	0.795	0.142
Croatia	4.1	1	13.72	0.798	0.639
Cyprus	6.3	1	26.94	0.84	1.32
Egypt	3.1	6	2.07	0.657	-0.3
France	6.8	1	42.62	0.898	1.442
FYROM	4.1	3	4.40	0.742	-0.14
Greece	3.5	1	29.04	0.89	0.608
Israel	6.1	1	25.79	0.916	1.095
Italy	3.9	1	35.11	0.882	0.517
Kosovo	2.8	5	3.24	...	-0.5
Lebanon	2.5	5	8.06	...	-0.67
Libya	2.2	7	12.02	0.775	-1.12
Malta	5.6	1	16.69	0.85	1.11
Montenegro	3.7	3	6.65	0.825	-0.03
Morocco	3.4	5	2.77	0.594	-0.11
Serbia	3.5	2	6.00	0.788	-0.15
Spain	6.1	1	32.12	0.897	0.936
Syria	2.5	7	2.41	0.627	-0.61
Tunisia	4.3	7	3.72	0.729	0.414
Turkey	4.4	3	8.72	0.679	0.352

Notes: CPI = Corruption Perceptions Index, PR = Political Rights, GNI pc = Gross National Income per capita, HDI = Human Development Index, GE = Government Effectiveness.

Sources: CPI: Transparency International (2010). PR: Freedom House (2011). GNI pc: World Bank (2010a). HDI: UNDP (2010). GE: World Bank (2010b).

Following the analysis of the behavioural equations and the definitions of the variables used, the following two equation model is developed to interpret corruption opportunities and motives in the Mediterranean and Balkan region, assuming at this stage that government effectiveness itself is affected by the level of corruption:

$$CPI = f(GE, HDI) \quad (1)$$

and

$$GE = f(GNI, PR, CPI) \quad (2)$$

The first equation denotes the hypothesis that CPI is affected by GE as a measure of the opportunities provided to participate in corruption activities and the non-income HDI as a measure of the motives to participate in these activities. The second equation expresses the tendency of GE to depend on GNI, PR and possibly to CPI itself. The 2-stage least squares method is used to run the above system of equations.

2.2. Estimation results

Each of the endogenous variables of the model, CPI and GE, are predicted by the exogenous variables GNI, PR and HDI. Then we run equations 1 and 2 by using the predicted, in the first stage, CPI and GE. Stepwise method is used. According to that procedure, the following equations are predicted:

$$CPI = 2.694 + 1.511 GE + 1.231 HDI \quad (R^2 = 0.512) \quad (1)$$

and

$$GE = 1.245 + 0.035 GNI - 0.196 PR - 0.218 CPI \quad (R^2 = 0.706) \quad (2)$$

Examining the 1st equation we can conclude that the b coefficients of both independent variables have signs in the expected direction suggesting that the higher the government effectiveness (GE) and the higher the human development (HDI) in the countries concerned, the lower the perceived level of corruption (the higher the corruption index) and the lower the GE and HD the lower the corruption.

In the 2nd equation, the b coefficients of GNI and PR are in the expected direction, implying that the higher the GNI per capita and the PR (the lower

the PR index), the higher the GE and the lower the GNI per capita and the PR, the lower the GE. The b coefficient of CPI however is not in the right direction as it indicates that the higher the corruption (the lower the CPI) the higher the GE and the lower the corruption the lower the GE. This economic insignificance is probably due to the fact that to run a more accurate regression model with 3 independent variables a larger number than 23 cases should exist.

This inconvenience leads us to run equation 2 again, rejecting CPI variable from the model. In that way the final model is the following:

$$CPI = 2.694 + 1.511 GE^* + 1.231 HDI \quad (R^2 = 0.512) \quad (1)$$

$$GE = 0.347 + 0.024 GNI^* - 0.156 PR^* \quad (R^2 = 0.701) \quad (2a)$$

* Statistical significance at 0.05 level.

In the last model CPI and GE constitute the endogenous variables of the system that depend overall on GNI, PR and HDI.

The variables GE, GNI and PR present statistical significance at 0.05 level. HDI does not present a significance of this kind, but we keep the variable in the model as our case is not a sample of countries, but all the population of the Mediterranean and Balkan countries, a fact that renders inference procedures of a lower interest. In fact we prefer the statistical significance of b's to be one of the criteria for rejecting the variables but not the main reason for that. What we suggest is that as the variable adds to the percentage of the explained variation of the dependent variable we keep it in the model. Overlapping the typical limits of statistical significance in models with cross-country variables, which are in fact composite indicators, is suggested in relative methodological papers as an approach reflecting "the reality that available data are proxies for the concepts that we try to measure" (Kaufmann, Kraay and Mastruzzi, 2010). Normality and linearity tests as well tests for homoscedasticity, autocorrelation and multicollinearity problems are provided in the following for equations 1 and 2a.

Equation 1:

The equation has a quite good total explanatory performance, as the coefficient of determination $R^2_{GE, HDI} = 51.2\%$. GE is the first explanatory variable

entering to the model, explaining the most of the dependent's variation ($R^2_{GE} = 50.9\%$). HDI enters as a second variable adding just 0.3 % to the explanatory capacity of the model.

The normality of the studentized deleted residuals is not violated as they present a skewness statistic equal to -0.087 with Std. Error = 0.481 (Sk. Stat/ Std. Error = 0.18 < 2) and kurtosis statistic equal to -0.351 with Std. Error = 0.935 (Kur. Stat/ Std. Error = 0.38 < 2). The skewness and kurtosis statistics for unstandardized residuals are similar. Additionally, Kolmogorov-Smirnov test verifies the normality of residuals (K-S statistic = 0.108, df = 23, p = 0.20 > 0.05). Linearity is assumed to exist according to the correlation parameters presented in table 2.

Table 2. Pearson correlation between variables of equation 1

Pearson Correlation	CPI	GE	HDI
CPI	1.000	0.714*	0.582*
GE		1.000	0.769*
HDI			1.000

* Statistical significance at 0.01 level.

Additionally, a relatively strong correlation between independent variables appears (table 2), a fact that indicates the existence of possible multicollinearity problems. Tolerance statistics is not too low (0.409) and VIF is not too high ($VIF = 2.447 < 10$) for all independent variables, indicating no serious multicollinearity problems. The conditional index for the last dimension is 29.89 < 30, a result confirming the above findings (table 3). On the opposite side are the rest 2 collinearity diagnostics of table 3. Eigenvalue is almost 0, and the variance proportions in last dimension is high, both indicating the existence of multicollinearity problems.

Table 3. Collinearity diagnostics of equation 1*

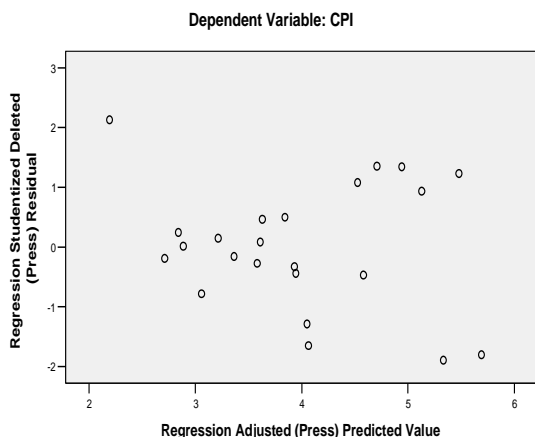
Model	Dimension	Eigenvalue	Condition index	Variance proportions		
				Constant	GE	HDI
1	1	1.37	1.00	0.31	0.31	
	2	0.63	1.48	0.69	0.69	
2	1	2.26	1.00	0.00	0.03	0.00

	2	0.74	1.75	0.00	0.39	0.00
	3	0.00	29.89	1.00	0.58	1.00

* Dependent variable: CPI.

The Durbin-Watson test did not indicate autocorrelation as $d = 1.973 > du = 1.54$ and $4-d = 2.03 > du = 1.54$ with explanatory variables $K = 2$, $\alpha = 0.05$ and $n = 23$.

Figure 1: Scatterplot of Residuals vs. Predicted Values



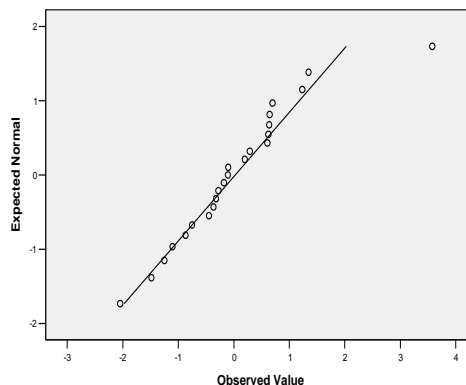
The homoscedasticity assumption seems also to be approximately followed according the scatter-plot in figure 1.

Equation 2a:

Equation 2a presents a very good total explanatory performance ($R^2_{PR, GNI} = 79.1\%$). PR is the first variable entering to the model, with a contribution of 60.9 % to the explanation of GE variation. GNI is entering to the model as a second variable with a contribution to the total R^2 equal to 9.2 %.

The unstandardized residuals normality is revealed by skewness statistic (0.631 with std. error = 0.481 and $Sk.stat/Std\ Error = 1.3 < 2$), kurtosis statistic (1.031 with std error = 0.935 and $Kurt. Stat/Std. Error = 1.1 < 2$) and Kolmogorov-Smirnov test (0.111, $df = 23$, $p = 0.20 > 0.05$). Studentized deleted residuals statistics and tests present similar results except the ratio $Kurt/Std. Error = 3.2$ which is higher than the empirical limit of 2 which is suggested by statistics. However, Normal Q-Q plot for studentized deleted residuals in figure 2 do not present serious violation of normality.

Figure 2: Normal Q-Q Plot of Studentized Deleted Residual



Strong linear relation seems to exist between independent and each of the dependent variables (table 4).

Table 4. Pearson correlation between variables of equation 2a

Pearson Correlation	GE	GNI	PR
GE	1.000	0.759*	-0.780*
GNI		1.000	-0.690*
PR			1.000

* Statistical significance at 0.01 level.

Although the correlation index between variables is relatively (but not very) high ($r_{GNI, PR} = -69\% < 0.70$), tolerance statistics is high enough (0.524 for both independent variables), $VIF = 1.91 < 10$ for both variables and condition index = $6.844 < 15$, are statistical evidences that collinearity is not a concern. Eigenvalues ($= 0.049 \approx 0$) and variance proportions are the only statistics that indicate possible collinearity problems (table 5).

Table 5. Collinearity diagnostics of equation 2a*

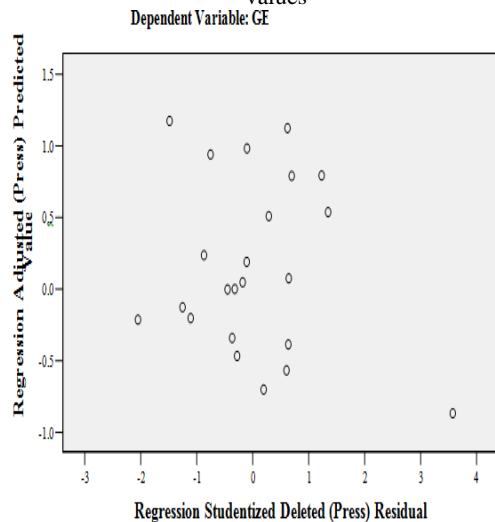
Model	Dimension	Eigenvalue	Condition index	Variance proportions		
				Constant	PR	GNI
1	1	1.833	1.000	0.08	0.08	
	2	0.167	3.312	0.92	0.92	
2	1	2.303	1.000	0.02	0.02	0.03
	2	0.648	1.885	0.00	0.10	0.21
	3	0.049	6.844	0.98	0.87	0.76

* Dependent variable: GE.

The Durbin-Watson test reveals that there are no autocorrelation problems as $d = 1.732 > du =$

1.54 and $4-d = 2.268 > du = 1.54$ with $K=2$, $a = 0.05$ and $n = 23$. Finally, the homoscedasticity assumption seems to be followed in equation 2a as the scatter -plot of the expected values against the residuals is similar to that of figure 3.

Figure 3: Scatterplot of Residuals vs. Predicted values



Concluding the evaluation of the 2-equations model predicted in the present study we could argue that it presents a good economic and statistical performance in addition to its sound theoretical basis. The coefficients in both equations present economic significance and, at the same time, statistical significance, with HDI as an exception in equation 1. As we have already explained, inferential statistics are not a reason to reject a variable because of its insignificance, as we deal with a population rather than a sample of cases (countries). The equations of the model present a good total explanatory performance and seem to follow the regression assumptions, with the exception of some multicollinearity problems revealed by only a part of diagnostic statistics. These results suggest to approve the model and to move to its further discussion.

3. Conclusions and policy proposals

3.1. Conclusions

The above empirical analysis highlighted the most significant factors that determine the level of corruption in the Mediterranean and Balkan region, namely the level of economic development as it has been approached by GNI per capita, the form of the existing political system as it has been approached

by the extent of political rights and the level of human development as it has been approached by the non-income value of the human development index. The first two variables, that is GNI per capita and political rights affect corruption through their impact on government effectiveness, which is the second endogenous variable of the model apart from corruption.

The level of economic development is the most important variable that affects the degree of corruption in the Mediterranean and Balkan region¹⁰. The two variables are negatively correlated, since increasing GNI per capita, increases government effectiveness which reduces corruption. However, the effective control of corruption should not be considered as a “luxury good” that people demand once their incomes increase to a certain level. It is achieved only through the adoption and effective implementation of the appropriate long-run policies. On the other hand, corruption inhibits economic development since it is an obstacle to the effective implementation of the necessary to development political, economic and social changes. Even though the consequences corruption has on economic development depend also on the existing institutional framework, the direction of causality between corruption and per capita income -as the critical factor that reflects the level of development-, has not been entirely identified. It has been shown, nevertheless, that the level of corruption is an extensive one in the low income countries of the Mediterranean and Balkan region (Rontos et al., 2012). And this is because generally in low income countries, corruption is to some extent a “survival strategy”. In order to survive and support themselves and their families, low paid public sector employees may need to moonlight or take small bribes, especially when their jobs are associated with high degree of uncertainty, mainly due to the prevailing political instability, that reduces their expected incomes. And political instability is a characteristic of many countries in that region. According to this line of thought, corruption is a “disease” caused by poverty, or a by-product of poverty that diminishes only with economic development.

As far as the character of corruption is concerned, it could be argued that the main difference between developed and developing countries is that the former are characterized by “grand” or “upper-level” corruption and the latter are ridden with “petty” or “lower-level” corruption.

¹⁰ See relevant analysis in Rontos et al. (2012).

Grand corruption is that form of corruption that pervades the highest levels of government engendering major abuses of power, while petty corruption involves the exchange of very small amounts of money and the granting of small favors (UN, 2004). The first form of corruption, often described as “political”, is generally associated with high-level politicians or government officials and is realized at the stage of policymaking and usually takes the form of economic scandals involving large sums of money. This systemic corruption can undermine state legitimacy and economic functioning (Rose-Ackerman, 2006). The second, often described as “bureaucratic” or “administrative”, relates to the implementation stage of state functions by lower level government employees at their regular interact with the public and usually takes the form of small bribes, widely described as “speed money”, and favors. The last form of corruption is also described as “needs-based” or “survival” corruption (UNDP, 2008). It could be argued that this basic distinction of corruption applies also to the developed and developing Mediterranean and Balkan countries.

The extent of political rights is the second variable that affects the degree of corruption in the Mediterranean and Balkan region. Generally, the more open the democracy is in a country the more the phenomenon of corruption is limited in this country. Corruption could therefore be considered both as a symptom of and as a cause for the malfunctioning of democratic institutions. On the other hand political development and democracy can reduce corruption. However, the transition from an autocratic to a democratic political regime does not constitute the critical turning point for controlling corruption, especially when the latter has been present for a considerable period of time and has identified itself as a bad practice of the “institutional” state structure¹¹. It is only the long and true democratic form of government, that is the establishment of a genuine democratic tradition, that proves to be of critical importance for tackling corruption. Only when democratic institutions have been consolidated we can argue convincingly that they reduce corruption. It could be accepted therefore that an important guarantee for crushing corruption is securing the smooth functioning of democratic institutions.

¹¹ The control of corruption is extremely difficult when the phenomenon becomes institutionalized and is not considered spontaneous. Easterly (2001) was the first to distinguish corruption into spontaneous and institutionalized or systemic.

Notions such as transparency, collectivism, rule of law etc., constitute but a few of the ingredients to a successful recipe of a smooth operation of a lawful state. It goes without saying that even in western type democracies one can encounter phenomena of institutional degradation in favor of personal gain. However, these take the form of economic scandals rather than large-scale corruption.

The level of human development is the third variable that affects the degree of corruption in the Mediterranean and Balkan region. Improving the quality of life and increasing the level of education reduces the motives of public officials to resort to corruption. These objectives however require the effective implementation of the appropriate long-run policies.

3.2. Policy proposals

From the above analysis we realize that improving government effectiveness by increasing the level of economic development and by establishing a more democratic political system and increasing the level of human development form the basic pillars of any anticorruption strategies in the Mediterranean and Balkan region, given its economic and political heterogeneity.

As it can be realized from table 1, many Mediterranean and Balkan countries could be characterized as highly corrupted especially Libya, Syria, Lebanon, Kosovo and Algeria. These countries are also characterized by low government effectiveness, by low levels of political freedom, and with the exemption of Libya, by low levels of per capita income. The Mediterranean Sea forms a natural border between two worlds. The northern, on the one hand, that comprises the European countries and the southern and eastern on the other, that comprises the Arab countries, with the exceptions of Turkey, Israel, Cyprus and Malta. These two worlds present great socio-cultural and politico-economic disparities. This very reality proves a challenge for the EU in its overall approach to the South East Mediterranean region. The EU from 1992 onwards¹² has attempted to intervene politically in SE Mediterranean¹³. The establishment of a Euro-Mediterranean Zone¹⁴, based on two pillars (namely, economy and culture), is estimated that it will reduce the existing “prosperity gap” between the two regions¹⁵, and thus it will reduce the level of corruption. These are the lines along which the Euro-

¹² Culminating in the Barcelona Declaration of 1995.

¹³ Its main objective has been to bridge the gap in the socioeconomic sector, which in turn will lead to the resolution of the greater part of the problems that this region is facing (Sioussiouras, 2007).

¹⁴ See further Sioussiouras (2003).

¹⁵ See extensively Seimenis and Sioussiouras (2003).

Mediterranean partnership is actually moving (Sioussiouras and Vavouras, 2012).

Corruption is also widespread in the Balkans where many countries are characterized by high unemployment rate, large hidden economy, organized crime, drugs proliferation, downgraded parliamentary institutions and migration (Dalaklis, Sioussiouras, and Karkazis, 2008). In some countries economic and political instability prevails. The existence of a regime of impunity that normally is well in place, contributes greatly in further strengthening corruption. It is not therefore surprising that a large part of the administrative mechanism in some Balkan countries does not function without the "contribution" of the necessary "supplement".

In 2003 a EU Commission report mentioned that extensive corruption levels in the Balkan countries constituted a serious obstacle to their economic reforms, with bleak prospects for their own future. Tax and social security revenues are seriously undermined, and all attempts to invest in many of those countries are made almost impossible (Sioussiouras, 2005). Given the fact that the majority of investment in the Balkan countries comes from the EU member-states, one could easily draw the conclusion that EU's role in the process towards the economic development and the political stabilization and hence to the reduction of corruption of the region is very important. The Stability Pact for South East Europe, which was put into effect in 1999, constitutes one serious step towards this direction¹⁶. The Initiative against Corruption that was included in the Pact provides the Balkan countries with the guidelines they need to follow¹⁷. The overall aim is the incremental incorporation of the Balkans into the European family of countries¹⁸.

Generally, the Stability Pact for South East Europe and the Euro-Mediterranean Cooperation Agreement constitute the two EU policies that are expected to contribute decisively to the effective reduction of corruption in the region, given the fact that they aim at strengthening the most important factors that improve government effectiveness, namely democratic institutions and economic development, as it has been shown in the present study.

Since corruption finds fertile ground for growth in countries that find themselves in economic, political and social instability and underdevelopment, the more developed, democratic, unitary, concrete and stable the country is, the harder it becomes for phenomena that can paralyze state structures like corruption to prosper. On the contrary, countries that are characterized by low levels of economic development, by ethnic and cultural disparities

and disputes, by persistent social inequalities and lack of consolidated democratic institutions, can be very easily infiltrated by corruption.

Finally, however, in a world that is more and more globalized it is natural that inter-state relations are increasingly taking the form of communicating vessels. Under these circumstances, corruption cannot always be solely attributed to inherent deficiencies of the existing political and economic systems. Imported factors might influence the level of corruption, especially in low income economies. In these countries corruption is sometimes taking gigantic proportions and due to the policies of developed states entrepreneurs who export illicit practices to them in order to exploit their institutions for their own benefit.

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¹⁶ See www.seepad.org.

¹⁷ See Stability Pact Anti-Corruption Initiative (SPAI). The creation of SPAI took place in February 2000 with the aim to fight corruption. The Council of Europe, the European Commission, the OSCE and the World Bank assist SPAI in implementing its aims. www.oecd.org/daf/SPAIcom.

¹⁸ See further Dalaklis and Sioussiouras (2007).

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Kuhn-Tucker's Theorem - the Fundamental Result in Convex Programming Applied to Finance and Economic Sciences

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Abstract— The optimization problems are not so important now in the field of production. But in the minimization risk problems, in profits maximization problems, in Marketing Research, in Finance, they are completely actual. An important example is the problem of minimizing portfolio risk, demanding a certain mean return. The main mathematical tool to solve these problems is the convex programming and the main result is the Kuhn-Tucker Theorem. In this work that result mathematical fundamentals, in the context of real Hilbert spaces, are presented.

Keywords— Convex programming, Kuhn-Tucker's Theorem, Optimization.

1. Introduction

As an application of convex sets separation theorems, in Hilbert spaces, a class of convex programming problems, where it is intended to minimize convex functionals subject to convex inequalities, is considered.

Note that

Definition 1.1

A Hilbert space is a complex vector space with inner product that, as a metric space, is complete.

The Hilbert spaces are designated in this paper by H or I . Remember that

Definition 1.2

An inner product, in a complex vector space H , is a strictly positive sesquilinear hermitian functional on H .

Observation

- In real vector spaces sesquilinear hermitian must be substituted by bilinear symmetric.
- The inner product of two vectors \mathbf{x} and \mathbf{y} belonging to H , by this order, is designated by $[\mathbf{x}, \mathbf{y}]$.
- The norm of a vector \mathbf{x} will be given by $|\mathbf{x}| = \sqrt{[\mathbf{x}, \mathbf{x}]}$.
- The distance between two elements \mathbf{x} and \mathbf{y} of H will be $d(\mathbf{x}, \mathbf{y}) = |\mathbf{x} - \mathbf{y}|$.

Definition 1.3

A set $K \subset H$ is convex if and only if

$$\forall_{\mathbf{x}, \mathbf{y} \in K} \forall_{\theta \in [0,1]} \quad \theta \mathbf{x} + (1 - \theta) \mathbf{y} \in K.$$

Definition 1.4

A functional p defined in H is convex if and only if

$$\forall_{\mathbf{x}, \mathbf{y} \in K} \forall_{\theta \in [0,1]} \quad p(\theta \mathbf{x} + (1 - \theta) \mathbf{y}) \leq \theta p(\mathbf{x}) + (1 - \theta) p(\mathbf{y}).$$

Then the separation theorems in Hilbert spaces, geometric consequences of Hahn-Banach theorem,¹ fundamental to the sequence of this work are presented.

Theorem 1.1

Be A and B two convex sets in a Hilbert space H . If one of them, for instance A has at least an inner point and $(\text{int}A) \cap B = \emptyset$, so there is at least a non-null vector \mathbf{v} such that

$$\sup_{x \in A} [\mathbf{v}, \mathbf{x}] \leq \inf_{y \in B} [\mathbf{v}, \mathbf{y}].$$

Theorem 1.2

Given a closed convex set A in a Hilbert space H and a point $\mathbf{x}_0 \in H$ not belonging to A , there is a non-null vector \mathbf{v} such that

$$[\mathbf{v}, \mathbf{x}_0] < \inf_{x \in A} [\mathbf{v}, \mathbf{x}].$$

Theorem 1.3

Two closed convex subsets A and B , of a Hilbert space, each other finite distanced, that is: such that

$$\inf_{x \in A, y \in B} |\mathbf{x} - \mathbf{y}| = d > 0$$

may be strictly separated. That is: there is at least a $\mathbf{v} \in H$ for which

$$\sup_{x \in A} [\mathbf{v}, \mathbf{x}] < \inf_{y \in B} [\mathbf{v}, \mathbf{y}].$$

Theorem 1.4

Being H a finite dimension Hilbert space, if A and B are convex sets, not empty, disjoint so they can

¹ Theorem (Hahn-Banach)

Be p a positively homogeneous convex functional defined in a real vector space L and L_0 a L subspace. If f_0 is a linear functional defined in L_0 , fulfilling the condition,

$$f_0(x) \leq p(x), \forall x \in L_0$$

so exists an extension f of f_0 defined in L , linear, and such that

$$f(x) \leq p(x), \forall x \in L.$$

always be separated, that is: there is at least a non-null vector \mathbf{v} such that

$$\sup_{x \in A} [\mathbf{v}, \mathbf{x}] \leq \inf_{y \in B} [\mathbf{v}, \mathbf{y}].$$

Finally an important property of the Hilbert spaces convex continuous functionals:

Theorem 1.5

A continuous convex functional in a Hilbert space has minimum in any limited closed convex set.

Demonstration:

If the space is of finite dimension, obviously the condition of the convexity for the set is not needed. In spaces of infinite dimension, note that if $\{x_n\}$ is a minimizing sequence, so, as the sequence is bounded, it is possible to work with a weakly convergent sequence and there is weak lower semi continuity, see for instance (1): $\liminf f(x_n) \geq f(x)$, calling $f(\cdot)$ the functional, where x is the weak limit, and consequently the minimum is $f(x)$. As a closed convex set is weakly closed, x belongs to the closed convex set ■.

2. Kuhn-Tucker's Theorem

From now on only real Hilbert spaces are considered.

Theorem 2.1 (Kuhn-Tucker)

Be $f(x), f_i(x), i = 1, \dots, n$, convex functionals defined in a convex subset C of a Hilbert space.

Consider the problem

$$\min_{x \in C} f(x)$$

$$\text{sub: } f_i(x) \leq 0, i = 1, \dots, n.$$

Be \mathbf{x}_0 a point where the minimum, supposed finite, is reached.

Suppose also that for each vector \mathbf{u} in E_n (Euclidean space of dimension n), non-null and such that $u_k \geq 0$, there is a point \mathbf{x} in C such that

$$\sum_{k=1}^n u_k f_k(\mathbf{x}) < 0 \quad (2.1)$$

where u_k are the coordinates of \mathbf{u} .

Thus,

- i) There is a vector \mathbf{v} , with non negative coordinates v_k , such that

$$\begin{aligned} & \min_{\mathbf{x} \in C} \left\{ f(\mathbf{x}) + \sum_{k=1}^n v_k f_k(\mathbf{x}) \right\} \\ &= f(\mathbf{x}_0) + \sum_{k=1}^n v_k f_k(\mathbf{x}_0) \\ &= f(\mathbf{x}_0), \end{aligned} \quad (2.2)$$

- ii) For any vector \mathbf{u} in E_n with non negative coordinates (it is also said: belonging to the positive cone of E_n)

$$\begin{aligned} f(\mathbf{x}) + \sum_{k=1}^n v_k f_k(\mathbf{x}) &\geq f(\mathbf{x}_0) \\ + \sum_{k=1}^n v_k f_k(\mathbf{x}_0) &\geq f(\mathbf{x}_0) \\ + \sum_{k=1}^n u_k f_k(\mathbf{x}_0). \end{aligned} \quad (2.3)$$

Demonstration:

Be the sets A and B in E_{n+1} :

$$\begin{aligned} A: \{ \mathbf{y} = (y_0, y_1, \dots, y_n) \in E_{n+1} : y_0 &\geq f(\mathbf{x}), y_k \\ &\geq f_k(\mathbf{x}) \text{ for some } \mathbf{x} \in C, k \\ &= 1, \dots, n. \}, \end{aligned}$$

$$\begin{aligned} B: \{ \mathbf{y} = (y_0, y_1, \dots, y_n) \in E_{n+1} : y_0 < f(\mathbf{x}_0), y_i < 0, \\ i = 1, \dots, n. \}. \end{aligned}$$

It is easy to verify that A and B are convex sets in E_{n+1} , disjoint.

So they can be separated, that is, it is possible to find $v_k, k = 0, 1, \dots, n$ such that

$$\begin{aligned} \inf_{\mathbf{x} \in C} v_0 f(\mathbf{x}) + \sum_{k=1}^n v_k f_k(\mathbf{x}) \\ \geq v_0 f(\mathbf{x}_0) \\ - \sum_{k=1}^n v_k |y_k|. \end{aligned} \quad (2.4)$$

As (2.4) must hold for any $|y_k|$, it is concluded that $v_k, k = 1, \dots, n$, is non negative. In particular approaching $|y_k|$ from zero it is obtained

$$v_0 f(\mathbf{x}_0) + \sum_{k=1}^n v_k f_k(\mathbf{x}_0) \geq v_0 f(\mathbf{x}_0)$$

and as the $f_k(\mathbf{x}_0)$ are non positive it follows that

$$\sum_{k=1}^n v_k f_k(\mathbf{x}_0) = 0. \quad (2.5)$$

Then it is shown that v_0 must be positive

In fact if the whole $v_k, k = 1, \dots, n$ are zero, v_0 cannot be zero, and from $v_0 z_0 \geq v_0 y_0$ for any $y_0 < f(\mathbf{x}_0) < z_0$, it follows that v_0 must be positive.

Supposing now that not all the v_k are zero, $k=1, \dots, n$, there is an $\mathbf{x} \in C$ such that $\sum_{k=1}^n v_k f_k(\mathbf{x}) < 0$ (by hypothesis). But for any z_0 greater or equal than $f(\mathbf{x})$ it must be $v_0(z_0 - f(\mathbf{x}_0)) \geq -\sum_{k=1}^n v_k f_k(\mathbf{x}_0) > 0$, and so v_0 must be positive. So, after (2.4) and putting $V_k = \frac{v_k}{v_0}, k = 1, \dots, n$ it is obtained

$$\begin{aligned} f(\mathbf{x}) + \sum_{k=1}^n V_k f_k(\mathbf{x}) &\geq f(\mathbf{x}_0) \\ &= f(\mathbf{x}_0) + \sum_{k=1}^n V_k f_k(\mathbf{x}_0), \end{aligned}$$

resulting in consequence the remaining conclusions of the theorem ■.

Observation:

- A sufficient condition, obvious but useful, so that (2.1) holds is that there is a point \mathbf{x} in C such that $f_i(\mathbf{x})$ is lesser than zero for each $i, i = 1, \dots, n$.

Corollary 2.1 (Lagrange's Duality Theorem)

In the conditions of Kuhn-Tucker Theorem

$$f(\mathbf{x}_0) = \sup_{u \geq 0} \inf_{\mathbf{x} \in C} \left(f(\mathbf{x}) + \sum_{k=1}^n u_k f_k(\mathbf{x}) \right)$$

Demonstration:

$\mathbf{u} \geq 0$ means that the whole coordinates $u_k, k = 1, \dots, n$, of \mathbf{u} are non negative. The result is a consequence of the arguments used in the Theorem of Kuhn-Tucker demonstration:

$$\begin{aligned} & - \text{ For any } \mathbf{u} \geq 0 \\ \inf_{x \in C} & \left(f(x) + \sum_{k=1}^n u_k f_k(x) \right) \leq f(x_0) \\ & + \sum_{k=1}^n u_k f_k(x_0) \leq f(x_0). \end{aligned}$$

- In particular for $u_k = v_k$

$$\inf_{x \in C} \left(f(x) + \sum_{k=1}^n v_k f_k(x) \right) \geq f(x_0).$$

then resulting the conclusion ■.

Observation:

- This Corollary gives a process to determine the problem optimal solution.
- If the whole v_k in expression (2.3) are positive, x_0 is a point that belong to the border of the convex set determined by the inequalities.
- If the whole v_k are zero, the inequalities are redundant for the problem, that is: the minimum is the same as in the "free" problem (without the inequalities restrictions).

3. Kuhn-Tucker's Theorem for Inequalities in Infinite Dimension

In this section, the situation resulting from the consideration of infinite inequalities will be studied. A possible approach is:

- To consider a transformation $F(x)$ from a real Hilbert space H to L_2 : space of the summing square functions sequences.
- To consider the positive cone \wp , in L_2 , of the sequences which the whole terms are non-negative.

- To consider the negative cone \aleph , in L_2 , of the sequences which the whole terms are non-positive.
- To formalize the problem of the minimization of the convex functional $f(x)$, constrained to $x \in C$ convex, as in section 2, and $F(x) \in \aleph$, supposing that $F(x)$ is convex.

Unfortunately the Kuhn-Tucker's theorem does not deal with this situation.

Similarly to the demonstration of Theorem 2.1 define

$$A = \{(y, z): y \geq f(x) \wedge z = F(x) \in \wp \text{ for any } x \in C\},$$

$$B = \{(y, z): y < f(x_0) \wedge z \in \aleph\},$$

where x_0 is a minimizing point, as before. But, now, A and B , even being disjoint, can not necessarily be separated if neither A nor B have interior points. And evidently \aleph has not interior points.

Another way, in order to establish a generalization, may be:

- To consider a real Hilbert space I that encloses a **closed convex cone** \wp .
- Given any two elements $x, y \in I$, $x \geq y$ if $x - y \in \wp$.
It is a well defined order relation: if $x \geq y$ and $y \geq z$, $x - y \in \wp$ and $y - z \in \wp$; being \wp a convex cone, $(x - y) + (y - z) \in \wp$, that is $x \geq z$.
- So \wp may be given by $\wp = \{x \in I: x \geq 0\}$ and may be called **positive cone**.
- The **negative cone** \aleph will be given by $\aleph = -\wp = \{x \in I: x \leq 0\}$.

Having as reference these order relation, it is possible to define a convex transformation in the usual way. If the cone \aleph has a non-empty interior, a version of the **Kuhn-Tucker's theorem for infinite dimension inequalities** may be established.

Theorem 3.1 (Kuhn-Tucker in Infinite Dimension)

Call C a convex subset of a real Hilbert space H and $f(x)$ a real convex functional defined in C .

Be I a real Hilbert space with a convex closed cone \wp , with non-empty interior, and $F(x)$ a convex transformation from H to I – convex in relation with the order induced by the cone \wp .

Consider x_0 , a minimizing of $f(x)$ in C , constrained to the inequality $F(x) \leq 0$.

Call $\wp^* = \{x: [x, p] \geq 0, \text{ for any } p \in \wp\}$ - the dual cone.

Admit that given any $u \in \wp^*$ it is possible to determine x in C such that $[u, F(x)] < 0$.

So, there is an element v in the dual cone \wp^* , such that for x in C

$$\begin{aligned} f(x) + [v, F(x)] &\geq f(x_0) + [v, F(x_0)] \\ &\geq f(x_0) + [u, F(x_0)], \end{aligned}$$

where u is any element of \wp^* .

Demonstration:

It is identical to the one of Theorem 2.1. Build A and B , subsets of $E_1 \times I$:

$$A = \{(a, y): a \geq f(x), y \geq F(x), \text{ for any } x \text{ in } C\},$$

$$B = \{(a, y): a \leq f(x_0), y \leq 0\}.$$

In the real Hilbert space $E_1 \times I$, these sets can be separated, since B has non-empty interior and $A \cap B$ has not any interior point of B . So it is possible to find a number a_0 and $v \in I$ such that, for any x in C , $a_0 f(x) + [v, F(x)] \geq a_0 f(x_0) - [v, p]$ for any p in \wp . As this inequality left side is lesser than infinite, it follows that $[v, p] \geq 0$, for any $p \in \wp$ and so $v \in \wp^*$.

The remaining demonstration is a mere copy of the Theorem 2.1's ■.

Observation:

- Through subtle, although conceptually complicated, generalization of Kuhn-Tucker's theorem it was possible to present the mathematical fundamentals of Kuhn-Tucker's theorem in infinite dimension. It was necessary to define very carefully the domains to be considered: the Hilbert spaces and the adequate cones.

And this is a really challenging problem from the mathematical point of view.

There is also a version in infinite dimension for the Lagrange's Duality Theorem:

Corollary 3.1 (Lagrange's Duality Theorem in Infinite Dimension)

In the conditions of Kuhn-Tucker's Theorem in Infinite Dimension

$$f(x_0) = \sup_{v \in \wp^*} \inf_{x \in C} (f(x) + [v, F(x)]).$$

Observation:

- Also, as in the former section, this Corollary gives a process to determine the problem optimal solution.

4. Conclusions

Convex programming is a powerful tool to solve practical problems in various domains, namely in Operations Research, Economics, Management, etc. In its various branches – Linear Programming, Integer Programming, Quadratic Programming, Assignment Problems and even Dynamic Programming – it allows the mathematical modelling of a lot of practical problems allowing a better knowledge of them and their solution determination.

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FDI Political Risks: The New International Context

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Abstract - The understanding of country risk for investors is extremely important. Considering the current international context on geostrategic countries' environment this subject gains additional relevance. The growing global nature of investments makes the country's risk measurement essential in terms of economic consequences. The international country's political risk show that companies investments abroad need an involving and multifaceted organization. This paper intends to analyze the conditions of attractiveness and the risks in a political context of a country in which a company intends to invest. The politics' stability of a country's government is often determinant to have investments, particularly the ones from an international company. The complexity of this analysis requires the understanding of the way the interrelationships are made. The case of Latin America countries is presented and the new context of China is also analyzed.

Keywords - *China, Latin America, Political Risks, Competitive Advantages, Foreign Direct Investment (FDI).*

1. Introduction

The existence of countries risks impacts on global investment strategies. Different measures for countries' risk exist, some of which coming for instance from the Political Risk Services' International Country Risk Guide (ICRG). These measures include, for example, political risk, economic risk and financial risk. The ICRG also states about a measure of composite risk which is a simple function of the three base indices. In fact the graduation of risk determines how attractive a country is for the international investments, given the fact that the existence of international investments is explained because investors want to maximize the return on their investments. As a consequence they analyze the risks in order to reduce eventual future

negative impact on returns.

FDI involves a complex system of analysis for the conditions of countries' attraction. Political conditions are a very central point of analysis when a company studies a country. The different frameworks that allow to analyze the attraction of investments show that the international political environment always works as an important factor for companies to go to international business. The stability of politics of a country's government is often determinant to get investments, particularly investments from an international company.

The great level of political consciousness was going working side by side with the internationalization of business and socio/economic relationships.

The economic and social development of developing countries depends often on commercial advantageous investments and on the reinvestment of capitals on these economies. The economies need to grow up and for that, at a large extent, they require foreign capital and foreign investments. The risk involved in the operation is determinant to an economy to be interestingly attractive for investors.

If companies consider the investments to be risky, considering for example the existence of any reversal conditions on the political system of a country, and also if the economic environment of an economy or just if the perception of investors change about it, the feeling of investors to retract the investments is effective and a financial and economic crisis comes potential.

Currently the international investments have reached maximum values and there is now a question. Will FDI keep growth trends? Or is it now reaching a tipping point? If reality shows that countries consider essential to promote development and economic and social growth, the truth is that

sometimes political agendas, individual interest or the lack of long-term vision by politicians make the context in many countries little conducive to receive foreign investments.

While China has been the country that most has attracted FDI in the last decade, in Latin America, for example, some countries kept structural political problems, what reduces the attractiveness for foreign investments. In the other hand, the good combination of factors in China has given China the potential to become extremely competitive in this area.

Productivity gains play a vital responsibility for countries competitiveness and for global international economy ranking in countries businesses.

In section 2, a review of some important aspects of competitive advantages of countries, political risks and the conditions to get international investments is made. In section 3 the political risk in international arena is studied. In section 4 some reasons for investments attraction in several world regions are pointed out. In section 5 some notes about the new international scenario are presented previously to the final remarks.

2. Competitive Advantages, Political Risks and Attractiveness Conditions for International Investments

A company or a country can obtain a better situation if it bases its choices on a competitive advantage at several levels (national, local, corporate, individual). And a country must aim to get long term competitiveness by getting competitive advantages in the global market.

The constant changes in the global market may have a strong and direct influence in the competitive advantages of companies and countries. Any significant investment require that the company is aware of risks and be aware of the general environment of the destination country, managing the inherent risks. An important factor that influences and that is determinant in the companies' decision about international investments is, in fact, the political risk.

The "political risk" concept has appeared often in the international business literature since long time ago. Its usage usually means that there is a strong chance of unwanted consequences arising from political activity. However, the precise meaning is far from just that. The political risk is customarily seen

as the (usually host) government interference in business operations.

According Robock, cited in Kobrin (1978), political risk in international business exists when:

- discontinuities occur in the business environment;
- they are difficult to anticipate; and
- when they result from political change.

To constitute a "risk", accordingly, these changes in the business environment roust have the potential for significantly affecting the profit or other goals of a particular enterprise.

Many authors define political risks as the government interference with the business operations (see, for example, Carlson (1969), Greene (1974), Aliber (1975), Baglini (1976) or Lloyd (1976). Others define political risks in terms of specific events (political acts, constraints imposed on firms, a combination of both).

In this context of the analysis of the political risks, let see also several other authors' points of view about political risks. For example, Weston and Sorge's definition shows that political risks arise from the actions of national governments which interfere with or prevent business transactions, or change the terms of agreements, or cause the confiscation of wholly or partially foreign owned business property.

Root (1976), cited in Kobrin (1978), defines political risk in terms of the "...possible occurrence of a political event of any kind (such as war, revolution, *coup d'etat*, expropriation, taxation, devaluation, exchange controls and import restrictions), at home or abroad, that can cause a loss of profit potential and/or assets in an international business operation".

As shown in Kobrin (1978), Root also emphasizes that the distinction between uncertainty and risk (a distinction with normative and positive implications) attempts to distinguish between political and other environmental risks.

Considering that it is interesting to know the essential conditions to invest in a country and to analyze the mode of a country's inclusion in a market economy, several factors are presented for the analysis of the attraction of investments. These factors can be grouped in three big economic groups:

- national security,
- development of new industries and
- protection of areas in decline.

Accordingly, the stability and instability of government policies are first-order political factors in making decisions on the deployment of large-scale investments, which may change the economic reality of a region. They may represent a significant change for two important economic variables: income and consumption.

It is not possible to avoid political risk completely. Even if the company keeps all its investments in a country, the company will be always exposed to governments' decisions, even if the company may consider the risks very low.

Busse and Hefeker (2005) have also studied the linkages between political risk, institutions and foreign direct investment inflows. The authors used different econometric techniques for a data sample of 83 developing countries for the period 1984-2003, identifying the indicators that matter most for the activities of multinational corporations. Their results showed that government stability, the absence of internal conflict and ethnic tensions, basic democratic rights and ensuring law and order are highly significant determinants of foreign investment inflows.

It must be also noted that the legal system where international business is inserted is very important to FDI. There is a great dilemma for international law, leading many analysts to doubt about normative character of law. When and where to complain when a business group is the victim of a sanction imposed by a host country?

3. International Environment and the Management of Political Risk

A relative equilibrium in relationships in international business environment, which is often unpredictable is very hard to get and organisations must find many adjustments. Companies need to minimize the risks as much as they can. Managing the international environments depends on the circumstances of the system. Companies have to know exactly the contexts to define strategies, particularly the political contexts, having in very particular account the long-term for investments.

Political risk shall take into account the sovereignty of nations, the legal systems, government policies, philosophies, interest groups, political parties among other factors. The analysis of political risk is a kind of barometer of what large companies forming the environment of international business measure the risk of the political environment.

The study PricewaterhouseCoopers and Eurasia Group (2009) shows that these organizations believe that a more effective management of political risk can help companies to protect their investments and take advantage of new opportunities, thereby improving global business performance. For that, it is necessary to go over any fear and uncertainty and they must integrate political risk management into a systematic process embedded in the company's business processes in general.

By doing business internationally, companies are, by nature, willing to take big risks. It is believed that big risks' takers shall be well informed about risks. Political risk management is an essential element of risk-taking knowledge.

When doing business across national borders, the size of companies often faces international political and legal barriers. This is due to the fact that government policies and laws in each nation are different. Thus, in most cases a foreign company must accept the policies and laws of a host country, since there are variables that are beyond its control.

Government policies and laws are strictly linked to the political system of each country and the risk of international investments depends, above all, on the political environment involved. The international political system is formed by sovereign states, theoretically free of external control, with legal equality to the other states, governing their own territories and applying social systems specific to their reality. Sovereignty itself guarantees requirements for citizenship, geographical boundaries and rules of such trade and surveillance of people and goods, and borders. A major cause of conflict in international business is the idea of the extension of the internal laws of a nation. Besides, sovereign states still have power and authority to enter into agreements among themselves.

Therefore, taking into account the fundamental principle of sovereignty, the evaluation of the foreign market is of vital importance to the international business. The analysis of a country's political environment is also essential to the operation of a foreign company business. This political environment that causes risks may be minimized, aiming that foreign organizations will not be subject to penalties such as confiscation, expropriation or nationalization.

A country has to invest in the creation of a global environment that attract FDI. Moreover, it is necessary that the governments know about the importance to have a stable political framework. An international company will work the political

expectations about the country to decide about investments.

Often, it is recommended the installation of investments in democratic countries, where there are no major policy changes. However, sometimes major competitive advantages are not achieved in these nations, when taking into consideration the factors of production. Thus, the issue is not to point out a model to manage the political risk, but showing more options and tools to manage the risk that is provided by political environment.

4. Regions Attractiveness

A general view of regions attractiveness is given in this chapter, considering the particular cases of Latin America and China. Some additional notes about USA, Europe and Africa are presented.

4.1. Investments in Latin America

Nowadays, Latin America is a region with 21 countries, 11 territories included since North America, from Mexico, until Argentina in South America. The Latin America territory was scene of major disputes by its field since its discovery in the ends of XIV century.

Let us focus in the period of the increased instability in Latin America after 1930. It is not to mention just the crisis of capitalism and the second World War II, between 1930-1947, when Latin America saw the birth of "desenvolvimentista" thinking. The apex of the "desenvolvimentista" paradigm occurred between 1947-1979 with authoritarian governments. Latin America holds in the people's mind a phase of modernization in this period, responsible for economic advances that brought at the time some prominent countries to the world. Latin America "desenvolvimentismo" brought a process of industrialization, income growth and *per capita* growth rate.

It was identified that policies were giving attention to issues respecting to investment rates, external financing and the mobilization of domestic savings. But the paradigm of Latin America subtraction issues was in the area of income concentration, regional concentration, social, political and cultural influence on development process. Added to authoritarian governments and dictatorial force, in the Latin America countries there was a chaos of instability in which people felt a temporary "satisfaction" on the system.

It seems evident from the way that there was an assertive degree of instability of the region in 18 countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panamá, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela) for long time and only 3 countries of them (Costa Rica, Colombia and Venezuela) did not use to have large instabilities along the time. Venezuela, however, undid this quality, with the steady rise of Hugo Chavez to the power in the early 2000's.

Accordingly, the Latin America political instability inhibits economic development through its effect on the political system with consequences larger than the physical and human capital. Events such as the ones in Honduras and the political ascents of Evo Morales in Bolivia, bring no help at all to the Latin America stability.

So, historically, Latin America has always been a storehouse of examples of how to remove large investments, often disregarding the right to private property, along with changes in the policies promoted by blows of states and / or changes to populist political leaders. The Brazil's neighbors, such as Venezuela, Bolivia or Ecuador live in this situation. Some important Brazilian companies (Petrobras and Odebreth) for the first time are faced with political instability, causing incalculable damage and consequently, it is important to learn how to minimize the effects of the political environment.

However, many Latin American countries have been very attractive last decade for international investments because in some countries - as it is the case of Brazil - many conditions of attractiveness were got in order to promote investments in their territories.

Anyway, the political context "ghost" was not forgot and the recent case of the nationalization of YPF, a filial of the Spanish Repsol in Argentina, shows well how things are volatile in Latin America. This has motivated a strong reaction by the Spanish government. Besides, strong consequences in terms of investment in Latin America are expected.

This recent event and the background on the political climate of Latin America show this new facet within international geostrategic relationship, in which Latin America incurs serious risks. The international framework is getting a much more complex stage in terms of international relations, as much as the new dimensions of international economy, show the evidence of complex

vulnerabilities for which the solutions seem very difficult. This framework will not be under review here, although it is important to note that the map of international relationships is being redesigned and a new reality is being built.

4.2. China Attractiveness

China got important measures in order to promote a stable economic framework for international companies to install their factories in Chinese territory. Its advantages have worked promoting China to the most competitive country in the world.

In fact, China got a strong combination of factors to get important competitive advantages. There are many factors - like cheap costs for labor, competent technicians, low cost infrastructures, important incentives, for example – that made China very attractive.

However, the increase of labor costs and other factors are changing a little this reality. Anyway, China has an important support line, what guarantees to China a strong basis for competitiveness.

While many companies are moving some investments outside China, coming back to their countries, for example (it is the case of some USA companies coming back to USA) or are investing in other countries, the fact is that there are investments in China and other Asian countries remaining interesting because, among other reasons, the demand in these countries is growing considerably.

4.3. Developed Countries Investments

For several decades USA has found, internally and externally, ways to overcome the successive problems in industry, sometimes very hardly. FDI has been for many USA companies the solution for the wealth creation. After the East Asian Tigers, China has emerged as the solution for many USA companies.

What European countries respects, the EU countries have searched as well for interesting destination countries to invest. Particularly, the Lisbon Treaty amends the Treaty Establishing the European Communities, and renames it the Treaty on the Functioning of the European Union (TFEU). Article 207(1) of the TFEU explicitly mentions foreign direct investment as forming part of the common commercial policy. As such, the Treaty establishes the EU's exclusive competence on foreign direct investment. As a result, the EU investment platform vis-à-vis third countries could be gradually enriched with investment protection standards for all

EU investors establishing its presence in these countries.

4.4. Other Regions

Africa countries have also their own problems, very well known, since corruption, lack of infrastructures, illiteracy, to strong political risks, for example. Anyway, sometimes there are specific conditions to invest in some African countries.

There are several countries in other regions that may attract also investments.

Anyway, the big question resides on the attractiveness of these countries and the implications of the actual international context, very problematic and very complex.

5. The New International Environment

China has a very significant domestic market. China has been converting all the potential to adjust the productive structures and it is enlarging the basis of the production structure what concerns to many capital-intensive industries. China is guaranteeing many skilled workers and is developing many conditions for the Chinese development. Many Chinese cities are now very well positioned for new challenges. China is also penetrating around the world guaranteeing a support for future activities.

The substantial changes in China reveal that in more options will exist for international investments and international trade flows, considering the existence of more choices for companies' production in the future. Anyway, many products to be supplied to the world and more specifically to Asian countries may remain being produced in China.

International companies have new options about the global supply networks. The usual criteria to decide about investments remain valid: the total cost of production, the proximity of markets and raw materials, and so on. However, companies must analyze now the new circumstances of fast change on the global combination of factors. The flexibility and dynamism of the supply chains and their capability to be balanced is now central in the companies' decisions. Movements from one to another center of production are also analyzed considering that as important as becoming closer to the final customer, according the needs and new demands. A new stage for international trade is in the front door and is determined by the new relative position of countries considering the speedy effects of international investment movements and the new requirements for

production and supply that respond to the new trends of demands.

6. Final Remarks

Internal market of China seems to be guaranteed in the future. China power remains and is able to supply many sophisticated products.

USA has overcome the challenges of last decades. Its flexibility made USA resistant enough to maintain its economic and political hegemony in the world. One of the big defies of USA for the coming years is the emergence and consolidation of China as one of the most powerful countries.

By its side, EU protects the advantages of international trade and keeps trade policy as being essential to generate development and jobs through the increasing of international trade. The various EU countries look for improving the conditions of competitiveness of domestic companies and to get a better graduation in the international ranking of competitiveness. EU countries are currently adjusting production structures and creating more competitive administrative conditions for internal investments and production.

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High Employment Generating Sectors in Portugal: an Interindustry Approach

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Abstract - An increase in the unemployment rate is one of the most serious consequences of macroeconomic crises. In Portugal, the impact of the recent recession has been particularly strong. In this paper, after quantifying this macroeconomic problem, an interindustry approach is used in order to identify the high employment generating (or destructing) sectors. This approach is particularly interesting because it considers not only the direct flows of job creation and destruction, but also the employment changes attributable to the indirect and induced effects of interindustry connections (the flows of intermediate inputs supply and demand). Using the so-called hypothetical extraction (or “shut-down of industry”) method and the employment and interindustry data of the Portuguese economy, the key sectors in terms of multipliers, elasticities and the creation of jobs are identified. The empirical results of this paper can be useful in improving the policy responses to the crisis and carrying out the most appropriate measures to stimulate the economy.

Keywords: Input-output analysis; hypothetical extraction; employment.

1. Introduction

The significant rise of the unemployment rate is one of the most serious consequences of macroeconomic crises. In Portugal, the impact of the recent recession has been particularly strong, putting unemployment at the center stage of policy makers' concerns. Unfortunately, after a brief period of anti-cycle, expansionary measures in 2009, the serious deterioration of budget imbalances (public deficit and debt as a percentage of GDP) and the instability of financial markets (e.g., Greece and Ireland cases), obliged the Portuguese Government to launch in 2010 an austerity program in successive rounds (*Programas de Estabilidade e Crescimento*¹ - *PECs 1, 2 and 3*) that have seriously deteriorated the macroeconomic context. After the refusal of *PEC4* in the Portuguese *Parlamento*, the minority government fall and the new government is implementing the strong austerity program negotiated with the so called *troika* (EU, ECB and IMF) as a requisite for financial

support. The main result of all these political and economic events is a double dip recession of consequences not yet fully quantifiable, with the last official previsions pointing to a GDP decay of 2,8% and an unemployment rate

The first purpose of this paper, after quantifying the macroeconomic imbalances of the Portuguese economy with a focus on real variables, such as economic growth, employment and unemployment, is to make a descriptive analysis of its employment structure by industries, and the main changes between 1995 and 2005.

The second purpose is to shed more light on this subject, using an interindustry approach in order to identify the high employment generating (or destructing) sectors. This approach is particularly interesting because it considers not only the direct flows of job creation and destruction, but also the employment changes attributable to the indirect and induced effects of interindustry connections (the flows of intermediate inputs supply and demand). Using the so-called hypothetical extraction (or “shut-down of industry”) method and the employment and interindustry data of the Portuguese economy, the key sectors in terms of multipliers, elasticities and the (direct plus indirect) jobs creation are identified.

The empirical results of this paper can be useful in improving the policy responses to the crisis and carrying out the most appropriate measures to stimulate the economy, using the (limited) instruments and resources available (e.g., EU structural and cohesion funds; fiscal benefits; public-private R&D partnerships, etc.) in supporting the industries with strong growth potential and jobs creation capability.

The paper is organized as follows. Section 2 surveys the main macroeconomic trends (1990-2010) of economic growth, employment and unemployment in Portugal and other European countries (EU-27) and provides a descriptive analysis of the structure of employment in Portugal and its changes between 1995 and 2005. Section 3 presents the theoretical

¹ Stability and Growth Programs.

framework of the interindustry approach used to assess the relative importance of sectors for employment creation, namely the hypothetical extraction method. The empirical results are shown and discussed in section 4 and Section 5 ends the paper with some concluding remarks.

2. Macroeconomic trends and sectoral employment structure

The macroeconomic performance has deteriorated in the European countries both in terms of real GDP growth as in employment creation, in the first decade of the XXI century (OECD, 2011). In Table 2.1 we can see that this trend is particularly clear in Portugal, with average annual GDP growth decaying from 4,22% in 1995-2000 to a mere 0,5% in 2001-2010, leaving many observers to pessimistically talking of “the lost decade”.

Table 2.1 Economic and employment (annual) growth rates, Portugal and EU27

Years	Real GDP		Employment	
	Portugal	UE27	Portugal	UE27
1995	2,31	2,65	-0,75	0,61
1996	3,66	1,83	1,68	0,54
1997	4,38	2,73	2,62	0,63
1998	5,05	2,98	2,81	1,27
1999	4,08	3,06	1,37	0,73
2000	3,93	3,90	2,09	1,48
2001	1,97	1,98	1,82	0,90
2002	0,71	1,25	0,58	-0,10
2003	-0,93	1,35	-0,59	0,35
2004	1,56	2,51	-0,08	0,68
2005	0,76	1,96	-0,33	0,94
2006	1,44	3,21	0,51	1,66
2007	2,39	2,98	-0,04	1,81
2008	0,03	0,53	0,45	0,95
2009	-2,58	-4,23	-2,58	-1,82
2010	1,26	1,84	-0,93	-0,55
1995-2010	1,82	1,84	0,62	0,63
1995-2000	4,22	2,90	2,11	0,93
2001-2010	0,50	1,24	-0,34	0,43

This had a significant effect in unemployment rates, as expected. Portugal was until 2000 a relatively low unemployment country, well below the average of EU-27 (see Table 2.2). However, the weak growth since 2001 and above all the devastating effect of the 2009 recession has completely changed the situation, with a more than doubling unemployment rate between 2001 and 2010, from 4% to 10,5%, whereas the EU27

unemployment rate has augmented only slightly from 8,7% to 9,6%.

So, unemployment is nowadays the main macroeconomic problem of the Portuguese economy, with its pernicious social and political effects, albeit the other great imbalances the country is currently facing, namely the huge public and external debts.

Table 2.2 Unemployment rates in Portugal and in the EU27

Years	Unemployment rate	
	Portugal	EU27
2000	4,00	8,70
2001	4,10	8,50
2002	5,10	8,90

2003	6,40	9,00
2004	6,70	9,10
2005	7,70	8,90
2006	7,80	8,20
2007	8,10	7,20
2008	7,70	7,00
2009	9,60	8,90
2010	10,50	9,60

In this context, it is important to study in more detail the employment changes in the economy, namely the structure of employment by sectors. Unfortunately, for data availability restrictions, we must limit the period covered to 1995-2005. The data sources are the National Accounts from Statistics Portugal (INE) and the *Departamento de Prospectiva e Planeamento* (DPP, 2004; 2008).

In Table 2.3 we present several employment indicators by sector, namely the structure in 1995 and 2005, and the absolute and relative employment growth. The most significant sectors in terms of employment weight in 1995 are Trade and Repair Services, Agriculture, Construction, Public Administration, Textiles, Education and Health Services, reflecting a long standing problematic specialization in low value added and non tradable industries.

Table 2.3 Employment indicators by sector in Portugal

NS	Sectors	E_i/E_T 1995	E_i/E_T 2005	E_i Abs. Growth	E_i Rel. Growth
01	Agriculture	12,26%	9,45%	-71,895	-13,69%
02	Fishing	0,53%	0,35%	-6,091	-26,73%
03	Mining	0,34%	0,33%	1,319	8,98%
04	Food products and beverages	2,71%	2,42%	0,098	0,08%
05	Textiles	6,50%	4,58%	-58,817	-21,12%
06	Wearing apparel	1,80%	1,19%	-19,708	-25,63%
07	Wood and products of wood and cork	1,49%	1,18%	-7,21	-11,33%
08	Pulp, paper and paper products	1,21%	1,04%	-1,685	-3,25%
09	Coke, refined petroleum products	0,03%	0,02%	-0,4	-28,57%
10	Chemicals	0,60%	0,46%	-3,551	-13,90%
11	Rubber and plastic products	0,51%	0,55%	4,428	20,15%
12	Other non-metallic mineral products	1,63%	1,35%	-4,952	-7,11%
13	Fabricated metal products	2,07%	2,02%	8,473	9,56%
14	Machinery and equipment n.e.c.	1,02%	0,92%	0,162	0,37%
15	Electrical machinery	1,22%	0,96%	-6,125	-11,71%
16	transport equipment	0,81%	0,75%	1,032	2,96%
17	other manufactured goods	1,47%	1,46%	7,112	11,33%
18	Electrical energy, gas and hot water	0,70%	0,46%	-7,985	-26,54%
19	Construction work	9,67%	11,06%	116,655	28,17%
20	Trade and repair services	16,53%	17,87%	149,463	21,12%
21	Hotel and restaurant services	4,78%	6,13%	89,186	43,54%
22	Transports and communication services	3,87%	4,05%	28,532	17,20%
23	Financial services	2,30%	1,78%	-13,272	-13,46%
24	Real estate services	4,97%	6,47%	97,547	45,81%
25	Public administration	7,18%	7,50%	52,425	17,06%
26	Education services	5,93%	6,32%	48,975	19,27%
27	Health and social work services	5,35%	6,34%	75,099	32,81%
28	Other services	2,50%	3,00%	36,449	33,98%

In 2005, some progress in the pattern of specialization was detected with the decaying weight of some traditional sectors (Agriculture, Fishing, Textiles and Wearing) and the positive absolute and relative growth of Rubber and Plastic Products, Fabricated Metal Products, Machinery and Equipment, Transport Equipment and Other Manufactured Products. This slight improvement is also documented for the capacity to generate value added and diminishing external vulnerability in Lopes et al (2011).

However, this evolution was overcome by the significant (absolute and relative) progression of Non Tradable Services (Real Estate, Hotels and Restaurants, Construction, Health and Other Services). So, we can conclude that much remains to be done in the upgrading of the specialization pattern of Portuguese economy, in the context of the globalization challenges and the ambitious Strategy 2020 recently launched by the European Union in the way of a smart, sustainable and cohesive growth.

3. Theoretical framework

In this section we present the methodology of interindustry analysis that will be used to assess the relative importance of sectors for employment generation in Portugal. We start by presenting the traditional framework in this context, the (open) Leontief input-output model (for a detailed presentation of this model, see Miller and Blair (2009); an interesting empirical study of the Portuguese economy with this kind of model, comparing its structure with the Spanish one, is Amaral et al, 2011).

This Leontief system can be represented as follows:

$$(1) \quad x = \mathbf{A}x + y,$$

where: x means the gross output vector of the n sectors of the economy; \mathbf{A} is the (domestic) technical coefficients matrix (intermediate input requirements per unity of gross output) and y is the sectoral final demand vector (final consumption + gross investment + exports).

The well known solution of this system is

$$(2) \quad x = \mathbf{B}y,$$

with $\mathbf{B} = (\mathbf{I} - \mathbf{A})^{-1}$

Each element of the matrix \mathbf{B} , the so called Leontief inverse, is a production multiplier that gives the total (direct and indirect) effect in one's sector

production of a unity increase in the domestic final demand directed to a given sector. That is, b_{ij} is the global impact on sector's i production when the domestic final demand of sector j increases by one unity.

Considering that the labour coefficients (the requirements of labour, in total hours or number of equivalent workers, per unit of production of each sector, $ec_i = l_i/x_i$) are fixed (a strong hypothesis for a long period of time but reasonable enough in the short run), the traditional (Leontief) employment multipliers can be calculated as (generic case of sector j , with $j = 1, \dots, n$):

$$(3) \quad Em_j = \sum_{i=1}^n ec_i b_{ij}$$

These multipliers give additional information about the employment potential of the different sectors of an economy, considering not only direct flows of job creation in the own sector, but also the indirect and induced effects generated by the interrelatedness of sectors. Generally speaking, more (domestic) interrelatedness means more complexity of the corresponding economy and more employment growth potential (see Amaral et al, 2007). The general case of multiplier Em_j gives the total amount of employment created in the economy (own sector j and all the others) when the final demand directed to sector j augments one monetary unit. Parallel to Rasmussen (1957)-Hirshman(1958) linkage indicators we can consider key sectors those that have an above average employment multiplier.

However, as (traditional) employment multipliers can be misleading because do not take into account the relative (employment and production) weight of each sector, it is useful to complement the analysis with what Valadkhani (2005) calls Type I employment multipliers, or Relative employment multipliers, Rm_j , calculated as:

$$(4) \quad Rm_j = \frac{\sum_{i=1}^n ec_i b_{ij}}{ec_j}$$

This multiplier overcomes the problem of units of measurement, and it means that for each additional person directly employed in sector j , a further Rm_j are employed in the economy due to the multiplier and forward effects of sector j .

It is also possible to assess the relative importance of the different sectors in terms of employment potential using as indicators the employment elasticities (see Mattas and Shrestha, 1991), calculated as follows:

$$(4) \quad Ee_j = \frac{\partial L}{\partial y_j} \cdot \frac{y_j}{L}$$

where L represents total employment in the economy, y_j is final demand directed to sector j and $\frac{\partial L}{\partial y_j}$ is the employment multiplier for sector j .

Using Equation (3) the employment elasticity corresponding to sector j is:

$$(5) \quad Ee_j = \left[\sum_{i=1}^n ec_i b_{ij} \right] \cdot \frac{y_j}{L}$$

The analysis with employment multipliers and elasticities can be complemented with the so called hypothetical extraction method, originally proposed by Paelinck et al (1965) and later employed by many authors, e.g. Strassert (1968), Schultz (1977), Meller and Marfán (1981), Milana (1985), Heimler (1991), Valadkhani (2003) and Kay et al (2007). This method, that Groenewold et al (1993) also called “shut-down of industry”, has been recently improved and extended in Dietzenbacher and Lahr (2008).

The basic idea is to solve the Leontief system after extracting one (or a group of) sector(s), and compare the results, for instance, gross output, value added, employment of the economy and of each other sector with the usual solution (before extraction). Technically, this can be performed with the algebra of partitioned matrices. Suppose we begin by extracting sector one (after this, we can compute the results permuting all and every sector to position one, of course). The algebra is as follows:

Starting by the matrix of technical coefficients A , the first column and the first row are substituted by full zero vectors.

$$(6) \quad \bar{A} = \begin{bmatrix} 0 & 0 \\ 0 & A_{22} \end{bmatrix}$$

The Leontief inverse is now:

$$(7) \quad \bar{L} = \begin{bmatrix} I & 0 \\ 0 & \alpha_{22} \end{bmatrix}$$

$$\text{with } \alpha_{22} = (I - A_{22})^{-1}$$

The solution of the system is given by:

$$(8) \quad \begin{bmatrix} \bar{x}_1 \\ \bar{x}_2 \end{bmatrix} = \begin{bmatrix} I & 0 \\ 0 & \alpha_{22} \end{bmatrix} \begin{bmatrix} y_1 \\ y_2 \end{bmatrix}$$

and so, the impact on the sectors' gross output of extracting sector one is measured by:

$$(9) \quad \Delta x^1 = \begin{bmatrix} x_1 - \bar{x}_1 \\ x_2 - \bar{x}_2 \end{bmatrix}$$

and the impact on total gross output is given by:

$$(10) \quad i' \Delta x^1 = i' \Delta x_1^1 + i' \Delta x_2^1$$

As sector one completely “disappears”, the direct impact is its own production. The interesting indicator of this method is the indirect effect of this “disappearing”, the consequences for the other sectors' output, due to backward and forward linkages of sector one and given by the second term on the right of equation (10).

This quantification of impacts on sector' gross output can be used to assess the impacts on sectors' employment, considering the hypothesis of constancy of labour coefficients, previously mentioned. The total relative importance of each sector can be split in two components: the direct effect given by the volume of employment “lost” in the own sector (of straightforward calculation) and the indirect and induced change in the employment of other sectors due to the “shut down” of the sector.

4. Empirical results

Using data on employment by sector from INE and the input-output tables (domestic flows) provided by DPP (2008), we started by calculating the (absolute) employment multipliers and the (relative) Type I employment multipliers of Portuguese sectors in 1995 and 2005. These values are presented in Table 4.1, together with the corresponding sectoral ranks (relative importance of sectors by each criterion, in descending order).

Table 4.1 Employment (traditional and relative) multipliers, Portugal 1995-2005

		Em_j 1995	rank	Em_j 2005	rank	Rm_j 1995	rank	Rm_j 2005	rank
01	Agriculture	0,1141	1	0,0889	1	1,2182	25	1,2532	25
02	Fishing	0,0601	4	0,0355	10	1,1980	26	1,2014	26
03	Mining	0,0344	18	0,0228	17	1,4236	21	1,5093	20
04	Food products and beverages	0,0578	5	0,0388	5	5,3068	2	4,3805	1
05	Textiles	0,0538	8	0,0415	3	1,6554	13	1,5514	18
06	Wearing apparel	0,0523	9	0,0378	6	1,6289	15	1,4845	21
07	Wood and products of wood and cork	0,0714	2	0,0463	2	2,2822	5	2,5513	5
08	Pulp, paper and paper products	0,0321	19	0,0221	19	2,6201	3	2,1366	6
09	Coke, refined petroleum products	0,0059	28	0,0007	28	6,7248	1	3,5735	2
10	Chemicals	0,0185	26	0,0115	26	2,3654	4	2,6351	4
11	Rubber and plastic products	0,0285	21	0,0189	20	1,7313	12	1,8222	9
12	Other non-metallic mineral products	0,0429	15	0,0248	16	1,7985	10	1,7237	13
13	Fabricated metal products	0,0482	12	0,0252	15	1,5073	18	1,6958	14
14	Machinery and equipment n.e.c.	0,0390	17	0,0224	18	1,6110	16	1,6419	15
15	Electrical machinery	0,0251	22	0,0138	23	1,6323	14	1,7538	12
16	transport equipment	0,0241	23	0,0128	24	2,1717	6	1,9085	8
17	other manufactured goods	0,0547	7	0,0359	8	1,5585	17	1,6126	16
18	Electrical energy, gas and hot water	0,0123	27	0,0071	27	2,1691	7	3,2404	3
19	Construction work	0,0550	6	0,0359	9	1,9009	8	1,9261	7
20	Trade and repair services	0,0503	10	0,0366	7	1,3054	24	1,2596	24
21	Hotel and restaurant services	0,0648	3	0,0390	4	1,7868	11	1,5396	19
22	Transports and communication services	0,0315	20	0,0183	21	1,4834	19	1,7574	11
23	Financial services	0,0230	25	0,0117	25	1,3439	22	1,6056	17
24	Real estate services	0,0231	24	0,0146	22	1,8628	9	1,7972	10
25	Public administration	0,0480	13	0,0294	12	1,0863	27	1,1428	27
26	Education services	0,0491	11	0,0307	11	1,0844	28	1,0713	28
27	Health and social work services	0,0465	14	0,0280	13	1,3147	23	1,3507	23
28	Other services	0,0400	16	0,0275	14	1,4797	20	1,4552	22

The top 5 key (absolute) multiplier sectors in 2005 are Agriculture, Wood and cork, Textiles, Hotels and restaurants and Food products. In relative terms (Type I multipliers) Agriculture decay from the first to the 25th position in the rank and Textiles from third to 18th, that is to say, these sectors have mainly a great weight in direct employment. Top 5 sectors are in this second case Food products, Coke and

refined petroleum products, Electricity, gas and water, Chemicals and Wood and cork products.

Next, we have calculated sectoral employment elasticities, shown in Table 4.2.

Table 4.2 Employment Elasticities, Portugal 1995-2005

		Ee_j 1995	rank	Ee_j 2005	rank
01	Agriculture	0,0440	9	0,0342	10
02	Fishing	0,0041	24	0,0032	26
03	Mining	0,0023	27	0,0017	27
04	Food products and beverages	0,0861	3	0,0688	6
05	Textiles	0,0704	6	0,0496	8
06	Wearing apparel	0,0218	13	0,0143	14
07	Wood and products of wood and cork	0,0146	17	0,0127	18

08	Pulp, paper and paper products	0,0115	19	0,0098	21
09	Coke, refined petroleum products	0,0012	28	0,0000	28
10	Chemicals	0,0064	22	0,0071	22
11	Rubber and plastic products	0,0037	25	0,0057	24
12	Other non-metallic mineral products	0,0083	21	0,0070	23
13	Fabricated metal products	0,0089	20	0,0132	17
14	Machinery and equipment n.e.c.	0,0116	18	0,0122	19
15	Electrical machinery	0,0157	16	0,0142	15
16	transport equipment	0,0159	15	0,0135	16
17	other manufactured goods	0,0163	14	0,0163	13
18	Electrical energy, gas and hot water	0,0036	26	0,0038	25
19	Construction work	0,1253	2	0,1269	2
20	Trade and repair services	0,1358	1	0,1559	1
21	Hotel and restaurant services	0,0709	5	0,0767	5
22	Transports and communication services	0,0268	12	0,0331	11
23	Financial services	0,0064	23	0,0098	20
24	Real estate services	0,0381	10	0,0484	9
25	Public administration	0,0780	4	0,0857	3
26	Education services	0,0584	8	0,0654	7
27	Health and social work services	0,0670	7	0,0777	4
28	Other services	0,0272	11	0,0326	12

The most important sectors in 2005, along this indicator are: Trade and repair services, Construction work, Real estate services, Health and social services and Hotels and restaurants.

These results are a good indication of the current dilemma of Portuguese decision makers of fighting unemployment with measures to support traditional low value added sectors or facilitating the upgrade of productive structure supporting medium and high technological sectors with low employment.

In fact, in terms of the evolution of employment indicators between 1995 and 2005, there are no substantial changes both in multipliers (absolute and relative) and elasticities, with some minor exceptions. For instance, Textiles sector goes up 5 positions in

the rank of absolute multipliers but comes down in the relative case and the same occurs in

Wearing apparel. The opposite tendency occurs in the case of Fabricated metal products. Fishing has been losing importance only in the absolute multipliers ranking whereas Hotels and restaurants loose in relative multipliers.

On the other side, Transport and Financial services improve significantly the position in the relative multipliers rank. The constancy of relative positions in elasticity rankings between 1995 and 2005 is remarkable with only 3 sectors changing 3 positions (the maximum change in the period): Financial and Health and social services improving; Food products descending. This can be a further sign of the relatively low structural changes in the Portuguese productive structure.

The results obtained with the more sophisticated method of hypothetical extraction or "shut down of industry" hypothesis are shown in tables 4.3 (year 1995) and 4.4 (year 2005).

Table 4.3 Hypothetical extraction - sectoral employment results: 1995

NS	Sectors	DE	IE	TE	Rank (TE)	IE/TE
01	Agriculture	525,2	126,8	652,0	3	0,194
02	Fishing	22,8	87,1	109,9	26	0,793
03	Mining	14,7	90,8	105,5	27	0,861
04	Food products and beverages	116,2	455,5	571,7	4	0,797

05	Textiles	278,5	135,5	414,0	7	0,327
06	Wearing apparel	76,9	102,4	179,3	17	0,571
07	Wood and products of wood and cork	63,6	130,5	194,2	14	0,672
08	Pulp, paper and paper products	51,8	138,2	190,0	16	0,727
09	Coke, refined petroleum products	1,4	92,5	93,9	28	0,985
10	Chemicals	25,6	113,3	138,8	22	0,816
11	Rubber and plastic products	22,0	99,3	121,3	25	0,819
12	Other non-metallic mineral products	69,7	120,8	190,5	15	0,634
13	Fabricated metal products	88,6	113,6	202,2	13	0,562
14	Machinery and equipment n.e.c.	43,7	108,4	152,1	21	0,713
15	Electrical machinery	52,3	110,8	163,2	19	0,679
16	transport equipment	34,9	121,1	156,0	20	0,776
17	other manufactured goods	62,8	115,5	178,3	18	0,648
18	Electrical energy, gas and hot water	30,1	96,7	126,8	23	0,763
19	Construction work	414,0	263,4	677,5	2	0,389
20	Trade and repair services	707,7	231,4	939,1	1	0,246
21	Hotel and restaurant services	204,8	240,1	444,9	5	0,540
22	Transports and communication services	165,9	129,9	295,7	11	0,439
23	Financial services	98,6	27,8	126,4	24	0,220
24	Real estate services	213,0	188,5	401,4	8	0,469
25	Public administration	307,4	111,3	418,7	6	0,266
26	Education services	254,1	104,9	359,0	10	0,292
27	Health and social work services	228,9	148,8	377,7	9	0,394
28	Other services	107,3	124,3	231,6	12	0,537
99	Total	4282,3	3929,2	8211,6		0,4785

In these tables, the first column corresponds to direct effect (suppression of own employment), the second represents indirect effect (suppression of other sectors' employment due to backward and forward

linkages with the extracted sector) and the third is total (direct + indirect) effect. The rank of sectors is based on total effect and the fifth column is the ratio of indirect to total effect.

Table 4.4 Hypothetical extraction - sectoral employment results: 2005

NS	Sectors	DE	IE	TE	rank (TE)	IE/TE
01	Agriculture	453,3	41,1	494,4	3	0,083
02	Fishing	16,7	5,9	22,6	27	0,261
03	Mining	16,0	10,8	26,8	26	0,403
04	Food products and beverages	116,3	314,5	430,8	6	0,730
05	Textiles	219,7	39,5	259,2	11	0,152
06	Wearing apparel	57,2	15,8	73,0	20	0,216
07	Wood and products of wood and cork	56,4	51,7	108,1	15	0,478
08	Pulp, paper and paper products	50,1	45,5	95,6	18	0,476
09	Coke, refined petroleum products	1,0	2,6	3,6	28	0,720
10	Chemicals	22,0	30,6	52,6	23	0,582
11	Rubber and plastic products	26,4	23,4	49,8	24	0,470
12	Other non-metallic mineral products	64,7	40,6	105,3	17	0,385
13	Fabricated metal products	97,1	40,7	137,8	13	0,295
14	Machinery and equipment n.e.c.	43,9	26,4	70,3	21	0,375
15	Electrical machinery	46,2	34,1	80,3	19	0,425
16	transport equipment	35,9	33,2	69,1	22	0,480
17	other manufactured goods	69,9	37,0	106,9	16	0,346

18	Electrical energy, gas and hot water	22,1	25,1	47,2	25	0,532
19	Construction work	530,7	173,4	704,1	2	0,246
20	Trade and repair services	857,2	172,8	1030,0	1	0,168
21	Hotel and restaurant services	294,0	157,1	451,1	4	0,348
22	Transports and communication services	194,4	83,8	278,2	10	0,301
23	Financial services	85,3	43,4	128,7	14	0,337
24	Real estate services	310,5	137,0	447,5	5	0,306
25	Public administration	359,8	54,9	414,7	7	0,132
26	Education services	303,1	23,1	326,2	9	0,071
27	Health and social work services	304,0	75,6	379,6	8	0,199
28	Other services	143,7	49,1	192,8	12	0,255
99	Total	4797,6	1788,5	6586,1		0,2716

The (top 5) key sectors according to the total effect on employment (direct + indirect) in 1995 are: Trade and repair services; Construction work, Agriculture, Food products and beverages and Hotel and restaurant services. In 2005, the only change in this list is the substitution of Real estate services (5th) for Food products (6th).

It is also interesting to note that there are sectors with very low importance in the indirect effect induction of employment, such as Agriculture and Education services (under 10% of total employment effect) and Public Administration, Trade, Textiles and Health and social services (ratio under 20%).

On the other side, for Food products, Coke and refined petroleum products, Chemicals and Electricity, gas and water the indirect effect surpasses the direct effect on employment. In terms of economic policy measures directed to fighting unemployment and job promotion in the economy at large, these should be the priority sectors in Portugal.

4. Conclusions

Unemployment is one of the great problems in Portugal due to the weak growth performance of the economy since 2001, the restructuring of the business sector to respond to the globalization challenges and the efforts to consolidate the public finances affecting public employment creation. The macroeconomic crisis of 2009 has seriously deteriorated the situation along all these lines.

In this paper, after quantifying the deleterious macroeconomic trends of the past decade, a descriptive analysis of the Portuguese employment structure is made with the main conclusion that some upgrading has been achieved between 1995 and 2005 but maintaining a relatively high weight of traditional sectors (agriculture, textiles, construction).

The main purpose of the paper was to further reinforce the analysis with an interindustry approach based in the Leontief input-output model, starting with the traditional employment multipliers and elasticities, and the application of the more sophisticated “hypothetical extraction” or “shut down of industry” method. This approach was theoretically exposed in Section 3, and its empirical results are presented and discussed in section 4.

The most important sectors for employment creation (and so, unemployment fighting) using multiplier and elasticity indicators and the direct effect in hypothetical extraction quantifications are the traditional (low value added, and mainly non traded goods producing) sectors of Trade services, Construction works, Real estate, Public services, Agriculture and Textiles.

On the other side, if the indirect effects are taken into account (due to backward and forward linkages) the key sectors appear to be Food products, Coke and refined petroleum products, Chemicals and Electricity, gas and water, and several other manufacturing products. Unfortunately, although increasingly important along the decade here treated, these sectors still have a relatively weak weight in total employment.

So, the traditional dilemma persists for Portuguese policy makers of fighting unemployment with short run support of traditional low value added, high employment intensive, sectors or upgrade the productive structure with restructuring and supporting high value added, strong productivity, sectors with heavy costs of employment destruction.

Finally, it is important to recognize the limitations of the methodology used, first of all, the apparent lack of reasonability of the hypothetical extraction method, because it is non reasonable and in fact, for much cases, really impossible to “shut down a whole industry”. However, this exercise is

also valid for partial extractions, for instance, a great company of a certain sector, given the linearity of the model and supposing that its backward and forward linkages are “close to the average” of the sector. An interesting example is given in Valadkhani (2003) with the assessment of jobs lost with the collapse of Ansett (an Australian airline).

Other limitations are: the linear structure of the model; the constancy of labour coefficients; the absence of inputs availability restrictions and the non consideration of capital inputs or technological progress. But for a short run, static assessment and comparison, in the context of under utilization of factors as in the present economic crisis, this exercise can be valuable in helping to inform a strategy for employment creation and consequent unemployment reduction.

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Catastrophe in Stock Market of Bangladesh: Impacts and Consequences

(A study on recent crash of Stock Market with a Reference to DSE)

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Abstract- A crucial part of an economy is Stock Market which acts as an intermediary for the movement of funds between surplus units and deficit units. A well-functioning capital market plays an important role in mobilizing savings and investments for organizing the production of goods and services, creating employment opportunities, and enhancing economic development. But any sort of disorder in the capital market may negatively affect the economy as a whole. The present study is an endeavor to explore the impacts and consequences based on a chronological analysis of stock market in Bangladesh and to provide some recommendations to overcome the present crises.

Keywords- Catastrophe, Stock Market, Regulatory bodies, Investors, Government.

1. Introduction

In a market economy, the capital market plays a vital role in the efficient allocation of scarce resources. Well-functioning and developed capital markets augment the process of economic development through different ways such as encourage savings, draw more savers and users into the investment process, draw more institution into the intermediation process, help mobilize non financial resources, attract external resources, bring disciplines in the sick organizations and invest for organizing production of goods and services and create employment opportunities (Chowdhury, T.A., 2005). There is a saying that the stock market is the pulse of the economy.

There is no doubt that a vibrant capital market is likely to support economy to be robust but two major catastrophes in the capital market of Bangladesh within one and half decades do not indicate the

existence of a vibrant market; rather these show a highly risky and unstable capital market. The recent surge in the capital market has shaken the whole country as millions of people became insolvent within a very short span of time. It was observed in 2010 that the DSE general index was the highest ever which made it Asia's top performer after China (Islam, 2011), while the reverse scenario was scaring investors in the 1st quarter of 2011 as the lowest ever in the index observed during that period.

2. Objectives of the Study

The main objective of the study is to analyze the impacts and consequences of the recent catastrophe in the stock market of Bangladesh. To achieve the main objective, the study sets the following specific objectives:

1. To depict the present scenario and the recent crash in the stock market of Bangladesh through a chronological analysis of stock market in Bangladesh.
2. To identify the impacts and consequences of the recent catastrophes in the stock market of Bangladesh.
3. To provide some recommendations to avoid such crisis in the stock market in future.

3. Methodology of the Study

The present study is done based on both secondary and primary data. Secondary data were taken from different relevant studies, national and international dailies, websites of SEC, Bangladesh Bank, DSE, and CSE.

Primary data were collected through a structured questionnaire survey.

Table No.1: Involvement with the stock market

Involvement as:	Investor	Financial Analyst	Regulator	Broker	Total
Frequency	255 (78.95%)	11 (3.41%)	6 (1.86%)	51 (15.80%)	323 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

350 questionnaires were administered among various stakeholders of the capital market and totaling of 323 respondents responded correctly out of which 255 (78.95%) are investors, 11 (3.41%) are

financial analysts, 6 (1.86%) are executives of regulatory bodies and 51 (15.80%) are employees of brokerage houses. The respondents were chosen randomly from Dhaka Metropolitan area.

Table No. 2: Demographic Characteristics of the Respondents. Age, Profession and Educational Status of Investors in capital market

Age	20-29	30-39	40-49	Above 50	Total
Frequency	136 (42.11%)	169 (52.32%)	18 (5.57%)	-	323 (100%)
Profession	Business	Service	Housewife	Other	Total
Frequency	15 (4.64%)	265 (82.04%)	9 (2.79%)	34 (10.53%)	323 (100%)
Education	Undergraduate	Graduate	Post Graduate	More	Total
Frequency	44 (13.62%)	17 (5.26%)	238 (73.68%)	24 (7.43%)	323 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

Based on age, the respondents were classified as: 136 (42.11%) respondents fall in 20-29 years, 169 (52.32%) respondents fall in 30-39 years and 18 (5.57%) respondents fall in 40-49 years. As per profession, 15 (4.64%) are businessmen, 265 (82.04%) are service holders, 9 (2.79%) housewives,

34 (10.53%) are others. According to the educational background, 44 (13.62%) respondents are undergraduate, 17 (5.26%) respondents are graduate, 238 (73.68%) respondents are post graduate, 24 (7.43%) more or others.

Table No. 3: Why have you invested in stock market/ Reason of involvement?

Opinion	To create self dependency	To upgrade social status	To earn higher return	Easy to invest	Others	Total
Frequency	66 (20.43%)	36 (11.15%)	119 (36.84%)	37 (11.46%)	65 (20.12%)	323 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

Based on the reason or objective of involvement or investment in stock market the respondents can be classified as: 66 (20.43%) to create self dependency, 36 (11.15%) to upgrade social status, 119 (36.84%) to earn higher return, 37 (11.46%) easy to invest and 65 (20.12%) other reasons. Finally according to the sources of capital the respondents can be divided into

few groups as: 161 (52.96%) investors invested only own money, 31 (10.20%) investors invested taking fund from husband or father or relatives, 41 (13.49%) investors invested taking bank loan, 24 (7.90%) investors invested taking margin loan from broker, 47 (15.46%) investors invested both own fund & taking loan.

Table No. 4: Duration of involvement with stock market

Duration in Years	Less than 2 years	2-3 years	3-4 year	More than 4 years	Total
Frequency	68 (21.05%)	85 (26.32%)	51 (15.80%)	119 (36.84%)	323 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

Based on the duration of involvement with the stock market, 68 (21.05%) respondents are involved for less than 2 years, 85 (26.32%) for 2-3 years, 51 (15.80%) for 3-4 years and 119 (36.84%) for more than 4 years.

To depict the present condition of the stock market two variables, that is, Capital market at present, and Surge and fall in capital market in 2010 were considered. To evaluate the impact of the recent catastrophe, four variables such as loss of own capital, loss of borrowed capital, interest expense, and loss of income were considered. Simple statistical techniques like frequency distribution, percentage of frequency were used to analyze the collected primary data.

4. Limitations of the Study

The present study is a self funded work which was done within a very short period of time and therefore it was not possible to collect opinion of all types of people relating to the stock market. It could be much more representative and comprehensive, if opinion could be collected from many more respondents.

5. Present Scenario of Stock Market and Recent Catastrophe

5.1. Capital Market at present

On July 24, 2011, the number of active listed companies in the two stock exchanges DSE and CSE were 270 (236 A-Category, 9 B-Category, 5 N-Category and 20 Z-Category) and 212 respectively while there are 54 companies in the Over-The-Counter (OTC) Market. Among them, the number of mutual funds traded is 32 in both the stock exchanges and that of bond traded in both DSE and CSE is 3. The market capitalization in the two stock exchanges is €29652.257 million and €24061.00 million respectively. The number of B/O Account holders at present is about 3.3 Million. Among them about 0.6 million are women. In the month of June, 2011 average daily turnover in DSE was €47.7523 million and in CSE it was €5.7303 million. Again the turnover has been showing an increasing trend as it stood at €186.998 million in DSE and €19.005 million in CSE as on July 24, 2011.

5.2. Surge and fall in Capital Market in 2010

In 2010 the market reached its peak and on 13th October, 2010 DSE regulators warned of a looming collapse in stock market as all flurry cooling measures

failed to end a record breaking bull run. While the DSE general index reached from 1318 in 2003-2004 to 3010 in 2008-2009 in five years, it hiked double in single fiscal year 2009-2010 to 6153. It had hit a new height in consecutive five months reaching 8602 in 30th November, 2010 followed by a 290 points drop to 8290 in one month followed by a series of drops before the massive market crash on 10th January, 2011 to 6499. With a rebound on 12th January, 2011 to 7690 the index again fell on 19th January, 2011 by a single day 587 points-fall leading to a second crash. The capital market had to suffer another crumple in ten days while on 20th January, 2011 trading was halted at a loss of 587 points or 8.5% plunge within five minutes of start of trading, although it crossed the circuit breaker threshold of 225 points by a huge margin. The SEC has introduced the new circuit breaker a day earlier although it did not work at all (Akkas, 2011).

From that slump to till now the stock market in Bangladesh is continuing its lame run having some small crack and bounce. DSE General Index has shown a peculiar trend since 29th November, 2010. It declined from 8599.411 as on 29th November 2010 to 5612.519 as on 12th May 2011 with many sharp ups and downs as shown in the following graph:

Table No. 5: DSE General Index from November 2010 to May 2011

Date	DSE General Index	Change in General Index	Date	DSE General Index	Change in General Index
29/11/10	8599.411	--	20/02/11	6389.625	+810.120
05/12/10	8918.514	+319.103	28/02/11	5203.085	-1186.540
19/12/10	7654.405	-1264.110	10/03/11	6639.181	+1436.096
02/01/11	8304.589	+650.184	27/03/11	6094.639	-544.542
05/01/11	7948.431	-356.158	10/04/11	6556.520	+461.881
10/01/11	6499.436	-1449.000	26/04/11	5806.309	-750.211
12/01/11	7690.690	+1191.254	03/05/11	5865.709	+59.400
20/01/11	6326.345	-1364.350	08/05/11	5611.471	-254.238
30/01/11	7572.610	+1246.265	11/05/11	5482.874	-128.597
07/02/11	6394.531	-1178.080	12/05/11	5612.519	+129.645

Source: www.bloomberg.com (Access Date: 12-05-2011)

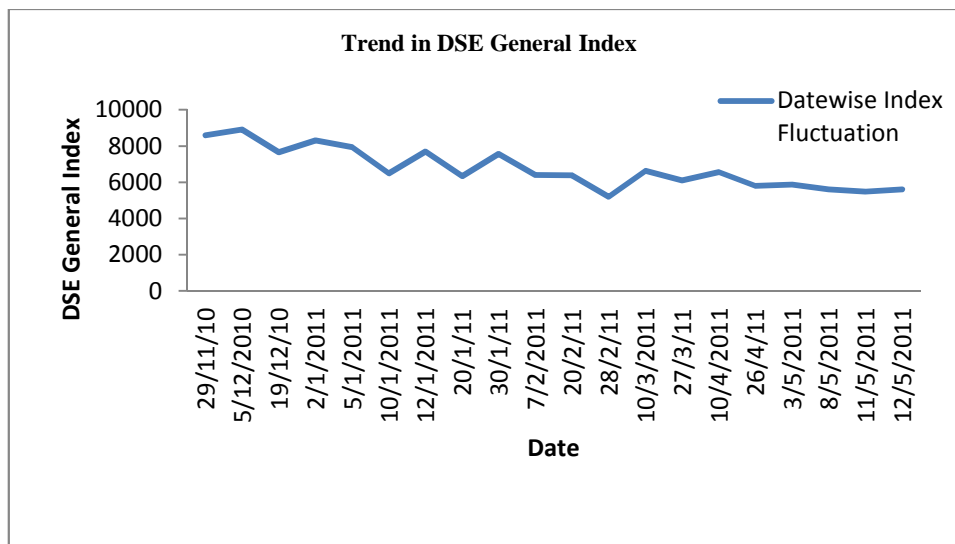


Figure No. 1: Showing the Movement of DSE General Index from November' 10 to May-'11

6. Reasons of Recent Catastrophe in Stock Market

From the study it is found that 17.34% of the respondents think cause of the recent catastrophe in the stock market is the lack of government

awareness/control over the stock market, 23% respondents believe for apathetic aspects by the SEC, 13.31% feel for lack of adequate supervision of the investments of the commercial banks by the central bank, 36.22% realize for the syndication or manipulation in the stock market and the rest 10.53% assume the Lack of proper knowledge/ skill of investors.

Table No. 6: Most serious cause of the recent catastrophe in the stock market

Opinion	Lack of Govt. awareness/ control over the stock market	Role of SEC	Role of Bangladesh Bank in controlling the investment of commercial Banks	Syndicate in Stock Market	Lack of proper knowledge/ skill of investors	Total
Frequency	56 (17.34%)	74 (23%)	43 (13.31%)	117 (36.22%)	34 (10.53%)	323 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

7. Impact of the Recent Catastrophe

From the study it is found that the sources of capital of the investors are different.

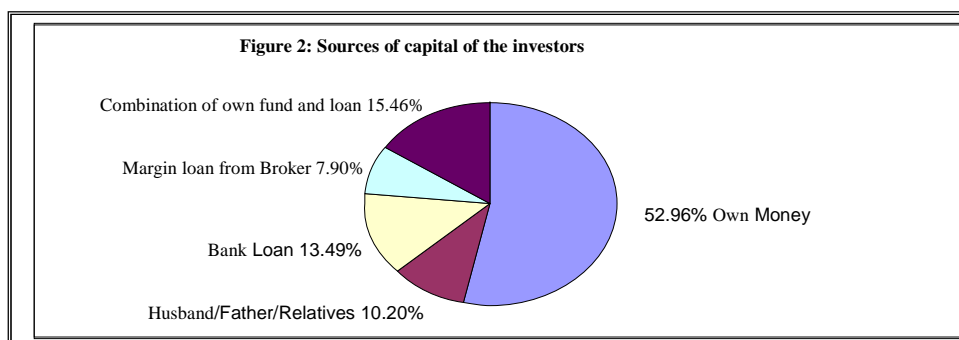
Table No. 7: Sources of capital of the investors in stock market

Sources of Capital	Own money	Husband or father	Bank loan	Margin Loan from broker	Combination of own & loan	Total
Frequency	161 (52.96%)	31 (10.20%)	41 (13.49%)	24 (7.90%)	47 (15.46%)	304 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

Out of 304 investors surveyed, 161 (52.96%) investors invested only own money, 31 (10.20%) investors invested taking fund from husband or father or relatives, 41 (13.49%) investors invested taking bank loan, 24

(7.90%) investors invested taking margin loan from broker, 47 (15.46%) investors invested both own fund & taking loan.



Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

7.1. Loss of own capital

The investment of 151 (49.67%) investors surveyed was in the range of €967.3 to €4836.6, the one of 8 (26.97%) investors surveyed was in the range of €4836.6

to €9673.1 and only 12 (3.95%) investors had investment of €14509.7 and above.

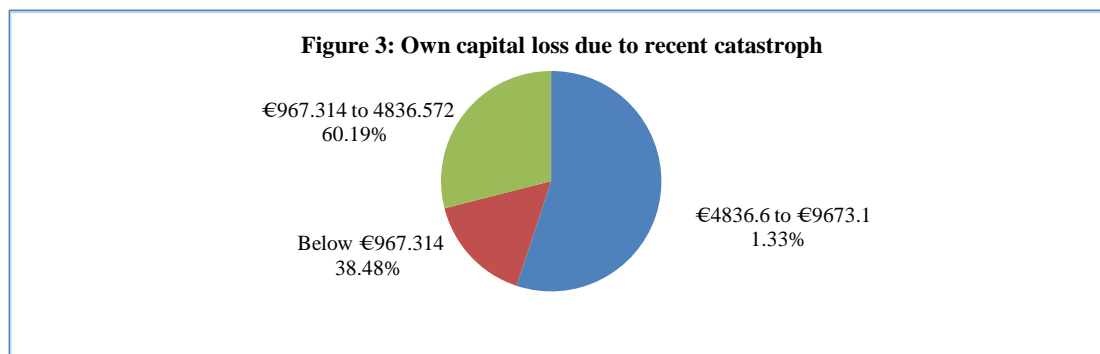
Table No. 8: Comparison of original investment and investment after catastrophe

Class of Investment	Below €967.314	€967.3 to €4836.6	€4836.6 to €9673.1	€9673.1 to €14509.7	Above €14509.7	Total
Before Slump	28 (9.21%)	151 (49.67%)	82 (26.97%)	31 (10.20%)	12 (3.95%)	304 (100%)
After Slump	46 (15.13%)	169 (55.59%)	62 (20.39%)	19 (6.25%)	8 (2.63%)	304 (100%)
Change	5.92%	5.92%	-6.58%	-3.95%	-1.32%	-

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

While 82 investors (26.97%) were in the investment range of €4836.6 to €9673.1 and 31 (10.20%) in the investment range of €9673.1 to €14509.7 before the catastrophe, it came down to 62 (20.39%) and 19 (6.25%) respectively showing a decline of 24% and 38% respectively after the slump. Again, the number of persons having investment above €14509.7 was 12 which is now 8 causing a decline of 50%. Among the investors surveyed 183 have

suffered a loss ranging €967.3 to €4836.6.



Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

More specifically, it can be observed from the above graph that 117 (38.48%) investors under survey lost below €967.314, 183 (60.19%) investors

under survey lost €967.3 to €4836.6 and 4 (1.33%) investors under survey lost €4836.6 to €9673.1.

Table No. 9: Own capital loss for the recent catastrophe in the stock market

Own capital loss	Below €967.314	€967.3 to €4836.6	€4836.6 to €9673.1	€9673.1 to €14509.7	Above €14509.7	Total
Frequency	117 (38.48%)	183 (60.19%)	4 (1.33%)	-	-	304 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

7.2. Loss of borrowed capital

The investors also invested taking loan from banks and brokerage houses.

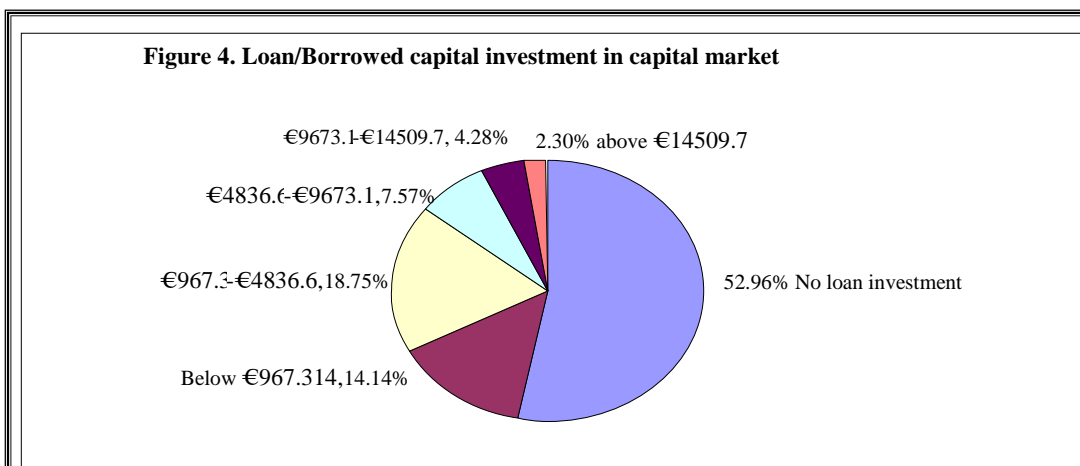
Table No. 10: Amount of investment taking loan from different sources

Class of loan	No loan	Below €967.314	€967.3 to €4836.6	€4836.6 to €9673.1	€9673.1 to €14509.7	Above €14509.7	Total
Frequency	161(52.96%)	43 (14.14%)	57 (18.75%)	23 (7.57%)	13 (4.28%)	7 (2.30%)	304 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

Among the investors under survey, 43 (14.14%) investors have taken loan of below €967.314, 57 (18.75%) investors took loan in the range of €967.3 to €4836.6, 23 (7.57%) investors took loan in the

range of €4836.6 to €9673.1, and 13 (4.28%) investors took loan in the range of €9673.1 to €14509.7, while only 7 investors (2.30%) took loan above €14509.7.



Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

It is revealed from the study that the impact of the catastrophe is severe, especially on those who have taken loan.

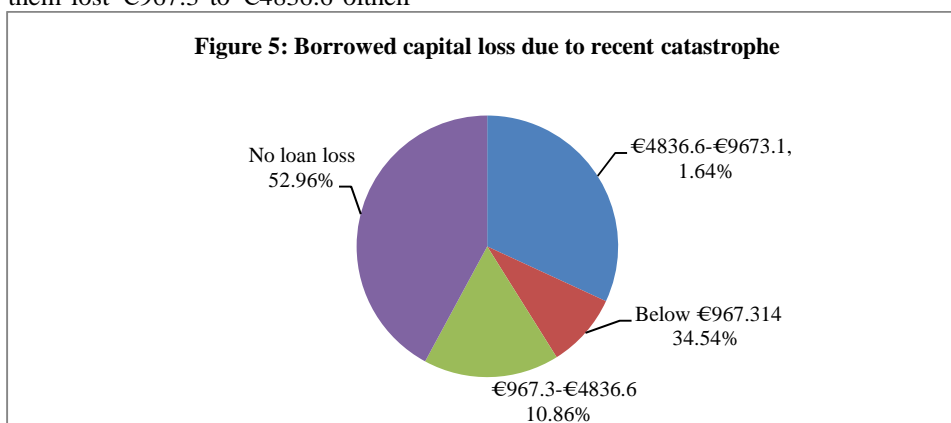
Table No. 11: Borrowed capital loss for the recent catastrophe in the stock market

Borrowed capital loss	No Loan lost	Below €967.314	€967.3 to €4836.6	€4836.6 to €9673.1	€9673.1 to €14509.7	Above €14509.7	Total
Frequency	161(52.96%)	105(34.54%)	33(10.86%)	5 (1.64%)	-	-	304(100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

Out of 143 investors who have invested taking loan from different sources, 105 of them lost below €967314 of their loan, 33 of them lost €967.3 to €4836.6 of their

loan, 5 of them lost €4836.6 to €9673.1 of their loan which are now to be paid from their personal assets.



Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

7.3. Interest Expense during the period of catastrophe

The investors who have taken loan suffered not only for the loss of loan but also for interest payment on their loan which made the condition even worse.

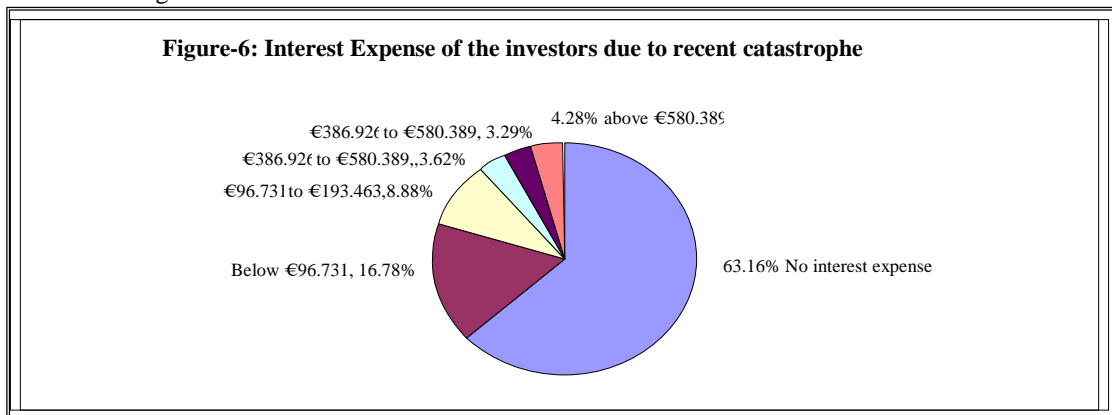
Table No. 12: Interest expense on the borrowings during this situation in the stock market

Interest Expense	No interest Expense	Below €96.731	€96.731 to €193.463	€193.463 to €386.926	€386.926 to €580.389	More than €580.389	Total
Frequency	192 (63.16%)	51 (16.78%)	27(8.88%)	11 (3.62%)	10 (3.29%)	13 (4.28%)	304(100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

The study shows that 192 (63.16%) investors have no interest expense because they have no loan or they invested taking loan from husband or father

or relatives. 23 (7.57%) of the investors require paying interest expense of €386.926 or above.



Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

7.4 Loss of income earned before catastrophe

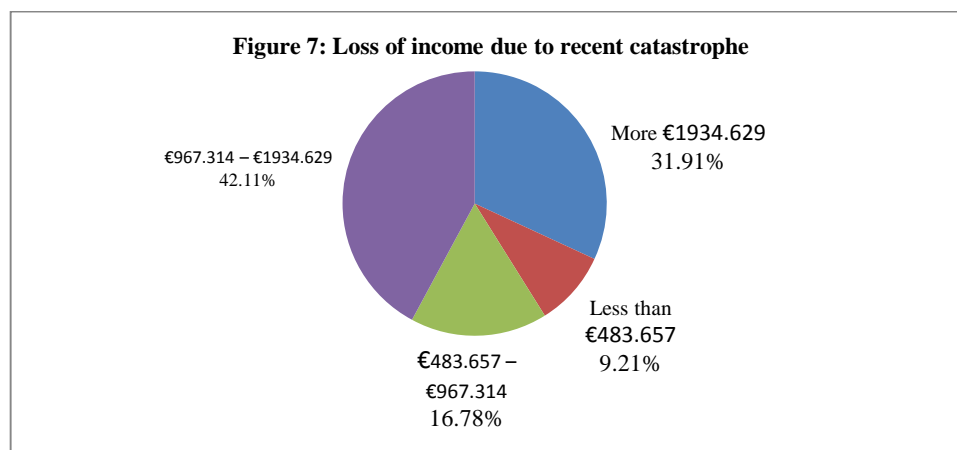
It is also found that 128 (42.11%) investors out of 304 have lost their earned money of €967.314 to €1934.629, and 97 (31.91%) have lost their earned

money of more than €1934.629, which they earned before the recent catastrophe. The 9.21% number of investors falls in the range of less than €483.657, which indicates a heavy loss of investors for the recent catastrophe.

Table No. 13: Loss of income for the recent catastrophe in the stock market

Loss of income	Less than €483.657	€483.657– €967.314	€967.314– €1934.629	> €1934.629	Total
Frequency	28 (9.21%)	51 (16.78%)	128 (42.11%)	97 (31.91%)	304 (100%)

Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.



Source: Own Survey on Investors, Brokers and Regulators in Dhaka during March-May, 2011.

Investors in the stock market not only lost their past earnings but also lost the current income. Many unemployed and retired persons also invested their last resorts in the capital market to earn something for living in a better way; but they are also suffering much due to this catastrophe in the stock market.

8. The uniqueness of the recent Crash

Compared to other stock market crashes, crash in the Bangladesh capital market is unique and unprecedented in two criteria; firstly, the reasons behind the crash mostly observed from the recent crash in Bangladesh stock market are rumor and investors' psychology & negative attitude, lack of knowledge about stock market, delusive speculations, and even smart manipulation which were not absolutely seen in the crash of other stock markets.

Secondly, the impacts and consequences of this crash are much deep rooted which may hinder overall capital formation. Although global economic crisis could not much affect the economy of Bangladesh but the recent crash in Bangladesh capital market shook most of the economic aspects of the country resulting huge loss of capital of investors, reduction of employment opportunities, develop crack in the confidence of the investors and so on.

9. Recommendations of the Study

It is crystal clear that for the sustainable development of stock market all the parties concerned must work in a harmony as failure of any of them may lead the market to a further long decline towards a deep dark tunnel. So, we would like to suggest a few recommendations for different stakeholders of capital market.

9.1. Recommendations for the Government

There is no doubt that the failure of the government in making various decisions regarding capital market played role behind the recent crash which was also admitted by the Planning and Finance Minister in his different speech. Thus, the govt. should ensure the followings:

- i. Government should ensure the supply of fundamentally strong shares in the market to meet the demand which will make the market efficient as investors would not go for buying junk shares. For ensuring the supplies of such shares, Government can offload the shares of different companies which it possesses now. It also can urge the private limited companies to go public by offering tax benefits through fiscal policy. Even it can offer shares to the public for infrastructural development work like constructing big bridges, highways and power stations.
- ii. Government must ensure the appointment of skilled and capable personnel in different

regulatory bodies and must give punishment to the persons responsible for any kinds of irregularities.

- iii. The responsible persons of the Government should refrain from delivering irrelevant, irresponsible and sensitive speeches which many of them did before.
- iv. Government should ensure more active merchant banks to participate in the smooth building of a sound stock market.
- v. Government must ensure that the chairman and members of the Investment Corporation of Bangladesh (ICB) are honest and skilled. Any sort of direct or indirect involvement of any of the ICB members and officials in the stock market must be stopped in any way.
- vi. Government should delegate all power to the SEC to take legal actions against the criminals. Even if necessary, new Act may be passed in the Parliament in this regard.
- vii. Flow of black money in the capital market must be restricted as it can never bring any good results in the long run other than creating bubble in the stock market the blast of which nothing but a disaster.

9.2. Recommendations for Securities and Exchange Commission (SEC)

SEC as the guardian of capital market should play significant role to make it march forward. It must ensure the followings:

- i. SEC must ensure that neither of its members nor any of its officials is involved either directly or indirectly with the transactions in the stock market.
- ii. The monitoring and surveillance should be strengthen so that none can get chance to gamble.
- iii. SEC must have its own certified Chartered Accountants to ensure the accuracy of the Financial Statements of the listed companies and they should give punishment if the books of accounts are not accurately audited.
- iv. SEC must rethink about the rule of disclosure of quarterly financial reports by the companies because many of the companies misused it as a vehicle of misleading the investors. In fact, it became a common practice of most of the listed companies to show high quarterly EPS in its un-audited quarterly report to bring down P/E ratio. In some cases, it is seen that a few companies' annual audited EPS for the year ended 2010 was lower than its accumulated EPS of three quarters.
- v. It must ensure speedy disposal of decision for market operation and all the decisions

should be taken considering the long term effect on the market.

- vi. To bring fundamentally strong private companies in the capital market, there is no alternative of Book Building Method of IPO. So, the postponed Book Building Method must be reintroduced with necessary correction to resist all sorts of manipulation.
- vii. It is high time for SEC to take a decision regarding the stocks in the OTC market because huge amount of money has been blocked due to inefficient OTC market. The companies in the OTC market should either be de-listed and their assets and liabilities should be settled or these companies may be brought in the main market through acquisition by the Government or by the interested entrepreneurs restarting production of those enterprises.

9.3. Recommendations for DSE and CSE

Both Dhaka and Chittagong Exchanges have important role to play as the monitoring authority of the Broker Houses. So, they need to play vital role by ensuring the followings:

- i. They must ensure proper monitoring of the brokerage houses for which more skilled manpower should be appointed in the Monitoring and Surveillance Team.
- ii. Any sort of irregularities in case of trading should be identified promptly and immediate action should be taken.
- iii. The operating software of both the stock exchanges should be updated as often these fail to take immediate sale or buy order especially that of CSE is very poor. Sometimes, it is seen that trade in DSE is on progress but due to technical problem CSE has postponed its operation which is really a big problem as it creates a gap between the prices of script in two stock exchanges. So, they must bring new software within the shortest possible time.
- iv. Now there is a common practice by DSE and CSE to ask for query for price hike of any script which is nothing but a routine work. To make such query fruitful, visible action should be taken if any involvement of sponsor/directors is identified.
- v. To aware investors having no or insufficient skills about the investment in stock market should be trained through different training programs, seminars and motivating fair.
- vi. Last but not the least that the stock exchanges need to be de-mutualized as it is the demand of time now to have a new corporate governance structure for more effective conflict management among market participants, and to make more quick decision with greater flexibility (Chowdhury, A.K.M., 2005).

9.4. Recommendations for Bangladesh Bank

Though Bangladesh Bank is the regulatory body of Money Market; but its decisions are also reflected in the capital market as the money market and capital market are interrelated. In this regard it has the following roles to play:

- i. It must ensure that the Banks and Other financial institutions' exposures do not exceed the limit from the very beginning. But in the recent slump it failed to do so as it could not monitor the involvement in the early periods while it put pressure on the banks to readjust their capital market exposures at the eleventh hour which accelerate a huge sale pressure from their side.
- ii. It must ensure the proper functioning of the Merchant Banks through arranging money from the parent company to mitigate liquidity crisis.
- iii. It should keenly monitor the loan of the commercial banks to industrial sector and take regular feedback so that no industrial loan may flow to the capital market. It is found that in case of recent catastrophe, it failed to do so as about €7.85169 million taken for industrial loan has directly been invested in capital market according to the report of newspapers published in most of the dailies as on 5th December, 2010. Moreover, Bangladesh Bank has identified a Readymade Garments Exporter to take loan of €3.9258 million and €80697.928 for his business purpose and to invest in the capital market while a Berth Operating Organization of Chittagong port did the same amounting to €545256.270 and €1090.513. According to a report published in the Daily Prothom-Alo on 5th November, a listed company has taken loan from a Government owned bank and invested in the stock market. There are many other such examples which urge for proper monitoring of Bangladesh Bank on time.

9.5. Recommendations for Institutional Buyers

Institutional Buyers (Mutual Funds, Merchant Banks etc.) ensure balance in capital market through reacting according to the interaction between demand and supply. But in recent past they completely did the opposite as when there was huge sales pressure in the market instead of buying, they also sold shares in a large scale resulting further decline. Their behavior in that case was not different from individual investors. Hence, they need to act in the way mentioned below:

- i. They must show mature behavior to ensure balance in the stock market by buying shares when there is sale pressure and vice-versa.

- ii. In providing margin loan, they must follow the rules as prescribed by SEC as well.
- iii. They should advise their client giving emphasis on the benefits of the clients instead of thinking their own benefits only.
- iv. At the time of huge decline they should not be involved in forced/trigger sale of clients' shares without giving them any chance to adjust their loan.
- v. All sorts of transactions through omnibus accounts should be restrained.

9.6. Recommendations for Individual Investors

No matter what is the reason of a crash, individual investors are the ultimate losers. Hence, it is their own responsibility to take care of their own money and they ought to consider the following things while taking investment decisions.

- i. Before investing in a particular script they must analyze the key factors of that company to justify whether the company is fundamentally strong. Such factors include EPS, P/E Ratio, dividend policy, future growth, industry average etc.
- ii. In analyzing financial strength of a company they must consider the audited annual reports instead of quarterly un-audited report as often these information is not accurate or do not reflect the real position of the company.
- iii. They must restrict themselves from buying junk shares and taking whimsical investment decision.
- iv. They must build their portfolio in a way which will involve at least three or four different types of fundamentally strong shares from different industries. It should also contain shares considering both long term and midterm benefits.
- v. Instead of being traders, the retail investors need to think of being investors.

- vi. They ought to keep some cash for emergency so that they might buy more shares (fundamentally strong) which they bought earlier when there is a big decline in price.
- vii. They should not buy on the basis of rumor or following advices of the persons who do not possess sufficient knowledge about capital market investment.
- viii. They ought to participate in different seminars and training programs relating to stock market to enhance their knowledge and skill in making stock market investment decisions.
- ix. They must know that both gain and loss are the indispensable parts of stock market. Instead of looking for gain, sometimes they must accept loss with patience so that they may recover the loss in future through higher gain.
- x. Above all, they must understand that perseverance and patience is the key to success in investing in capital market.

10. Conclusion

As an important part of the economy of the country, well-functioning of the capital market is a must for the industrialization process of an under-industrialized country like Bangladesh but instability in the same may negatively affect the total financial system. Therefore, all related stakeholders including Government, Regulatory bodies, Listed Companies, Brokerage houses, institutional investors, and retail investors should act rationally to maintain the stability in the capital market for the greater interest of the country. However, to resist any crisis in the capital market of Bangladesh the compliance of recommendations by all the stakeholders recommended can make a difference in the capital market of Bangladesh and the economy as well.

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Are American and European Companies Returning Back from China?

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Abstract - China has been the destination country for many international companies investments. Economy keeps very competitive and many investments are coming yet to China, where production costs are low. Chinese economic power and its capability to penetrate in international markets made China a very consistent and affluent economic country. However, many companies are coming back from China because they consider that the reduced costs (principally wages) are not anymore as attractive as before. An analysis of this new international scenario is made in this paper as much as a perspective for the future and the implications for companies.

Keywords - China, USA, EU, Competitive Advantages, Development, Foreign Direct Investment.

1. Introduction

Considering that international investments are explained as the flow of investment capital into and out of a country by investors who want to maximize the return on their investments, it is necessary to have in mind that one of the major factors that influences international investment is the potential return on alternative investments in the home country or other foreign markets.

The present stage of globalization is characterized by a significant increase in Foreign Direct Investment (FDI). Some countries consider essential to promote development and economic growth. Multinational USA companies throughout the last decades have looked abroad for good opportunities for international investment. EU has considered FDI domestically essential to promote the stabilization of growth and employment, not discarding good opportunities to invest abroad. China has been the country that most has attracted FDI. A good combination of factors has given China the potential to become extremely competitive in this area.

Representing an important basis for productivity gains and playing a central role in establishing

businesses and jobs, FDI constitutes the essence of the global supply chains that compose the modern international economy.

In fact, the inter-dependence and the complementarity existing between trade and FDI are effective and significant. As early as 1996, World Trade Organization (WTO) showed the interlinkages between FDI and trade presenting a report on "Trade and Foreign Direct Investment" focusing on the economic, institutional and legal interlinkages between FDI and world trade. The report also examined the interaction of trade and FDI, including the impact of FDI on trade of home and host countries. This report reviewed the perceived costs and benefits of FDI, and analyzed the implications of competition for FDI among host countries. A review of the regulations governing foreign investment was also made, together with a brief discussion of existing investment, related WTO rules and disciplines and had a final conclusion considering the key policy issues facing WTO members (WTO 1996).

The increasing globalization of the world economy and the fragmentation of production processes have changed the economic landscape facing the nations, industries, and individual firms. Multinational corporations have been key agents in this transformation by creating international production and distribution networks spanning the globe and actively interacting with each other. The result has been the growth of intraindustry or increasingly intraproduct trade at the expense of traditional interindustry trade (Kaminski and Javorcik, 2005).

In section 2, a review of some important aspects of relative advantages of countries is made, studying competitive advantages and international investments. In section 3 some reasons are pointed out for the American companies' return from China. In section 4 an analysis of EU case is made. In section 5 the attractiveness factors of China are approached and finally, previous to the final notes, some perspectives for the future are presented.

2. Competitive Advantages and International Investments

The comparative advantage theory defends the capability of an entity (a person, an organization, a country) to produce a given good or service at a lower marginal and opportunity cost. In the situation in which a country is more efficient in the production of all goods than another one, both of them will still benefit by trading with each other, as long as they have different relative efficiencies. Comparative advantages were explained by Ricardo considering two countries, Portugal and England, and each one of them should specialize in one specific product in the bilateral trade (wine and cloth), the one in which has comparative advantage.

The option for a comparative advantage can lead a country to get specialized in exporting primary goods and raw materials, what may trap the country in low-wage economies due to the terms of trade.

The competitive advantages theory shows, by its side, that each person can become in a better situation if his choices are based on a competitive advantage at several levels, whichever they are at the national, the corporate, the local, or the individual levels. With this in mind, states and businesses should follow policies that allow them to produce high-quality goods to be sold at high prices in the market. Porter (1985) highlighted that growth of productivity should be the focus for national strategies. Cheap labor is ubiquitous and natural resources production may not be necessarily good for an economy.

Competitive advantage attempts to maximize scale economies in goods and services that get premium prices. To gain competitive advantages it is important to get the best performance. The long term survival of a company or the country competitiveness may depend on the gains it can obtain from getting competitive advantages in the global market.

Companies face rapid changes in the global market that directly influence their competitive advantages. The dynamics of competition and the eternal cycle of innovation and imitation are subjects to be considered in the global market. Competitive advantages may be quickly matched or exceeded by competitors. Companies should continually develop new products, organizational abilities and look externally to find out conditions to get competitive advantages for the company. If a company is merely reactive to the innovations or to the improvements on the market it may be unsuccessful on getting a competitive advantage. An active attitude is needed to create a framework favorable to the company in

the context of global competition. This global competition increasingly requires an incessant exploration of new ways to get value growth.

Companies' investments abroad need involving and multifaceted dimensions in the organization in order to promote competitive advantages and to get new competences to the company. These investments require that the company knows a lot about the risks and the general environment of the destination country. Political and macroeconomic conditions, infrastructure and human capital, domestic policies, bureaucratic environment, for example, are essential to get FDI. The political stability of a country's government works often in order to be determinant to get investments particularly from international companies. In fact, a company needs to know well the political expectations about a country and to get a dynamic strategy to be well succeeded in the international market. The complexity of this analysis requires the understanding of the way the interrelationships are made. In the last decades, China has obtained strong advantages to receive foreign investments, being the development of China the reflex of the success of China's economic policy and competitive position in the world global market. One way for a company to get successful was to go to China, where the company could produce at low cost the same products the company used to produce in the domestic market. This began to be done by some companies and rapidly the example was followed by others by installing plants in Chinese territory. This factor constitutes a way to get competitive advantages in the market.

Considering that companies need to obtain the best performance for the future they use the available resources to get this performance. Many world companies, in particular the USA and EU companies, found in China the appropriate place to invest. They could find in China the best country to produce in order to get their best results. China represented a strong basis of low cost work force and a domestic market growing fast. In China companies could also find an artificially low currency. And China authorities use it to encourage the foreign investment as well.

Recently, a combination of economic forces is fast eroding China's cost advantage as an export platform. Many USA companies are returning back to supply North America basing their production in several low cost states in USA. Europe also finds some other countries to produce many of its products.

Now, as there are fast growing wages in China and some factors are contributing to get better

conditions on production abroad, some companies are considering to install their production in other countries. Sometimes they return to the origin country, others they invest in other low cost production countries. Anyway, for supplying some kind of products and for supplying the region, China production may remain interesting.

In fact, investments in China and Asian countries will keep interesting once the internal demand in some countries of the region is growing. Movements of capital will prevail in the coming years. Some companies moving from China for other neighbor countries and sometimes to other countries far way do so depending on many factors. In fact, considering the destination country, many of these factors are related to the analysis the companies make concerning political and macroeconomic conditions, including political risks, internal conditions for production, infrastructures and human capital, domestic demand, law, etc.

If the country does not meet these factors, so domestic reforms are essential to attract FDI, contributing to significant changes, and ensuring that regulatory framework gets stable, transparent, non-discriminatory, i.e. long term competitive. It is what some EU countries are trying to get, as it is the example of Portugal. Some other countries in EU south territory are making efforts to implement such kind of politics.

3. Getting Investments Back to the USA?

The evaluation of the foreign country conditions for FDI is of vital importance to the international business. The analysis of a country's political environment is considered essential to the operation of a foreign company business. This political environment has to be analyzed by the company.

The development of China is making that foreign companies look abroad to find competitive advantages in production in other territories. USA companies consider to transfer some plants to other countries and even to return back to the USA, producing in interesting conditions.

In fact, there are several factors that contribute to a new position of USA companies in what international investments in China is concerned. In fact, considering the BCG report (Sirkin *et al*, 2011), there are several reasons to move from China to USA:

- Wage and benefit increases of 15 to 20 % per year at the average Chinese factory will

reduce the low cost advantage of China over the low cost labor of some states of USA (from 55% today to 39% in 2015) if it is adjusted for the higher productivity levels of USA workers. In reality, labor cost is a small part of a product's manufacturing cost. And so, the savings gained from outsourcing to China drop to single digits for many products.

- Considering the transportation costs that many products have and their duties, supply chain risks, industrial real estate, among other costs, these products shall have small gains obtained from Chinese production.
- Automation and other productivity improvements are expected not to be enough to keep cost's advantage of China.
- In China and other Asian countries the income rising will contribute for the demand increasing. The multinational companies will devote more of their capacity in China to supply domestic markets of the region. It is expected that many companies bring some of their production work back to the USA.
- Manufacturing of some products will move from China to nations with lower labor costs, as Vietnam, Indonesia or Mexico. Anyway, these countries continue to be limited once they do not have adequate infrastructures, skilled workers, scale, domestic supply networks and there are additionally political and intellectual property risks, low worker productivity, corruption, and the risk of personal safety.

This process of investments' return to USA is now beginning and the adjustment for a new situation is in a very early stage. The shift will happen depending on a set of factors and on the industry sector itself. While China will keep an interesting platform for production for many companies of Europe and Asia and even still remain interesting for many USA companies, the truth is that USA is becoming more and more attractive for the production of many goods to be sold in North America.

4. EU Politics in International Investment Area

EU-China trade has increased significantly in recent years. China is now the EU's second trading partner behind the USA and the EU's biggest source

of imports by far. The EU is also China's biggest trading partner.

EU is characterized by an open market policy what has been very important to China's export-led growth. The EU has also benefited from the growth of the Chinese market and the EU is committed in increasing trading relations with China. However the EU wants to ensure that China trades fairly, respects intellectual property rights and meets its World Trade Organization (WTO) obligations.

Considering the principles that rule EU and the frameworks in terms of foreign investment, EU follows an approach which is both ambitious and flexible (see European Commission, 2010). Its main principles are that:

- It focuses on long-term investment, i.e. establishment that generates stable employment and growth;
- It improves market access and provides that foreign investments both at pre- and post-establishment stages are treated like domestic ones;
- It fosters transparency by clarifying the regulatory framework;
- It ensures that host and home states fully retain their right to regulate the domestic sectors;
- It aims at freeing the flow of payments and investment-related capital movements, while preserving the possibility to take safeguard measures in exceptional circumstances; and
- It seeks to facilitate the movement of investment-related natural persons ("key personnel").

The Lisbon Treaty amends the Treaty Establishing the European Communities, and renames it the Treaty on the Functioning of the European Union (TFEU). Article 207(1) of the TFEU explicitly mentions foreign direct investment as forming part of the common commercial policy. As such, the Treaty establishes the EU's exclusive competence on foreign direct investment. As a result, the EU investment platform vis-à-vis third countries could be gradually enriched with investment protection standards for all EU investors establishing its presence in these countries.

5. China strength

After the confirmation of China as the strongest competitive country in the beginning of this century, USA have maybe felt the greatest challenge to their position on the competitiveness ranking. The big question about the future world economic leader is now taking place.

China got an apparent unbeatable combination of factors to get the hegemony of world economy. Cheap work force, a rising pool of qualified technicians in several areas, particularly in engineering area, for example, a undervalued currency, a politic of cheap land and free infrastructures, and a politic of significant financial incentives, all together made China a very fast growing competitor in the market, making China the first world player in international trade and an important political and geostrategic player in many scenarios. Indeed, China got the world's second largest economy and the biggest exporter in the global economy, but also an increasingly important political power. After entering WTO in 2001, China has become the default option for companies that wanted to outsource production at low cost, as a consequence of the very coherent and consistent management of the economy, planned and visionary, including the management of natural resources and the development management in general. This vision has contributed to guarantee the future development of China, and its economic and politic power.

What about now? Is it credible that the emergence of China is synonymous of USA and Europe decline? It seems that USA may continue to keep an important role in the international arena. The economy keeps robust and the flexible structures may continue to give to the economy some of the strengths it needs to overcome this phase.

EU is now trying to overcome a very severe internal crisis. The economic strength of EU is now sustained but the future requires that many adjustments have to be done. Some countries are implementing strong programs of internal economic reorganization.

China has assumed a place that it will keep for many years although the forces in the international stage are changing quickly. The question is not to know what China will be in the future but if the traditionally considered the most developed countries may keep their strength in the new reality. USA, with strong basis and flexible factors, may guarantee a new breath to the new "war". About Europe, new and hard changes have to be done. Political will seems to exist but implementations are always delayed. A

much more rigid system exists in Europe compared with United States.

Considering the new combination of factors in China about new wages, the rising transport costs, the new price for Chinese coastal lands where a significant part of production has been headed, USA may profit from using the internal adjustments to come back to a new positioning, bringing some production back to USA territory. In EU investments are being redefined. However, many companies will keep in China with their production based particularly for supplying the region; and sometimes they will move for neighbor countries with lower production costs. In short, China will not be weakened because China production and economic potential is expected to be kept.

6. What About Future?

Despite the USA potential rise and the internal reorganization in EU, the China's potential will remain very strong. Manufacturing power of China will be maintained. China has a very large domestic market and this Asia region is very strong in the context of the world economic order. In the last years, China has converted all the potential to adjust the productive structures and has enlarged the base of their production to many capital-intensive industries, has guaranteed many skilled and talent work force and has developed many micro infrastructures and super structures to guarantee conditions for the Chinese development (at macro and micro levels). Many coastal cities in China are now very well positioned for new challenges. China has also guaranteed abroad the employment of their work force in excess at very competitive conditions, penetrating all over the world and guarantying an interesting positioning for the future. A positioning in terms of natural resources has already been got. China continues to be a strong low cost exporter to Western Europe and facing the difference in cost production for the next years it is expected that will remain to be.

Anyway, there are significant changes in the China terms of trade and trade trends with the Western Developed Countries. The reality is changing fast. The shifting cost structure between China and these countries reveals more choices for companies' production in the future.

Many high labor products and products to be supplied to Asian countries may remain to be produced in China; it makes sense also to keep production in China for many products due to the

high technology incorporation and/or economies of scale.

Companies have now to decide about their global supply networks taking into account the usual criteria of total cost of production, the proximity of markets and raw materials, and so on, but at this moment the companies' analysis must include the new circumstances of fast change on the global combination of factors. Companies must make this analysis product by product considering particularly factors as worker productivity, transit costs, time to market considerations, logistical risks, energy costs, among other factors. An essential factor nowadays is the flexibility and dynamism of the supply chains, as their capability to be balanced. The flexibility to move from a center of production to another place is also crucial as much as to become closer to the final customer, according the needs of new demands. The relative position of countries determines a new stage for international trade, considering the rapid effects of international investment movements and the new requirements for production and supply and to respond to the new trends of demands.

In the long term, scenarios may be built; anyway predictions are not easy to be presented. The fundamentals exist but suggesting trends is a risky task. And that will be driven to another work, in which a reflection on this may be done. For now, just the idea that internal market of China will be reinforced in the future; and with this the economic power of China will be guaranteed. The capacity of China to supply many sophisticated products in the region (and even far away) is installed and the protection and control of important sources of natural resources have been also strategically planned.

USA have had along the last decades several periods of adjustment resulting from the economic international order. The flexibility that USA gave to the economy has permitted that adjustments could be made. Nowadays, one of the most powerful challenges for USA is out there. It is now the time to make a new wave of restructuration. Some kinds of reorganization of structures are in course and some of them have been already made. It is the example of General Motors (GM). A company like GM shows how rapidly reorganizations can be got. In two or three years GM got a profound internal reorganization, passing from insolvency to considerable profits and efficient levels of production. Its production and market position had to be profoundly changed. The case of General Motors shows in fact the possible recover of USA to be kept in the front line. In two years, after it nearly collapsed

into financial ruin, it is reporting record nominal profits for 2011 despite losses in South America and Europe. The record gains were driven by the strong recovery in demand for vehicles in North America. It still has not got all the way back to the "normal" status, so GM probably still has a way to climb. Anyway, GM is a vastly different company than it was before. It is smaller and has less debt, in consequence of the government rescue and bankruptcy protection in 2009 to cut its bloated costs. The restructured company was able to make record profit last year, even though U.S. auto sales were near historic lows at 12.8 million cars and trucks.

Examples like this one show that USA gets quickly new positions, as a result of big flexibility and internal dynamism. But the "war" is not won yet. The search for better methods and better general organization as much as improvements in logistic, labour efficiency and productivity combined to capital requirements may be the passage for a new phase of economic stability in the future if the results get achieved. If USA effectively get that stage, how long this economic shape remains? Will USA remain the last guarantee for the world balance in terms of geostrategic forces, whatever they are considering the countries or the regions?

EU defends the virtuosity of international trade and keeps trade policy as being essential to create growth and jobs by increasing the opportunities for trade and investment with the rest of the world. Internally, looks to define competitive conditions for domestic companies, looking at EU as a space for innovation and high technology industries. EU looks to the future creating new windows and factors of competitiveness, for instance by making adjustments in the production structures and creating more competitive macro frameworks for investments and production.

7. Concluding Remarks

It is not expected that China loses its leading position in the international trade, and especially it is not expected that China loses its economic potential in the region. Its fundamentals are very strong and solid and they guarantee a new position of China in what advanced technologies is concerned.

However, some USA companies will move back to the USA to supply many products in North American markets. Many plants will be transferred as well for other countries with lower costs of production. EU companies will try to reinforce the gains with commercial relationship with China. Anyway, European companies will work on a

competitive basis and will move as far as new conditions seem more attractive. EU will provide interesting conditions to get foreign investment in the European countries. China is looking as well to these opportunities.

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Testing the Efficiency of Indian Stock Market Vis-À-Vis Merger and Acquisitions - A Study of Indian Banking Sector

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Abstract-The objective of the present study is to test the efficiency of the Indian Stock Market with respect to the announcement of Mergers and Acquisitions (M&As) in the Indian Banking Sector by employing the Standard Risk Adjusted Event Study Methodology. In order to analyze the effects of the announcements of Bank's Merger and Acquisitions on Stock Price's Risk Adjusted Rate of Return using 6 recent mergers as of 21st Jan 2003 to 19th May 2009. All the acquiring banks are either traded on the SENSEX, BSE 200 or BSE 100. The three forms of Efficient Market Hypothesis (EMH) i.e., weak, semi-strong and strong form of EMH are being tested under this study in order to test the investor's ability to earn positive abnormal return on the merger announcement. Specifically, Semi-strong form of EMH is being tested in this study to analyze how quickly the market reacts to the new information, exploring the idea of an investor's ability to earn an abnormal return against the market. Evidence here supports the efficiency of the market in its semi-strong form of EMH by accepting both the null hypotheses. It is observed that neither before nor after the merger announcement investors are able to earn abnormal/excess return.

Key Words: Market Efficiency, Efficient Market Hypothesis (EMH), Merger, Acquisition, Announcement Effect, Event Study.

1. Introduction

In the current scenario, all over the world the activity of Merger and Acquisitions (M&A's) is becoming the reality for almost all kinds of companies as the execution of cross-border M&A transactions helps in

boosting the value, efficiency, profitability and synergy of their businesses (International Business Report, 2008). Mergers and Acquisitions are means by which either the Corporations combine with each other or one Corporation is completely absorbed by another Corporation on the consent of the Board of Directors via process of voting. Federal and State Laws regulate M&A's and provide procedures for this in order to protect the interest of the shareholders and to eliminate the competition between the merging firms. Strategic Acquisitions or Mergers with another business are the common ways to expand one's business (Gale Encyclopedia of US History, 2012).

Large number of International and Domestic Banks are engaged in the activity of Merger and Acquisitions (M&A's). Both the Government and Private Banks are adopting the policies for M&A's. Sometimes Non-Banking financial institutions are also merged with other banks only if they are providing similar type of services. In Banking Sector, M&A's are controlled and regulated by the apex financial authority of a particular country like in India it is overseen by the Reserve Bank of India (RBI) (Economy Watch, 2010).

Whenever the announcements of successful mergers are made to the public, it is generally proved to be beneficial for the shareholders. By employing the combine efforts company could reduce its cost and can maximize its profitability. Moreover, by the combination of two competitors the company could achieve more market power and increased market shares (Gersdorff and Bacon, 2009).

If the prices of securities fully confiscate the return insinuation of particular information then it can be said that the capital market is efficient with respect to that information. In an efficient market, when a new information item is added to the market, its revaluation implications for security returns are

instantaneously and unbiasedly impounded in the current market price. Fama (1970) classified EMH in its three forms:

Weak Form of EMH states that current stock prices reflect all historical information it is not possible for anyone to utilize past data for predicting future prices and earning abnormal returns.

Semi-Strong Form of EMH states that the current stock price absorbs not only the historical information but also the information that is publicly available. Hence, new information cannot be used by anyone for earning abnormal returns.

Strong form of EMH states that current stock prices reflect all available information whether it is public or private and no one can earn abnormal return by using private or insider's information (Khan and Ikram, 2010).

2. Literature Review

Many studies have been made on testing the efficiency of Indian Stock Market in relation to event announcement like dividend, bonus, right issue, option listing, stock split, block trading, annual earning, Merger and Acquisitions (M&A's) etc. Critical reviews of significant studies by the Researchers are as follows-

Ormos (2002) empirically tested the efficiency of Hungarian Capital Market in its semi-strong and strong form. The study focused to examine whether the Hungarian Capital Market was efficient in the semi-strong form. The investigation was based on the capital market data over the period 1991 to 2000 which was analyzed by employing event study. The study concluded that strong form of efficiency of capital market does not completely hold true, thereby supporting that Hungarian Capital Market is semi-strong form efficient. Vandana (2003), tested the semi-strong efficiency of the Indian Stock market over the period 1995 to 2000 by employing event study. The study involved a sample of 145 bonus issues, in order to examine the announcement effects of bonus issues on equity share prices in India. The study concluded that the Indian Stock market was semi-strong form efficient. Mishra (2005) examined the reaction of the stock price to the information content of bonus issues over the period 1998 to 2004. For the purpose of the study samples of 46 stocks listed on the NSE and BSE of India were analyzed by employing event study using 180-day event window. It was found that stocks show abnormal return before eight or nine days of announcement, thereby supporting the evidence that Indian Stock market is efficient in its semi-strong form. Iqbal and

Mallikarjunappa (2007) tested market reaction to quarterly earnings announcement of 149 companies listed on the Bombay Stock Exchange for September 2001 by employing both parametric and non-parametric tests. It is observed that during event window, runs test are not significant at 5% level, which signifies that abnormal returns occur randomly. On the other hand, t-test rejects the existence of abnormal returns on daily basis, which provides an opportunity to beat the market and earn abnormal returns. The study concludes that Indian stock market is not efficient in semi-strong form. Yalama, Abdullah and Selik (2008) investigated semi-strong form efficiency in Istanbul Stock Exchange Market (ISE-100), Foreign Exchange Market (FEM) and Inter-bank Money Market (IMM) in respect to changes in Currency and Circulation (CIC). The data consist of the daily frequency over the period 1990-2008 which was analyzed by employing Toda Yamamoto Causality method. The study concludes that there is the causality relationship running from CIC to FEM and CIC to IMM. However, there is no causality relationship running from CIC to ISE-100. This result implies that in Turkey money market is semi-strong form efficient while capital market is not. Dhar, Satyajit and Chhaochharia (2008) analyzed the impact of the information relating to the announcement of stock split and bonus issue on stocks listed on National Stock Exchange (NSE) by employing event study. Both the events, that is stock split and bonus issue reflect significantly positive announcement effect. For bonus issues, the abnormal return was about 1.8% and for stock splits, it was about 0.8%. Thereby the study supports the view that Indian Stock Market is efficient in semi-strong form. Gersdorff and Bacon (2008) made an attempt to empirically examine the efficiency of the market with respect to the announcement of the mergers and acquisitions by US Company on stock prices risk adjusted rate of return using twenty recent mergers as of 31st Aug 2007. This study uses the Standard event study methodology test. The weak, semi-strong and strong form efficient market hypothesis which test an investor's ability to earn a positive abnormal return on the basis of merger announcements are examined. Specifically, this work focuses on the semi-strong form test in an effort to test the efficiency of merger announcement public information. Evidence here supports semi-strong market efficiency along with a positive signal exhibited by the sample of acquiring firms during the event period. Evidence of lingering excess returns after the merger announcement was

also observed. Cheng and Shavin (2008), in their paper, analyze the impact of Cross-Border Acquisition Announcement of US firms on the Indian acquiring firms stock prices. The sample of 114 acquisitions made by publicly listed Indian firms of US firms has been taken for the period from 1999 to 2005. Standard Event Analysis Methodology has been employed under this study to test for abnormal returns around announcement dates. Further, Multiple Empirical Analyses have been employed to test the effect of the presence of price pressure around the announcement dates. The study concluded that the acquisitions of U.S firms by the Indian firms have positive impact on the acquiring firm value in the initial days and become negative in next few days in the announcement period. This means that the announcement returns in the Indian Cross-Border Merger and Acquisitions are mainly effected by the price pressure rather than information. Pichardo and Bacon (2009) examined the effect of Lehman Brother's Bankruptcy on the overall market by taking stock price's risk adjusted rate of return for 15 selected brokerage firms. Statistical tests proved that the bankruptcy had a negative impact on stock price's risk adjusted rate of return for the 15 firms, which supports the semi-strong market efficiency theory. Even after the event, bankruptcy continued to affect the market. Raja, Sudhahar and Selvam (2009), in their paper, opine that very few studies have been conducted on testing the Semi-Strong efficiency of stock market with respect to stock split announcements amongst which some studies observed that security prices reacted prior to announcement of events while other observed that security prices reacted after the announcement of events. This study attempts to test the efficiency of the Indian Stock Market with respect to information content of stock split announcements of IT Companies in the semi-strong form of efficient market hypothesis over the period 2000 to 2007. The statistical tools used under this study in order to test the informational efficiency are Abnormal Returns, Cumulative Abnormal Return, Average Security Returns Variability and T-test. The study reveals that the Indian Stock Market in respect of IT Companies is efficient in its semi-strong form but not perfectly efficient to the announcement of stock split. This enables the investors to make abnormal profit during the announcement period. The study is confined to only one event and is restricted to only IT industry, it can also be extended to two or more events by taking different industries. The author himself highlights the limitations of the study. Raja and Sudhahar (2010), in

their paper, made an attempt to empirically examine the efficiency of the Indian Stock Market with respect to Information Content of Bonus issue announcement released by the IT Companies over the period 2000 to 2007. The statistical tools used under this study in order to test the informational efficiency of the Indian Stock Market are Average Security Returns Variability, Average Abnormal Returns, Cumulative Abnormal Returns and T-test. The study concludes that the Indian stock markets for the IT Companies are efficient but not perfectly efficient to the bonus issue announcement. This enables the investors to make abnormal profit during announcement period. The author himself highlights some of the limitations of the study. The study is confined to only one event and is restricted to only IT Companies. Moreover, it can also be extended to two or more events by taking different industries. Yilmaz, Altioek and Selcuk (2011), in their paper, analyzes the impact of Merger and Acquisitions (M&A's) on the performance of the Turkish Companies over the period from 2003 to 2007 by taking the sample of 62 Companies involved in M&A's. Event Study has been employed under this paper in order to measure whether the whether the security holders are earning abnormal returns around Merger and Acquisitions announcements. The study concluded that the returns for stocks of Turkish companies are showing positive signals around the Mergers and Acquisitions announcements. It suggests that the returns for stock of Turkish Companies involved in acquisitions exceed average industry returns. Earl and Bacon (2011), in their paper, test the Semi-Strong form of EMH by analyzing the impact of the failure announcement of Federal Deposit Insurance Corporation (FDIC) bank on the stock price returns of Bank Holding Companies. The period covered under this study is from 13th Feb 2009 to 16th Jul 2010. The study employed the Standard Risk Adjusted Event Study Methodology over the sample of 36 FDIC bank failure announcements which have been taken from publicly traded Companies which are traded on NYSE, NASDAQ or OTC. The study concluded that the market shows the negative signals on and around the bank failure announcements which suggest that the Bank Holding Companies cannot earn abnormal return and the management and stock holders have fear of FDIC bank failure announcement. Stuart *et al.* (2011), in their paper, investigates about the reaction of short term stock market to the announcement of outward Foreign Direct Investment (OFDI) related Mergers & Acquisitions by Indian Cos. by taking the sample of 30 Cos. engaged in Merger & Acquisitions

transactions over the period from 2000 to 2007. Sample of 74 firms have been taken for the event analysis and further a sample of 66 firms for Multivariate Analysis. Event study Methodology has been employed under this study in order to analyze short run share price performance of Indian Acquiring Companies engaged in OFDI related Mergers and Acquisitions. The study concluded that the OFDI related Mergers & Acquisitions announcement has a positive effect on the returns in the stock market. Ananthi and Dinesh (2012) examined the efficiency of Indian Stock Market with respect to the Information Content of Profit Booking Announcement. The Impact of Profit Booking Announcement by LIC housing finance Ltd. By employing Event study using rate of return, beta, excess return and average excess return, pivot point and t-statistics for testing market efficiency. The study concluded that the announcement of corporate events like Profit Booking made by the LIC housing finance Ltd. is having a slight impact on the stock market during the study period.

3. Research Gap

Some of the pertinent literature is scanned by the Researches through various research papers which show that many research studies have been conducted to test the efficiency of the Indian stock market with respect to the announcement effect. In the developed countries, many research studies have been conducted with respect to analyzing the impact of announcement effect of any event on the efficiency of the stock market. Whereas in India, very few studies have been conducted test the efficiency of the stock market with respect to the announcements (like dividend, bonus, stock split, merger, acquisition etc.). These studies have been conducted by taking different industries, banks and analyze the different types of announcement effects over the stock market with different time period. Present study is an attempt to test the efficiency of the Indian stock market with respect to the announcement effect of Merger and Acquisitions (M&A's) took place in the Indian Banking sector for a particular period ranging from 21st Jan 2003 to 19th May 2009.

4. Scope and Objectives

The present study tests the Efficiency of Indian Stock Market with Respect to Announcement of Merger and Acquisitions (M&A's). The study covers the period ranging from 21st Jan 2003 to 19th May 2009 in which the mergers and acquisitions took place in the Indian Banking sector. All the acquiring banks

are either traded on the Sensex, BSE 200 or BSE 100. The three forms of Efficient Market Hypothesis (EMH) i.e., Weak, Semi-strong and Strong form of EMH are being tested under this study in order to test the investor's ability to earn positive abnormal return on the merger announcement but emphasis is being given to the Semi-strong form of EMH to analyze how quickly the market reacts to the new information, exploring the idea of an investor's ability to earn an abnormal return against the market.

The objectives of the present study are as follows:

1. To test the speed with which the announcement of Merger and Acquisition are impounded in the share prices of Indian Banking Sector.
2. To test whether the investors are able to earn abnormal return on the bases of the announcement of Merger and Acquisition.
3. To test in which form of EMH (Efficient market Hypothesis) the market exists.

5. Hypotheses

H1₀: The Risk Adjusted Return of the stock price of the sample of banks announcing a Merger and Acquisitions is not significantly affected by this type of information on the day of announcement.

H1₁: The Risk Adjusted Return of the stock price of the sample of banks announcing a Merger and Acquisitions is significantly affected by this type of information on the day of announcement.

H2₀: : The Risk Adjusted Return of the stock price of the sample of banks announcing a Merger and Acquisitions is not significantly affected by this type of information around the announcement date, as defined by the event period.

H2₁: The Risk Adjusted Return of the stock price of the sample of banks announcing a Merger and Acquisitions is significantly affected by this type of information around the announcement date, as defined by the event period.

6. Data and Methodology

The data analyzed in this paper has been collected from the reliable source i.e.; from the website of Bombay Stock Exchange India (<http://www.bseindia.com/>). The sample consists of six recent mergers in the Indian banking sector; the mergers take place from 21 Jan 2003 to 19 May 2010. All the acquiring banks are either traded on the SENSEX, BSE 200 or BSE100. In order to find out the impact of M&As on Indian stock market researchers uses the Standard Risk Adjusted Event Methodology. The required historical financial data regarding adjusted stock

price of various banks and values of market Index like, SENSEX, BSE 200 & BSE100 was obtained from the website (<http://www.bseindia.com/>). Table 1 below shows the sample of M&A's in the Indian banking sector and date of announcement of mergers along with the traded Index of banks.

Table 1
Description of Study Sample Banks

Name of the Transferor Bank	Name of the Transferee Bank	Date of announcement of Merger / Amalgamation	Acquired Bank Traded Index
Nedungadi Bank Ltd.	Punjab National Bank	21 Jan 2003	BSE100
South Gujarat Local Area Bank Ltd.	Bank of Baroda	18 June 2004	BSE100
Global Trust Bank Ltd	Oriental Bank of Commerce	26 July 2004	BSE200
Bharat Overseas Bank Ltd.	Indian Overseas Bank	15 Feb 2006	BSE200
Centurion Bank of Punjab Ltd.	HDFC Bank Ltd.	23 Feb 2008	SENSEX
The Bank of Rajasthan	ICICI Bank Ltd	19 May 2010	SENSEX

Source: Compiled from Business Standard, Times of India, Indian Express, The Hindu, The Financial Express and Bombay Stock Exchange (<http://www.bseindia.com/>).

To test the efficiency of Indian stock market with respect of announcement effect of bank's Merger and Acquisitions on and around the date of announcement of the event period Standard Risk Adjusted Event Study methodology is being used here and the following steps are undertaken.

1. The historical stock price of the sample banks and SENSEX, BSE200 & BSE100 Index for the event study duration of -165 to +15 days (with days -15 to days +15 defined as the event period and the day of announcement of Merger and Acquisitions used in post period).
2. Then, holding period return of banks (R) and the corresponding return of SENSEX, BSE200 & BSE100 (R_m) for each day in this study were calculated using the formula:

$$R = \frac{(\text{Current Day Close Price} - \text{Previous Day Close Price}) \times 100}{\text{Previous Day Close Price}}$$

$$R_m = \frac{(\text{Current Day Market Close Price} - \text{Previous Day Market Close Price}) \times 100}{\text{Previous Day Market Close Price}}$$

R= Current Daily Return

R_m = Current Daily Market Return

A regression analysis is performed using the actual daily return of each bank (R) as dependent variable and the corresponding daily market return (R_m) of SENSEX, BSE200 & BSE100 as independent variable over the pre-event period (days -165 to -15 or prior to the event period of days -15 to +15) to obtain the intercept alpha and standardized beta for each sample bank separately. Table 2 shows Alphas and Betas for each bank.

Table 2
Alphas and Betas of Study Sample Banks

Acquiring Bank Name	Alpha(α)	Beta(β)
Punjab National Bank	0.165	0.498
Bank of Baroda	-0.236	1.709
Oriental Bank of Commerce	0.004	1.409
Indian Overseas Bank	-0.335	0.849
HDFC Bank Ltd	0.177	0.941
ICICI Bank Ltd	0.135	1.287

Source: Compiled and Calculated from Appendix 1&2

1. For the study, in order to get the normal expected return, the Risk-Adjusted Method was used. The expected return of each stock for each day during the event period from (day -15 to +15) was calculated as: $E(R) = \text{Alpha} + \text{Beta} (R_m)$, where R_m is the return on the market. i.e. SENSEX, BSE200 or BSE100 index.

2. Then, the Excess Return (ER) was calculated as:

$$ER = \text{the Actual Return}(R) - \text{Expected Return } E(R)$$

3. Average excess return (AER) were calculated from days -15 to days +15 by simply averaging of all excess returns for all the banks for given day.

$$\text{AER} = \text{Sum of all Excess Return for given day}/n$$

Where n= number of sample banks i.e. 6 in this case for the study.

4. Cumulative average excess return (CAER) was calculated by adding AER for each day from -15 to +15.
5. Graphs of AER and CAER were plotted for the event period i.e. table 4 shows the values of AER and CAER during the period of

event period. Graph 1 below depicts average excess return (AER) plotted against time. Graph 2 below depicts Cumulative average excess return (CAER) plotted against time.

7. Quantitative Analysis Tests and Results

The Quantitative analysis has been done in order to analyze how quickly and accurately market reacts to the information like Merger and Acquisitions of banks. Standard Risk Adjusted Event Study was conducted to measure whether any abnormal return has been earned by share holders around the Merger and Acquisition's announcement period. The basic assumption of the standard risk adjusted event study is that the information was communicated publicly and this type of information surprising content that the abnormal return will occur at the time of event. Abnormal return of stock price indicates the impact of the particular event on the stock price. After obtained the value of alphas and betas, finds the expected average return and compared it with actual average return. The actual average return and expected average return within the event period should differ in order to know the possibility to outperform the Indian stock market with respect to Merger and Acquisitions announcement. A paired sample t-test was conducted and finds that the announcement of mergers of banks does not have any significant effect on the risk adjusted stock price. Table 3 shows mean, standard deviations, t-stat and p-value which concluded that announcement of mergers does not have any effect on the stock prices, and shareholders does not earn any abnormal return from the market except the case of Indian overseas bank which has p- value .020 which is less than 5% significance level and concluded statistically significant but it may be not the reason of merger announcement it may be some other reasons. The majority of bank's mergers fail to create the abnormal return to the shareholders. The share holders of sample banks were not able to earn above normal risk adjusted return by the information of Merger and Acquisitions around the announcement date, as defined by the event period. Likewise, the result support H_{10} : Therefore we concluded that the market is efficient in semi-strong form respect to merger and acquisitions announcement as no investor is able to earn abnormal return neither before nor after the announcement.

Table 3
Result using paired sample t-test

Acquiring Bank Name	Mean	Std. Deviation	t-stat	p-value
Punjab National Bank	0.02366	4.54837	0.028	.977
Bank of Baroda	0.85142	2.74337	1.700	.100
Oriental Bank of Commerce	0.10350	2.11944	0.267	.791
Indian Overseas Bank	1.19137	2.64072	2.471	.020
HDFC Bank Ltd	0.36943	2.44046	0.829	.414
ICICI Bank Ltd	-0.00515	0.98406	-0.029	.977

Source: Compiled and Calculated from Appendix 3

Table 4 depicts the analysis of Average Excess Return (AER) along with Cumulative Average Excess Return (CAER) for M&As announcement of Indian banks during the period of event study and display the changes takes place in the daily market return from (day -15 to +15 days). It is clear that from the above table that there was no significant abnormal return almost all the days (from days -15 to days+15) surrounding the mergers announcement. The value of cumulative average excess return (CAER) was below on the very first day and has not been significant. It is unambiguous that the Merger and Acquisitions announcement did not generate cumulative average excess return. The lowest Cumulative Average Excess Return was on the first day after announcement with -5.0209 and the highest on the day 11 that was -13.2876. The value of Cumulative Average Excess Return during the pre and post announcement period was less than 1. It reveals that M&As announcement in the Indian banking sector did not meet the significant reaction on the security prices of banks in the Indian capital market.

The Graph 1 shows the relationship Average Excess Return (AER) to time and Graph 2 shows the relationship of Cumulative Average Excess Returns (CAER) to time during the event period (day -15 to +15 days). The Cumulative Average Excess Returns (CAER) graph shows the return on adjusted stock price during the event period (during day -15 to +15 days), which shows that the mergers announcement had negative impact on the stock prices of acquiring

banks and suggest that the merger announcement had not the positive significant impact on the stock price of banks immediately on the first day after the announcement of mergers and likewise the result support H_2_0 and continuing decreasing to the whole event period .

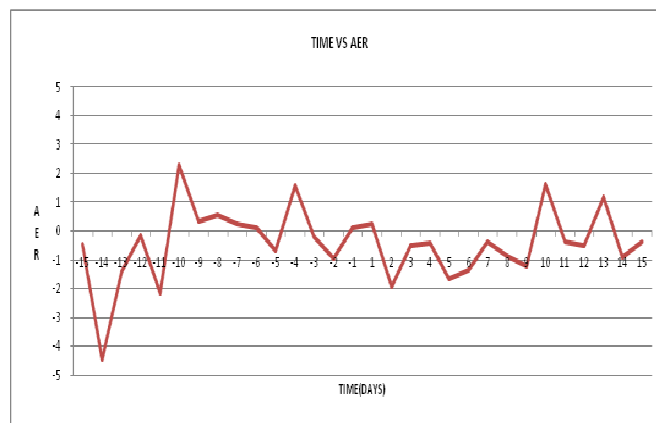
Table 4

Result of Average Excess Return and Cumulative Average Excess Return of Stock Price for Merger and Acquisitions Announcement of Indian Banks

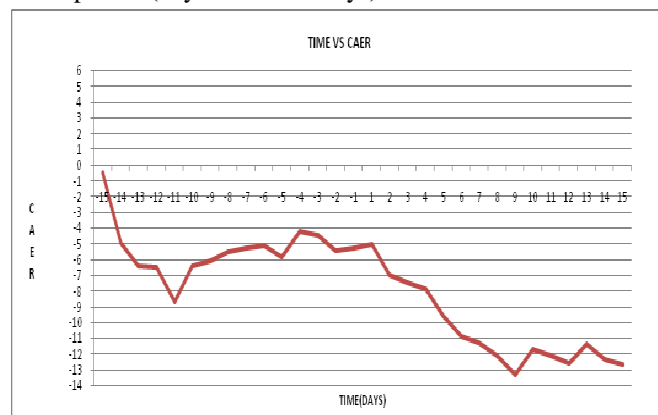
Days	AER	CAER
-15	-0.47975	-0.47975
-14	-4.46442	-4.94417
-13	-1.40973	-6.3539
-12	-0.14246	-6.49636
-11	-2.16962	-8.66598
-10	2.292895	-6.37309
-9	0.325515	-6.04757
-8	0.550479	-5.49709
-7	0.26562	-5.23147
-6	0.116059	-5.11541
-5	-0.66611	-5.78152
-4	1.565823	-4.2157
-3	-0.19737	-4.41307
-2	-0.95768	-5.37075
-1	0.117311	-5.25344
1	0.232532	-5.0209
2	-1.932	-6.9529
3	-0.50221	-7.45512
4	-0.42942	-7.88453
5	-1.64435	-9.52889
6	-1.34411	-10.873
7	-0.37118	-11.2442
8	-0.83911	-12.0833
9	-1.20435	-13.2876
10	1.617352	-11.6703
11	-0.38038	-12.0507
12	-0.48924	-12.5399
13	1.168847	-11.3711
14	-0.924	-12.2951
15	-0.37611	-12.6712

Source: Researcher's Compilation and Calculated from Appendix 3

Graph 1 shows the relationship of Average Excess Return (AER) to time during the event period (day -15 to +15 days).



Graph 2 shows the relationship of Cumulative Average Excess Returns (CAER) to time during the event period (day -15 to +15 days)



8. Conclusion

Generally investors will view the announcement as something positive. This study has empirically examined the informational efficiency of the Indian Stock Market with regards to the announcement of Merger and Acquisitions in the Indian Banking Sector. After testing, the study shows that the expectations of share holders of sample banks to avail the excess return cannot be realized with public information and they are unable to earn abnormal return neither before nor after the announcement of M&A's. The study proved that Indian stock market shows that the market is efficient in its semi-strong form as both the historical and publically available information are disseminated in the stock prices and no investor is able to earn abnormal/excess return. This study had empirically testing the market efficiency of Indian stock market with respect to merger and acquisitions announcement after released

the information in the market and examined the effects of mergers announcement on stock price of banks. Six recent mergers were used as the sample for the study with stock price obtained from (<http://www.bseindia.com/>) for the whole study. They were traded on SENSEX, BSE200, or BSE100, the standard adjusted event study methodology was used to test the efficiency of Indian stock market.

The findings show that there is negative action in the stock price, but the analysis displays that the announcement of merger does not have any significant impact on the stock price of banks. The result supported the two null hypotheses.

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APPENDICES

Appendix 1. Daily market Return and stock price Return of each bank during the Period of ((Days -165 to Days -15)

Rm-ICICI	R-ICICI	Rm-HDFC	R-HCFC	Rm-IOB	R-IOB	Rm-OBC	R-OBC	Rm-BOB	R-BOB	Rm-PNB	R-PNB
0.380211	-0.49115	0.587704	-0.38528	-0.62666	-0.49689	0.972166	0.193966	2.079725	2.393162	2.824274	-4.41176
-0.48759	-0.04	0.081382	-0.2908	-0.47351	-1.64453	1.515315	0.108225	0.554216	0	-0.46517	0.383632
-0.41761	-2.37567	-0.47306	-2.19481	0.089843	-2.60152	-0.36263	0.362473	-2.35212	-4.53552	-2.3681	-2.44216
1.052357	0.930127	0.813087	2.61121	0.753894	0.986842	0.585663	-0.67625	-0.51307	-3.58166	0.320551	1.542416
0.174881	1.90128	0.179909	0.266094	0.54968	-1.54839	0.4896	-1.20253	0.316636	1.764706	-0.71299	-3.375
-0.04728	-0.14838	-0.59768	-2.72458	-0.06762	-0.64935	-1.82914	-5.28541	0.555292	3.965517	-0.39301	-2.50313
-0.64993	-1.03324	-0.25107	0.209059	0.693017	-2.17949	0.479569	-2.99003	2.875887	5.115512	0.312372	-4.36409
0.690515	2.596443	0.858821	4.1757	0.079247	-1.49545	1.597214	2.320865	1.646349	-6.97372	0.857541	2.067183
1.746483	1.348214	0.367291	1.996851	-1.44805	-1.32275	0.845906	0.770077	0.472477	1.824212	1.165983	7
-0.12429	1.557018	0.105851	-1.78968	0.799543	-2.64375	0.218802	1.861472	-0.15757	-2.9205	-2.368	-5.07901
-0.26522	-0.41224	-0.44135	-1.3081	0.312975	-1.00267	-0.19434	2.047277	-0.03638	3.162816	-1.1092	2.380952
0.461594	-1.74508	0.033407	-1.1548	0.523015	5.666667	0.459933	-2.22898	-1.68565	-3.24037	1.418929	-9.3
-1.11457	-1.57104	1.255097	1.588433	1.067024	-0.37618	0.201207	-2.97582	0.823143	-2.21918	0.645215	8.189655
-0.23313	-1.123	-0.3845	-1.79624	-0.80649	-1.00629	0.058794	-2.61218	0.777609	3.186813	-0.16625	0.9375
0.23803	-0.36564	1.10298	3.440678	0.952053	5.987261	1.681861	0.662676	-0.53297	2.751323	-1.10995	-2.45399
-0.75868	0.463372	-0.04601	5.138655	-1.91859	-5.06555	1.008478	1.005025	-2.54317	-6.51674	0.2594	0.629591
2.296492	1.14211	-0.07981	0.534413	0.67724	4.625	0.865245	6.752814	-1.8859	-3.20652	-0.76614	-1.85185
-0.97959	-2.05503	0.050925	-1.68159	0.725787	-2.72835	-0.83681	-2.51923	1.023612	-2.10811	-1.59604	-3.79487
-1.91754	-1.09306	-1.63477	-1.96622	0.136221	1.333333	0.884652	0.983865	0.7444	-3.92211	-1.25313	-2.37603
0.041368	-0.37495	-0.11206	3.042957	-0.41324	-1.2426	1.186972	1.947551	-1.22995	-1.66667	0.920257	-0.31088
-1.5539	0.161254	1.25206	2.888412	-0.70212	-0.05988	1.107827	0.320634	-1.3524	-4.2322	-0.56834	2.275078
-0.26034	0.06295	-2.66065	-2.26298	0.990375	0.059524	-0.36581	-4.11985	-1.62376	-0.94118	-0.16518	-0.91371
1.549971	1.074066	-0.24742	-0.64655	0.337218	-2.22222	0.535272	-0.62016	1.187285	-0.77381	-0.34263	-0.4158
-0.82757	-0.27753	0.513043	-0.83477	0.100721	-1.41176	1.425286	2.317497	-0.1896	0.386905	-0.6171	0.422833
0.511839	1.070796	0.070035	2.024474	0.068912	-1.07143	2.633087	-1.12486	1.169216	1.736315	0.441898	0.209205
-0.51192	-0.41806	-0.69996	-1.07359	-0.68754	-2.02381	-0.07172	-4.71028	1.220678	3.764368	0.230787	2.745512
-1.06431	-2.14507	1.457509	2.532808	1.206308	-0.30211	-2.66275	2.550201	0.996204	-1.94574	1.032828	-1.34021
-0.87217	-2.25908	-2.27983	-2.49789	0.851354	6.519139	-0.76795	-0.80709	1.442462	-0.35931	0.143495	-1.45078
0.230257	5.989964	1.317418	1.044643	-0.0133	-0.38954	2.729681	4.448819	-0.5237	1.538462	0.370897	0.21097
0.410112	3.772392	0.344522	-1.90896	0.400576	-1.27283	-1.92257	4.776119	0.481646	-0.74271	-0.35668	1.359833
-0.30132	0.05692	-0.43672	0.609649	0.485851	0.227402	-1.84135	-0.58428	0.47475	-0.82932	0.240485	0.306748
-0.03478	-0.59438	-1.55441	-1.44144	0.718085	-1.06982	-0.17119	0.636267	-1.96732	-1.79432	0.336168	-1.5015
1.397385	1.716358	-1.17301	-1.72335	1.434858	0.170068	0.330544	1.388889	0.357929	2.065217	0.071628	-0.81633
-0.19339	0.134069	-0.58385	2.179837	-0.36397	-3.63128	-2.08134	-7.56601	1.522953	-1.0543	-1.01568	0
-0.90101	-0.98186	-3.60442	-2.22764	0.143499	2.440476	-2.45467	0.222222	0.967241	-1.57333	-1.01736	-4.48065
0.386391	1.556	1.374988	1.565336	-0.11325	-2.52809	1.348113	1.648148	0.288055	-1.61117	0.053024	-2.24949
-0.19998	-0.15501	-2.03585	-3.61087	-1.67446	0.654762	-2.98997	-7.64493	-0.33135	-1.21687	-0.79832	2.105263
-1.63093	-1.32155	1.31774	-0.81081	-0.3391	-2.7381	-5.01331	-7.35178	0.509014	-0.02716	-1.43665	-2.16495
-1.81615	-2.08851	1.790163	-0.32444	1.504709	2.179177	-3.37097	-1.74077	0.205812	-0.3276	-0.39598	-1.89076
0.704446	2.278428	0.414197	3.170339	0.514931	-1.29412	4.164413	6.779661	-0.02616	-4.40577	0.827702	-0.10638
-2.48673	-2.16843	2.331162	4.617611	-0.67728	-2.20238	2.669081	3.352941	1.638307	-1.07345	-0.1243	0.757576

-0.33599	-2.70665	-0.30952	1.116339	0.058604	3.658537	-2.23276	-0.38256	1.053691	3.347518	-1.7335	-1.20879
-1.98826	-1.31014	1.23743	0.102555	0.971269	4.254079	-1.27994	-4.27481	0.761723	4.386921	1.683006	2.359551
1.236441	2.160734	0.130243	-0.74262	-1.00732	-3.57143	-3.22346	-8.1746	-0.91819	3.324742	-1.54324	0.99889
-0.75388	-0.97175	-0.08483	-1.18507	-0.38703	0.632184	-3.36936	-3.80342	0.999602	-0.69479	-1.56109	-3.40426
-1.39562	-2.84111	-0.57417	-0.34805	-0.79519	-2.72882	2.448572	7.240018	1.109207	2.452924	-2.21446	-1.98238
-1.23766	-1.47707	1.515486	2.154615	-1.97554	-2.79557	-0.41747	0.204082	1.117741	1.322115	-0.81373	-2.58427
-1.31678	-0.19077	-0.41487	0.470588	-0.44316	0.664653	1.756393	3.673469	-0.15773	1.445498	-1.76414	-2.66667
0.908772	2.038019	1.188887	3.455135	0.319447	1.059447	1.961181	4.640281	0.668203	12.99517	0.542016	-1.26437
0.764044	-0.72483	-0.8018	-1.43154	0.243537	2.271404	-0.11098	2.185995	1.404074	-2.61758	-0.49605	1.149425
1.638557	1.562228	-0.66079	-0.78925	-0.68164	-0.63182	0.460769	-0.80819	2.712299	3.484848	0.293886	4.685714
-0.22936	0.860169	0.429518	2.156698	0.884058	-0.97701	-0.42447	-3.07554	0.052928	-2.0625	0.500485	1.521739
-0.20472	-0.42544	-0.69914	0.302041	0.776521	1.485714	1.377305	2.568876	-2.70209	0.641593	1.074034	0.437637
-0.28416	-2.75947	-1.02338	-0.55556	0.615354	-0.11111	-0.39979	-0.9971	-0.66466	-1.62996	-0.66012	-3.76344
-0.24151	-3.03057	0.785035	1.109741	0.158513	-2.38889	0.002595	2.610294	2.701162	2.351375	-1.96453	1.128668
-0.89472	0.004521	2.396117	5.261905	0.239239	2.352941	0.23925	-1.61663	-2.06142	-0.04241	0.331795	-0.56117
-2.55133	-4.07404	0.039164	-0.14684	0.244411	-1.76136	-3.12186	-0.1076	-1.88211	2.627119	0.922759	-0.22422
1.598801	5.728477	1.295902	-0.54511	0.965959	-1.31129	0.117042	-0.76364	-0.21112	1.466993	0.697505	-1.11359
0.46683	-0.57333	0.88598	1.221805	0.055671	4.127907	-3.19824	-5.99711	0.297707	4.18	-0.22931	1.927438
0.265563	-0.28075	0.05204	2.395604	0.873329	3.184358	0.547968	2.722393	-2.25223	-4.32565	0.621122	1.674107
-0.72482	-2.19551	-0.28321	-0.05816	0.701371	3.429796	-2.54208	1.596244	-2.46253	-4.05138	0.246248	0.434783
0.844071	2.155412	0.533131	2.378571	-0.32563	-2.42268	-1.04258	0.147656	1.474237	2.957447	0.558976	0.752688
0.601213	-0.05455	0.809162	0.401172	0.949993	-0.10455	1.315202	5	-3.14347	-5.50308	0.017332	-0.53763
0.675307	3.129529	-0.16345	-3.04202	0.789648	-1.90918	2.948352	2.358079	-4.89643	-6.66667	-0.75455	-0.32715
-0.51206	-1.33455	2.173362	0.618987	0.610724	-0.46875	-0.26435	1.327586	-3.43928	-2.92505	0.823692	2.759382
-0.27921	-0.57608	-0.12635	0.3	0.590318	-1.77083	-0.48242	-1.08475	4.128292	7.948244	0.450367	-0.10753
0.814606	0.004468	-0.32706	-1.02827	-0.78705	-2.68421	1.520327	1.729156	2.687421	1.835443	-1.25576	-2.44161
-0.16782	0.541145	-2.29333	-0.98592	-3.63149	-3.24176	1.612458	4.414716	-2.31899	-1.46634	0.037367	-0.76754
-0.15481	-0.96043	5.045327	0.748758	0.041009	-1.41643	-1.09864	1.585761	-1.30971	-2.99578	-0.30079	-0.4415
0.972789	0.921288	1.000464	-1.99448	2.445794	3.386912	-0.9029	-4.4448	-3.26379	-6.16246	2.16277	-1.30577
0.566979	0.628319	0.628188	2.207018	0.351648	-1.8617	-1.4619	-5.85676	-3.17395	-5.40849	-0.82945	-2.15054
0.471911	1.005956	-1.99839	-0.49722	0.625975	-0.4878	0.56157	0.805009	2.428479	3.038278	-1.15097	-1.53846
-0.29367	-0.81526	2.877422	1.387708	0.26293	-0.48913	-3.68425	-6.2931	-0.44657	1.636322	1.080327	8.495146
-0.57553	-3.52993	-0.26734	-0.68647	-0.21901	2.459016	0.821263	-0.12965	1.920154	5.398171	-0.28515	-1.55039
-1.01829	-2.70934	3.758309	4.406295	0.680995	-1.5442	0.058009	4.644708	1.92058	5.295359	-1.11301	4.250295
-1.03337	-2.04186	-4.40351	-6.17687	1.053703	-0.10753	-1.82167	-3.3345	-0.1582	-1.87625	-0.03318	-0.45558
-2.34102	0	-2.61644	-0.93066	-0.91364	-1.5442	0.427645	1.696751	0.459338	4.306122	0.293924	-2.09945
-2.48701	-3.03059	2.052996	4.923547	-1.59803	0.163043	-2.10142	-4.28571	-0.47254	-6.43902	0.239189	-1.44766
-0.43273	0.466395	3.252542	4.783227	-0.4818	-1.53005	0.207671	-1.38837	1.321797	2.511937	-0.59051	2.386364
0.933999	3.605699	-1.14797	-0.87171	-0.54918	1.388889	0.213031	-2.06439	-0.49889	-0.64607	-1.54295	0.555556
-1.5877	-3.98131	1.358912	1.719472	-0.07254	4.393191	0.478653	4.020777	0.011257	2.42915	0.586696	10.11097
-1.75851	-1.64006	2.228631	0.917102	-1.54054	-3.08416	1.763427	2.321429	0.203076	-2.98215	-0.81343	-0.44944
-0.1543	-1.89216	1.815774	-0.07927	-2.12557	-2.03209	1.421199	-0.72476	-3.22308	-2.65594	-0.71263	1.260023
0.573402	-0.04943	-1.59142	-2.80781	-0.58879	0.777778	-0.48943	0.275862	0.21079	-1.18405	0.703969	2.298851
-0.91363	0.738189	0.053411	2.996885	-1.03043	-3.29787	1.22961	2.923577	-3.29614	-6.53361	-0.4433	-0.11236
0.815724	3.435377	-2.01627	-0.56083	-1.57807	-2.60388	2.471953	3.930921	0.629728	5.303371	0.191708	-0.11364
0.002368	2.004977	3.158442	9.836066	-1.95272	-3.58744	1.185045	4.28125	-2.68917	-4.13136	1.372413	2.325581

0.291113	1.110075	-2.09187	0.502646	1.604055	-1.72414	0.206877	-5.6359	-1.16206	-3.08099	0.050463	0.113895
-1.34168	-4.80425	-1.46838	0.226191	-1.75018	-1.08696	-0.83948	-0.03143	1.352878	1.306306	0.361964	1.136364
-2.10754	-2.9813	-1.34356	-5.38304	0.255866	-0.78784	-0.17798	-1.12308	3.160883	2.631579	-1.21183	1.368301
-1.67115	-0.00492	-0.26933	-1.11604	-0.30538	1.875	0.657207	0	-0.2846	0.300043	-0.36443	-0.22573
0.557165	1.553166	-1.94527	-1.3595	-2.21349	1.5	-0.6922	-3.06248	-0.50689	-2.10773	-0.56423	0.454545
-2.18701	-2.70323	0.519031	-3.9388	-1.54898	-1.1413	1.575916	1.707692	1.618744	1.099612	-0.05497	-2.44989
-0.69326	-0.12871	1.896998	7.74744	2.188803	0	-0.55508	3.387574	1.634967	3.954082	0.649257	-0.79365
1.852628	2.086017	3.062012	7.379213	-0.1981	-0.54885	0.030609	4.724638	-1.20308	-1.18852	0.901372	-0.91013
-2.39522	-2.49511	-0.81628	-2.90286	1.189851	-0.05552	-0.09283	-0.74792	-0.89015	-4.95663	-1.0365	-1.71821
-0.53945	-0.87968	0.485995	2.251515	1.517657	-0.11099	-1.8228	-5.61625	-1.50658	-3.32604	0.198031	-1.95853
-2.01643	-3.73482	-1.31753	-4.70927	1.22733	0.607735	-0.25944	-3.09158	0.612831	1.533883	0.322988	-4.79532
-0.74035	0.593487	-1.17954	0.406154	-0.25642	1.208791	1.615137	2.018072	-3.73697	-3.33482	-0.3446	-3.65135
-0.79673	0.15625	3.09909	-2.88344	0.156968	0.486486	0.839856	2.533883	1.032671	-1.65138	-1.02458	-1.07143
1.195721	3.792746	-1.05634	1.531847	1.613469	0.053763	0.028947	-1.06868	-0.04058	1.433526	0.386575	0.966184
1.460634	1.724648	0.617221	-3.53704	-0.03904	-1.43617	-3.25311	-6.63793	-1.83213	-3.92954	-0.66082	0.486618
0.075137	1.645753	0.39794	-0.31838	0.84082	7.849462	-0.19026	1.723607	0.343283	1.475755	-0.55669	0
0.152355	0.014245	-0.00591	0.150307	0.447483	-3.49409	-0.23389	-0.52711	-2.00231	-0.94645	-1.01691	-0.24213
0.881433	1.11828	-1.95628	-5.13569	0.182615	-1.86869	-0.76814	-4.23193	0.28687	-1.79195	-0.47295	-1.79641
-1.89915	-3.16748	-1.48989	2.968443	-0.93725	-3.16327	-1.55511	-6.70127	0.248768	-1.2	-1.03935	-1.21951
1.095318	1.263415	1.186604	1.177163	-0.73066	-2.78069	1.003537	-1.11778	0.4031	7.156398	-0.98629	-0.49383
-0.51417	0.410317	0.288125	-2.73299	0.850249	-4.34343	0.44004	1.710262	1.728705	2.511013	-1.37716	0.12285
-0.30405	-1.16176	-0.90366	-1.01453	0.885523	-0.89568	0.437449	0.929487	1.439833	-2.20619	1.617089	1.3382
-2.77202	-5.22366	0.556426	1.623529	1.108786	-0.26316	-1.31555	-1.77187	-0.57529	0.334728	0.092142	0.481928
-0.41727	1.788752	-1.11049	-4.47309	0.649386	-0.1051	-1.19063	0.378289	1.225085	1.167153	0.424753	-0.60241
0.06917	-2.60782	-0.48596	-0.9977	0.959563	-2.33888	-2.96679	-2.18053	2.462025	3.039014	-0.00889	1.690821
2.581541	4.369278	-0.71851	-2.68966	-0.58479	0	1.294608	-4.37282	1.202825	-1.13659	1.17215	0.352941
0.935894	0.752475	1.204727	4.087977	-1.6593	-1.80085	2.64409	0.935115	0.447723	-4.7419	-0.23093	0.234192
-0.73163	-1.60228	0.883429	0.79096	1.454311	0.273224	-8.64342	-14.4906	-0.93468	2.635983	-0.60597	0.233372
-0.7569	-0.06942	-1.92076	-1.53501	-0.4077	-2.23958	-11.0952	-16.3399	-0.14921	-0.22106	-0.05943	-3.29545
0.88804	0.774926	-0.38422	-0.71223	-1.26414	-1.63158	7.121555	4.447368	0.265109	1.98556	-0.43804	-1.41011
-0.28532	0.63778	-3.85031	-1.8538	-0.23155	-0.37634	3.223463	17.11443	-1.03592	-1.34766	0.843499	-1.31265
-0.55809	-1.04878	-1.34184	2.277778	0.644483	0.053763	-1.6954	-0.55319	1.44279	2.851485	-0.05576	0.242424
-0.40563	-0.23765	-0.84875	-1.94982	0.194673	-1.00105	0.843843	0.543478	-0.85549	-1.23077	0.656214	1.579587
1.499304	1.076389	-0.24805	-0.4955	1.381496	-0.89474	2.078204	5.549581	0.0258	0.232019	0.99151	-1.07143
0.297287	0.52459	2.8274	2.315821	0.359584	-1.84017	-0.16323	-0.79365	-0.19253	0.768049	0.28291	-0.47904
0.520213	2.45509	1.261524	-0.39773	1.011322	0.31746	-0.256	-1.46245	-1.40786	-5.03774	0.832012	-1.90476
-0.42404	-0.24631	-0.4154	1.746356	-0.03931	-0.26042	-0.60081	-4.39936	-0.12602	-1.66008	-0.06348	-0.84848
-2.04025	-1.10345	0.242235	1.814706	-1.10548	-0.80645	-4.47863	-7.41051	1.423429	1.772764	0.259099	0.60241
-0.80997	0.00994	-0.17856	-0.41499	0.916514	2.403058	-0.96511	4.623209	0.673792	-0.43358	0.927204	1.150748
0.330245	-0.9037	-0.12083	0.173611	1.229886	0.10582	0.975192	-0.8913	-0.04116	-1.08097	0.211018	-1.812
1.30269	4.313627	0.354041	-1.31397	-0.4976	1.201672	1.627784	1.629956	-3.08916	-8.96414	-0.18552	1.387283
0.351736	0.823558	-0.28774	-0.15588	-0.18211	-0.91837	-3.2701	-1.75739	-0.00785	2.697368	0.686988	1.133787
1.812432	2.446469	1.565941	-0.15	-0.18411	-0.71832	1.861044	2	-0.58214	-2.53165	0.399322	0.334076
0.762937	1.519069	0.850115	-0.48048	-1.53509	-3.3033	0.595613	3.218975	-0.55522	-2.39637	1.390397	3.26087
0.903609	-0.20427	-0.46132	0.075802	-2.04174	-4.12371	-0.05447	0.82996	-1.25846	-5.78261	-1.60652	0.105263
0.580903	-0.05416	-0.15892	2.955752	2.288688	-0.10695	-0.0637	-2.00803	0.738919	-2.82609	-1.64631	-0.10526
0.545353	0.017977	-1.66362	-2.06139	-0.25198	-2.23881	0.268218	-3.77593	0.346414	-0.17786	1.208577	1.263158

-0.21949	-0.65766	0.601412	0.711469	0.463474	0.218579	-2.24583	-7.32074	0.367598	4.666667	2.005784	3.979592
1.169769	1.038094	-0.90916	1.585227	0.733702	-2.05913	-1.6434	-3.92202	-1.26967	-3.32739	-2.3381	3.444976
-0.22583	-0.99893	-2.8094	-1.18461	-0.12786	-1.38298	1.632074	4.095238	-1.34366	-2.54237	1.207451	-1.01946
-0.43866	-0.85586	-1.05469	-4.23714	1.416745	0.798297	-1.1121	-2.60181	-2.94239	-3.07692	-0.12319	7.276119
-0.15137	-0.04534	-1.36151	-3.05474	1.12228	2.146597	0.699301	5.529954	1.141955	1.311111	0.274609	2.835052
-0.77213	-0.54348	-2.8903	-3.26274	0.129762	6.663276	-1.18196	-0.67391	2.839589	5	0.640199	6.575576
-0.62101	0.798165	-6.94635	-3.64762	0.209592	7.52381	-0.69819	1.880531	-7.0206	-19.819	-1.15528	-1.41732
2.657267	3.585859	-0.91299	-0.71379	-0.30276	7.699115	-0.55361	0.991189	-10.4617	-22.3611	-0.7807	19.45455
-1.44001	-1.50695	1.026743	5.771881	-1.29316	-4.5935	-2.33531	-1.45374	7.132728	18.97887	0.254405	7.121212
-1.53983	-1.97464	-3.9018	-3.69329	0.306105	-1.6323	1.033682	2.857143	1.814425	13.62857	-0.06043	-6.95035
0.157398	0.660173	4.899794	2	-0.40275	1.643714	1.194871	1.299559	1.175259	-1.35468	0.068289	-1.05263
1.020898	0.406578	0.782206	1.92926	-0.88244	-2.33766	1.512918	7.308378	0.600604	-1.56566	-0.55701	-2.118
0.100753	0.058212	-1.38746	-6.31498	-0.40961	2.272727	0.242304	0.854167	2.522297	-2.72959	0.801115	2.88097
0.234358	-0.25986	-1.99545	-0.21172	-0.55307	-1.12554	-1.03401	-1.09053	-0.42892	-2.69231	0.565286	1.811594
-0.2601	0.183199	-0.90634	2.149837	1.650481	1.061008	1.558786	2.465078	-0.34287	-0.81152	0.112805	-1.61972
-0.82618	-1.6694	2.367532	-1.98562	0.432656	0.519481	0.563945	-1.14734	-0.11247	-3.00261	-0.14008	0.660793

Appendix 2: Market Return and Daily Return of each bank During the Period of ((Days -15 to +15))

Rm-ICICI	R-ICICI	Rm-HDFC	R-HCFC	Rm-IOB	R-IOB	Rm-OBC	R-OBC	Rm-BOB	R-BOB	Rm-PNB	R-PNB
-1.23295	-0.16527	0.888245	-2.62579	-0.14659	-2.36254	-0.77611	-3.13008	-4.07219	-10.4324	0.144983	6.891496
-0.81176	-0.08519	0.379614	-3.1885	0.313192	-6.2605	1.688799	2.648172	-0.32444	-7.82353	0.266179	-10.631
-1.17577	-1.63465	-0.58936	2.828602	0.626874	-1.25448	0.4308	-0.06174	0.948618	-6.41975	-0.68345	-1.65414
-2.34266	-2.40804	-3.6912	-0.75516	1.140284	2.23314	-3.49718	-6.65298	1.52367	3.665786	-0.72348	-5.23169
-0.47941	-0.98723	-0.82441	-4.24172	-0.75444	-4.93407	3.580758	2.442922	-2.95959	-2.74485	-0.68823	-5.03145
-1.48301	-2.86686	-4.57	0.017728	0.294167	-1.0177	0.236455	4.720358	1.772994	2.886466	-0.44877	7.107843
1.252229	4.377413	-1.21706	-1.83158	-1.14179	-5	-1.14159	1.584582	0.24546	-2.51534	0.43123	3.770739
-0.53504	-0.7791	0.786112	1.814838	-0.27016	-9.47826	-1.08747	0.951374	0.034556	1.274083	0.438939	7.997118
-0.28107	-0.55967	2.904341	2.949833	-0.68069	-0.63725	1.193393	0.062526	-0.06555	2	-2.23338	0
0.066496	-0.4213	3.272758	3.92691	1.891519	0.679612	1.369798	3.169969	-0.02507	-1.53846	-0.39752	1.25
-1.02309	-1.55827	-0.98836	-1.1303	0.788402	-0.80189	0.615937	1.35655	-2.00665	-3.34539	0.196149	-2.64858
0.919431	1.855885	-0.76639	0.538462	-0.37086	-1.21495	-0.35684	1.98	-1.51671	-1.77215	0.616658	5.277221
-0.79842	-0.45187	-2.07706	-1.63462	0.601084	2.300469	0.65753	1.206226	2.181001	-0.38685	0.379188	0.063291
-1.29038	-1.93396	-0.50793	-2.02565	0.688082	-0.86364	0.210676	0.264951	-1.06063	-2.15394	-0.00603	-2.19711
-0.50128	-1.11111	-0.95087	-1.80093	-0.86676	-4.19108	-0.13426	-1.53587	0.810009	2.182285	-0.46062	5.760518
-0.13894	-1.00865	0.723359	-5.14701	-0.42962	-1.85357	1.471859	3.968872	-1.20483	0.990712	0.122796	4.567901
0.693024	0.796332	0.037248	1.748252	-0.12957	-0.70192	-1.4368	-8.53704	-0.68681	-3.50109	-0.02469	-3.88007
-1.50927	-3.01118	-0.87542	-1.17427	-1.85835	-3.71765	-0.6677	0.874636	-0.04014	-4.12338	-1.00687	2.193784
-0.02476	0.925743	0.078381	1.451724	0.16715	-0.29126	1.313238	-0.96311	-2.20213	-0.20311	-1.63697	-6.13095
-0.71828	-1.15972	-1.1295	-0.44863	0.568137	-2.16763	0.524825	-0.99297	0.961087	1.016949	-1.47675	-6.0625
0.711778	0.850541	-3.1907	-3.39378	0.307362	-0.78663	0.297047	-1.17769	1.093397	-1.68874	0.9136	-1.04167
0.88641	3.776332	-2.40297	-3.05	-0.35823	-1.3834	-0.56028	-1.70337	1.336584	1.227605	-0.78165	-1.50327
-0.47861	0.5103	1.305476	-3.7869	-0.13653	4.108911	-0.04436	-0.42373	0.228775	-1.69935	-0.69996	-3.35747
1.295643	0.929368	-1.45843	-3.28571	1.326331	-2.66355	1.460361	2.784272	-1.14557	-0.59603	0.615938	-2.65668
0.440921	0.207795	1.526883	4.868	0.260909	1.7991	-1.19863	-1.06996	1.235337	2.310231	1.12216	4.705882
0.370838	-1.07264	2.185791	1.675573	1.847991	-0.58824	0.550781	0.645833	0.529254	-0.51613	-0.25205	3.141361
-0.95891	-0.58768	-2.49777	-0.16058	0.389455	-0.53659	0.265198	-0.3516	-0.61706	-4.7112	-0.17425	-0.6993
0.413426	1.142447	-3.2503	-4.34317	-0.16017	2.260442	-2.06897	-1.82195	1.598257	1.581959	1.278114	5.893658
0.764466	0.432818	1.895148	0.458015	1.118037	-2.78302	-0.80878	0.106383	0.733368	1.036096	-0.8112	-1.45808
-0.2933	-0.43173	-3.37602	-1.3226	0.025992	0.666667	-0.24038	-0.7265	-2.62187	-5.70957	-0.66879	-3.50769

Appendix 3: Expected Return and Actual Return of each bank during the Period of ((Days -15 to +15)

ICICI(ER)	AR-ICICI	HDFC(ER)	AR-HCFC	IOB(ER)	AR-IOB	OBC(ER)	AR-OBC	BOB(ER)	AR-BOB	PNB(ER)	AR-PNB
-1.4518	-0.16527	1.012838	-2.62579	-0.45946	-2.36254	-1.08954	-3.13008	-7.19537	-10.4324	0.237202	6.891496
-0.90974	-0.08519	0.534217	-3.1885	-0.0691	-6.2605	2.383518	2.648172	-0.79047	-7.82353	0.297557	-10.631
-1.37821	-1.63465	-0.37758	2.828602	0.197216	-1.25448	0.610997	-0.06174	1.385188	-6.41975	-0.17536	-1.65414
-2.88	-2.40804	-3.29642	-0.75516	0.633101	2.23314	-4.92353	-6.65298	2.367951	3.665786	-0.19529	-5.23169
-0.482	-0.98723	-0.59877	-4.24172	-0.97552	-4.93407	5.049288	2.442922	-5.29394	-2.74485	-0.17774	-5.03145
-1.77363	-2.86686	-4.12337	0.017728	-0.08525	-1.0177	0.337165	4.720358	2.794047	2.886466	-0.05849	7.107843
1.746619	4.377413	-0.96825	-1.83158	-1.30438	-5	-1.6045	1.584582	0.183491	-2.51534	0.379752	3.770739
-0.55359	-0.7791	0.916731	1.814838	-0.56436	-9.47826	-1.52824	0.951374	-0.17694	1.274083	0.383592	7.997118
-0.22673	-0.55967	2.909985	2.949833	-0.85178	-0.63725	1.685491	0.062526	-0.34802	2	-0.94723	0
0.22058	-0.4213	3.256665	3.92691	1.2709	0.679612	1.934046	3.169969	-0.27885	-1.53846	-0.03296	1.25
-1.18171	-1.55827	-0.75305	-1.1303	0.334353	-0.80189	0.871855	1.35655	-3.66536	-3.34539	0.262682	-2.64858
1.318307	1.855885	-0.54417	0.538462	-0.64986	-1.21495	-0.49878	1.98	-2.82806	-1.77215	0.472096	5.277221
-0.89257	-0.45187	-1.77751	-1.63462	0.17532	2.300469	0.93046	1.206226	3.491331	-0.38685	0.353836	0.063291
-1.52572	-1.93396	-0.30096	-2.02565	0.249182	-0.86364	0.300843	0.264951	-2.04863	-2.15394	0.161998	-2.19711
-0.51015	-1.11111	-0.71776	-1.80093	-1.07088	-4.19108	-0.18517	-1.53587	1.148305	2.182285	-0.06439	5.760518
-0.04381	-1.00865	0.857681	-5.14701	-0.69975	-1.85357	2.077849	3.968872	-2.29505	0.990712	0.226152	4.567901
1.026921	0.796332	0.21205	1.748252	-0.44501	-0.70192	-2.02046	-8.53704	-1.40976	-3.50109	0.152707	-3.88007
-1.80743	-3.01118	-0.64677	-1.17427	-1.91274	-3.71765	-0.93679	0.874636	-0.30461	-4.12338	-0.33642	2.193784
0.10314	0.925743	0.250756	1.451724	-0.19309	-0.29126	1.854353	-0.96311	-3.99943	-0.20311	-0.65021	-6.13095
-0.78942	-1.15972	-0.88586	-0.44863	0.147348	-2.16763	0.743478	-0.99297	1.406497	1.016949	-0.57042	-6.0625
1.051058	0.850541	-2.82545	-3.39378	-0.07405	-0.78663	0.42254	-1.17769	1.632616	-1.68874	0.619973	-1.04167
1.27581	3.776332	-2.08419	-3.05	-0.63914	-1.3834	-0.78543	-1.70337	2.048221	1.227605	-0.22426	-1.50327
-0.48097	0.5103	1.405453	-3.7869	-0.45092	4.108911	-0.05851	-0.42373	0.154977	-1.69935	-0.18358	-3.35747
1.802492	0.929368	-1.19538	-3.28571	0.791055	-2.66355	2.061648	2.784272	-2.19379	-0.59603	0.471737	-2.65668
0.702466	0.207795	1.613797	4.868	-0.11349	1.7991	-1.68486	-1.06996	1.87519	2.310231	0.723835	4.705882
0.612268	-1.07264	2.233829	1.675573	1.233944	-0.58824	0.780051	0.645833	0.668495	-0.51613	0.039481	3.141361
-1.09912	-0.58768	-2.1734	-0.16058	-0.00435	-0.53659	0.377663	-0.3516	-1.29055	-4.7112	0.078221	-0.6993
0.667079	1.142447	-2.88154	-4.34317	-0.47099	2.260442	-2.91117	-1.82195	2.495421	1.581959	0.801501	5.893658
1.118868	0.432818	1.960335	0.458015	0.614213	-2.78302	-1.13557	0.106383	1.017325	1.036096	-0.23898	-1.45808
-0.24248	-0.43173	-2.99983	-1.3226	-0.31293	0.666667	-0.3347	-0.7265	-4.71678	-5.70957	-0.16806	-3.50769

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