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## ***From the Editor***

*The eighth edition of Florya Chronicles, again comes up with a very interesting set of topics. In this issue, we have four articles and each has its own flavour of empirical research.*

*The very first article is focused on a fieldwork based research conducted in Nigeria about the social and economic impact of the Boko Haram, a phenomenon that rose to fame with its commitment to terrorism, particularly in Nigeria. As such this paper is unique. It provides to the world a matchless understanding of Boko Haram's socioeconomic, political and social basis within which it has flourished. The paper follows mainly the Root Cause (RC), theoretical approaches and the relationship between social, economic, political, and demographic changes. Until recently, the philosophy and activities of the group have been subjected to various interpretations alongside ethnic, regional, cultural and religious bifurcation amongst the Nigerian people. This article by Amadou Bah argues that, Nigeria's longstanding political schism, socioeconomic division, corruption and mismanagement of its resources, from independence to the present, has played an immense role in fueling the rise of Boko Haram. Population density coupled with lack of education or skilled training has led to a high demand for the country's resources and became the main reason for increased youth unemployment. The inhabitants, particularly of the Northern regions have become resentful against the government and also on Western influence whom they blamed for their economic plight. This has resulted with the formation of Boko Haram Sect. Factors such as poverty, rapid growth of population, social inequality and exclusion, dispossession and political grievance, as well as oppression, security force brutality and human rights abuse, are considered as the independent variable on which the emergence of terrorist organizations is dependent.*

*The second article by Salvatore Joseph Terragosa is an empirical study that combines fundamental intrinsic-value theory together with the modern-portfolio approach. This is done so to help discern the main determinants of common-stock valuation. In a way, this study differs from previous ones since it performs a simulated ex-ante controlled valuation experiment. This is to say, for each dividend-paying firm in a*

*cross-sectional sample alternately employed in a stock-valuation model are first, actual dividends; and then second, a measure representing the dividend-paying-ability of the firm. The model generates a set of results for each alternative strategy then generalises and makes a comparison to see which strategy works best. An analysis-of-variance and a comparison-of-forecast-errors respectively indicates that a dividend-paying-ability measure (1) has greater informational content and (2) generally leads to better price appraisal when employed in a valuation model.*

*The paper by Sedat Aybar and Patricia Siatou investigates the status of female inclusion problems in the economic development of Cameroon. This paper uses the annual data on Gross Domestic Product (GDP) and household assets survey between two time periods: 2007-2011 and 2012-2016. This data is obtained from National Institute of Statistics of Cameroon. There are also different educational statistics obtained from UNESCO and World Development Indicators with respect to the year 2016. Investigation particularly focuses on the level of female inclusion in Cameroon while putting a special focus on their education. The paper finds that Cameroon has also benefitted from the global amelioration in female inclusion effort however, not to a desired level. It can be concluded that growth in Cameroon has not been significantly inclusive because equity did not increase parallel to the economic growth. Hence, despite the positive developments, women inclusion still faces many problems in Cameroon. This can also be captured by the very low female representation in important positions in the country.*

*The last paper, by Insel and Korkmaz, primarily investigates the interdependence and/or contagion effect of economic crisis in Turkey, Brazil and Russia with some of the Gulf Cooperation Council countries such as Kuwait, Oman and Qatar. The investigation covers the period between August 2004 and March 2012. The paper also aims to present an alternative view on the transmission process of the financial crises across the mentioned economies via any possible interaction channel between the interdependence effect and contagion. In the article, an exchange market pressure index and the outlier test of Favero and Giavazzi (2002) are used. The estimation results reveal that there are fifteen cases in which the interdependence and the contagion effects could be related to each*

*other. This is a significant finding. Consequently, the paper suggests that the policy-makers are less likely to prevent the financial crises, even if they did predict its forthcoming, the interdependence effect exists to produce a greater impact of the crisis dynamics.*

*Finally, as per usual, putting together a journal is a collective effort. We have inadvertently received help from our assistants Ms. Deniz Keskin, Ms. Ecem Coşar and Mr. Zafer Çakmak at the Faculty of Economics and Administrative Sciences. We also thank Prof. Celal Nazım Irem, the Dean of the Faculty for his continuous and tireless support for Florya Chronicles. Our thanks also go to the Rector of Istanbul Aydın University, Prof. Dr. Yadigar İzmirli and our President of Board of Directors, Dr. Mustafa Aydın, whose vision and endless energy for higher achievement in academic excellence has always been an inspiration for us.*

***Prof. Dr. Sedat AYBAR***  
***Editor***

# ***AN ASSESMENT OF THE BOKO HARAM INSURGENCY IN NIGERIA***

**Amadu BAH<sup>1</sup>**

## **Abstract**

This paper will be based on a field research conducted in Nigeria about the Boko Haram crisis. The paper will provide an understanding of the Boko Haram phenomenon, especially from the perspective of its socioeconomic, political and social determinants. It will focus mainly on the Root Cause (RC) theoretical approaches and the relationship between social, economic, political, and demographic changes and Boko Haram terrorist activity that has plagued the country, especially the northern region for more than a decade. Since its emergence in 2002, Boko Haram has perpetrated a series of deadly attacks on key governmental agencies, market areas, schools, religious centers, including Mosques and Churches, kidnappings of politicians, foreigners and young boys and girls, and extension of violence in the neighboring countries of Cameroon, Chad and the Republic of Niger. The philosophy and activities of the group have been subjected to various interpretations alongside ethnic, regional, cultural and religious bifurcation amongst the Nigerian populace. However, this article argues that Nigeria's longstanding political schism, socioeconomic division, corruption and mismanagement of its resources, from independence to the present, has played an immense role in fueling the conflict. The high population in these areas coupled with lack of education or skilled training has led to a high demand for the country's resources and increased youth unemployment. Consequently, the inhabitants of the north have become resentful against the government and also on Western influence whom they blamed for their economic plight. The results of such resentment was the formation of the Boko Haram Sect. Factors such as poverty, population explosion, social inequality and exclusion, dispossession and political

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grievance as well as oppression, security force brutality and human rights abuse are considered as the independent variables on which the emergence of terrorist organizations is dependent.

**Keywords:** *Boko Haram, Nigeria, Chad, Cameroon, Niger, terrorism, religious cleavages, socioeconomic and political grievance, poverty, unemployment, income inequality, corruption, oppression, police force brutality*

## **INTRODUCTION**

Nigeria has the largest population in Africa and is economically considered as the giant of Africa, with its oil wealth which ranks the country 13<sup>th</sup> largest oil producing nation of the world. Despite its oil wealth and vast human resource, successive Nigerian government has mismanaged the country's resources, which have left, especially the northern part of the country economically marginalized, destitute, and disillusioned. This unequal distribution of resources is believed to be responsible for the emergence of Boko Haram. Thus, the mere mention of Nigeria in other parts of the world brings images of crime, corruption, ethnic or regional conflict and terrorism. Indeed, the undying Boko Haram insurgency, which has resulted in the death of thousands of civilians and displaced people, serves as a storm that threatens the very fabric of the nation. The group claimed to be fighting for its stated goal, that is to restore Sharia`ah law in Nigeria and overthrow the Nigerian government which it sees as Westernized and corrupt. But its tactics, which include suicide bombings and targets of all and sundry has only further brought misery and suffering to the people, especially northern Nigeria. Thus, this article assesses the insurgency in terms of its goal, tactics and targets since its violent eruption in 2009. The question that this article attempts to answer is, has Boko Haram succeeded in its goal to restore Sharia`ah law in Nigeria?

Boko Haram has used various tactics to achieve its goal of inciting fear in the general public. Due to its disadvantage in military might compared to the Nigerian security forces, the sect has adopted a hit and run tactics instead of man to man or arm to arm confrontation with the military. Despite its weakness, the sect has managed to dictate the pace in the fight

exploiting the weaknesses of the state. The first step the group adopted in its fight was to recruit and send members to train with other factions in the Sahara Desert. The group believed that its members have the right to protect themselves from violent actions; that God will grant victory to those who have been driven away from their homes. Some of the cells established are believed to have no direct contact with the top leaders and can freely take their own independent decisions free from the interference of the top leadership. Members were also sent for military training and the making and use of improvised explosive devices. The sect made extensive use of communication strategies, both verbal, through YouTube and telephone interviews, and non-verbal or violent attacks to attract attention to their struggle and set the agenda for the press. Lacking the military might and financial resources, the sect used psychological warfare by embarking on guerilla tactics of hit and run making the Nigerian forces a reactive opponent rather than a proactive one.

### **MARX ABRAHMS SEVEN PUZZLING TENDENCIES**

In order to assess the activities of the insurgency, I will look at Marx Abrahms “seven puzzling tendencies of terrorist organizations”. Abrahms analyzed the claim that “terrorists are rational people” to categorize terrorists as “organization” and came to the conclusion that building social ties is the main motive to form such an organization. In short, what seems to be a political or religious purpose hides the real reason to form such a terrorist organization. The seven puzzling tendencies are:

- Terrorist organizations fail to achieve their stated goals because they attack civilians;
- Terrorist organizations do not usually make use of other nonviolent means to achieve their goals, instead they resort first to the use of terrorism, which should have been the last resort;
- Terrorist organizations usually refuse to negotiate and compromise with their target government;
- Terrorist organizations usually have protean political platforms or can change into many different forms;
- Terrorist organizations, attack anonymously, making it difficult for target government to make informed policy concessions;

- Terrorist organizations usually attack each other rather than the common enemy, they claim to fight; and
- Terrorist organizations do not disband even though they may fail constantly to achieve their goals or even if their political and economic grievances are met.

### **1. COERCIVE INEFFECTIVENESS**

Boko Haram has used terrorism for almost a decade, but this strategy has not helped it achieve its goals. Sharia law was established in Northern Nigeria in 1999, even before Boko Haram started using violence. Since then, Nigeria, Northern Nigeria included, have not evolved towards a “pure” Islamic State the way the sect conceptualizes it. Western elements have not been erased from the country and the government has not been overthrown and replaced by an orthodox one. Rather, the sect’s activities have driven it even further away from the society. The government is now heavily fighting it, while most Nigerians consider it as a criminal organization. The more Boko Haram uses violence against civilians, the thinner becomes the opportunity to find an agreement with the government. If the sect was a rational organization, it would have shifted to another strategy. The fact that it is still targeting civilians and using terrorism, despite this strategy’s lack of success, shows that it is rather an irrational group.

### **2. TERRORISM AS THE FIRST RESORT AND 3. REFLEXIVELY UNCOMPROMISING TERRORISTS**

According to the Strategic Model, rational organizations weigh their political options and choose terrorism only as a last-resort strategy, because they do not have other political alternatives. So many attempts have been made by the Nigerian government through negotiation strategies to bring the crisis to an end. However, these negotiations have only yielded few positive results. Usually, Boko Haram leaders are willing to negotiate with government only in a situation where the negotiation would lead to the release of their senior members captured by the Nigerian military or security forces. The sect still does not show any willingness to compromise with governmental authorities and stop fighting altogether.

#### **4. PROTEAN POLITICAL PLATFORMS**

Boko Haram is typically a protean organization, both in term of activities and goals. At first, it was a rather peaceful organization trying to uphold the Prophet's teachings. It then became violent in 2002 and started using widespread terrorism in 2009. As such, its activities have been evolving. During its first stage of development, the sect refrained from using violence, but in recent times it has now become the most violent organization in the world. Its goals have also been unstable. Even though it has always tried to uphold rigorous Islamic values, it did not try to establish an Islamic State and Sharia law in Nigeria from the beginning. And its targets have been various: Muslim clerics, Christian churches and people, State symbols and offices. There is no consistency with regard to its activities, goals and targets, which tends to characterize Boko Haram as an irrational organization.

#### **5. ANONYMOUS ATTACKS**

Boko Haram is a rather secret organization. It is very difficult to understand its origin and identify its members, which come from different layers of society. There are individuals who join the sect secretly, without the knowledge of their family or close acquaintances. More importantly, most attacks are not re-vindicated by the sect. It is sometimes difficult to understand whether it comes from Boko Haram, from criminal gangs or from other violent actors. As such, Boko Haram is not trying to achieve its religious goal when using violence and killing civilians.

#### **6. TERRORIST FRATRICIDE AND 7. NEVER-ENDING TERRORISM**

Boko Haram has never been a monolithic group. It has been made up of several factions which has affected its modus operandi. Recently, these divisions have grown sharper, especially between the factions of Abubakar Shekau and Abu Musab al-Barnawi, who pledged allegiance to the now moribund Islamic State group in Iraq. Abubakar Shekau accused Al-Barnawi of polytheism and claimed that he is the only true leader of the movement. Apart from the rift between Shekau and Al-Barnawi, several other factions have emerged. Notable among them is the Ansaru group led

by Mamman Nur. The division between these factions and the leadership struggle led to a fierce fighting that left hundreds of Boko Haram fighters dead.<sup>2</sup>

Boko Haram fulfills the criterion of “never-ending terrorism”. Despite its lack of success during the last decade, the sect has not disappeared, though it has grown weaker. Its inability to impose Sharia law in Nigeria has not led to its disappearance, which would happen if it were a rational organization.

## **CONCLUSION**

What these seven puzzles show are that Boko Haram is an irrational organization. Its official rhetoric states that the sect’s purpose is to establish a “pure” Islamic State in Nigeria, impose Sharia law and reject all Western references. However, the strategy it uses (terrorism), its targets (civilians), its refusal to use normal settings to advance its claims and its inconsistency shows that Boko Haram’s religious rhetoric is nothing but words. Following Abrahms’ theory, we can thus affirm that the organization’s members are pursuing other goals. They did not join Boko Haram because they had a strong belief in the necessity of establishing an Islamic State in Nigeria and rejecting Western symbols, but because they were eager to develop strong social and economic ties. Most of the sect members are socially alienated and isolated. By joining such an organization, they can make up for this alienation. According to Abrahms, “terrorist organizations are particularly attractive outlets.”<sup>3</sup>

But religious organizations are also very attractive because of the particular values they uphold. It is not about sharing a hobby; it is about life-related values. Boko Haram combines these two characteristics. It can now be affirmed, once again, that religion is not the primary cause of Boko Haram’s terrorism and not the real reason why its members joined it in the first place.

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<sup>2</sup> Jacob Zenn, *Making sense of Boko Haram’s different factions: Who, how and why?* 2016.

<sup>3</sup> Abrahms Max, *op.cit.* p.100

Notwithstanding the modest achievement made by the government, Boko Haram remains the biggest security challenge facing Nigeria today. To win the fight against Boko Haram there is the need for Nigeria to evolve and implement a clear, comprehensive and robust counter terrorism strategy that addresses the grievances and feelings of marginalization that the extremists exploit in their recruitment drive, rationalization of their anti-secular ideologies and staging of violent attacks in Nigeria.

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# ***Discerning the Determinants of Common Stock Valuation: An Empirical Analysis***

**Salvatore Joseph TERREGROSSA<sup>1</sup>**

## **Abstract**

This empirical study combines the fundamental intrinsic-value theory with the modern-portfolio theory to help discern the main determinants of common-stock valuation. This study differs from previous studies in that a simulated ex ante, controlled valuation-experiment is performed: for each dividend-paying firm in a cross-sectional sample alternately employed in a stock-valuation model are first, actual dividends; and then second, a measure representing the dividend-paying-ability of the firm. For each alternative strategy a set of results is generated, then generalised and a comparison is made to see which strategy works best. An analysis-of-variance and a comparison-of-forecast-errors respectively indicate that a dividend-paying-ability measure (1) has greater informational content and (2) generally leads to better price appraisal when employed in a valuation model.

**Keywords:** *Valuation, Dividend-paying-ability, CAPM, JEL Classification: G 12*

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## **1) INTRODUCTION**

This study begins by posing the question: What do investors capitalise to determine the value of a share of common stock? That is to ask, what is the most important determinant of the intrinsic value of the common stock of a firm: actual dividends that a firm pay (or is expected to pay) to its shareholders; or some alternative measure that reflects firm earnings and defines the potential dividend-paying-ability of the firm.

Of course Miller and Modigliani (1961) have shown that capitalising dividends should lead to the same result as capitalising earnings (the broadest measure of the potential dividend-paying-ability of the firm), under a certain set of economic assumptions. However, when these assumptions are relaxed, certain ambiguities and conflicts arise regarding the appropriate variable to capitalise to determine the intrinsic-value of a share of common stock.

This paper is concerned with the potential ambiguity of the signalling effect of cash-dividends. On one hand there is the notion of the greater the current and future expected dividends, the greater the intrinsic current-value of the stock; all other things are equal. Implicit in this idea is the basic tenet of asset-valuation; only an asset's stream of cash flows (current and future) is relevant to its fundamental value. The greater the expected future cash flows (dividends), the greater the fundamental value of the asset (share of stock). In this sense, dividends convey information about the firm's prospects in a direct manner: The greater the level of dividends the greater must be the firm's earnings and thus the more favourable the firm's prospects.

On the other hand, conflicting with the above approach is the notion of a contrary signalling effect of the firm's dividend-pay-out policy: A high dividend-pay-out ratio may suggest less of a need for retained earnings and thus imply a lack of profitable economic investment opportunities. A low dividend-pay-out ratio may suggest more of a need for retained earnings, implying the existence of profitable economic investment opportunities. All other things equal, a lower dividend-pay-out ratio may suggest higher share value according to this line of reasoning.

Thus investors are faced with an inherent ambiguity when trying to determine share value with discounted-dividend approach. The present study attempts to resolve this ambiguity by showing that it is the firm's ability to pay dividends (reflected by a measure of firm-earnings) that better determines the intrinsic value of its common stock. The study's premise is that modelling dividend-paying-ability implicitly takes into account, to some extent, the impact of retained earnings on the value of the firm: Reinvested earnings that are not paid out to shareholders may lead to an increase in firm size; and therefore an increase in future net cash inflows, and thus an increase in firm value, other things being equal. Therefore, modelling dividend-paying-ability in stock valuation appears to capture a factor influencing firm value that modelling dividends does not. In that case, modelling dividend-paying-ability in stock valuation may lead to more accurate appraisals of firm value.<sup>2</sup> Indeed, many analysts have found that using dividends, or specific forecasts of dividends, in valuation models gives erroneous results.<sup>3</sup>

## **II) HOW THIS STUDY DIFFERS FROM PREVIOUS WORK:**

### **A) METHODOLOGICAL APPROACH**

Previous studies in the area of firm-value determination have been of two main types: 1) Surveys of investors and financial analysts<sup>4</sup>; and 2) Analysis of variance to identify which company fundamentals are most important in determining stock prices.<sup>5</sup>

In studies of the former type, firm-earnings emerges as the single most important variable in the eyes of investors and analysts. In studies of the latter type, firm-earnings is found to be the variable with the greatest explanatory power regarding movements in security returns and prices. The suggestion from these two types of studies is that dividend-paying-ability (as represented by some measure of firm-earnings) and not dividends may be the main determinant of the intrinsic value of a share of common stock.

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<sup>2</sup> Lending support to this hypothesis is a study by MacDonald and Power (1995) which demonstrates that retained earnings contain relevant information for stock prices beyond that contained in dividends.

<sup>3</sup> See, for example, Michaud and Davis (1982).

<sup>4</sup> See, for example, Clayman and Schwartz (1994) and Chang and Most (1980)

<sup>5</sup> See, for example, Jacque and Rie (1994), Vander Weide and Carlton (1988), and Malkiel (1970).

However, perhaps the ultimate litmus test is to discern which variable leads to most accurate appraisal of firm-value when applied in a stock valuation model. To date, little, if any, work has been done in this area.

To this end, the current study performs a simulated, ex ante valuation-experiment to discern whether actual dividends or an alternative measure representing the firm's ability to pay dividends is the better variable to use in a stock valuation model. This study differs from previous studies in the sense that a controlled valuation-experiment is conducted: For each dividend-paying firm in a cross-sectional sample, alternately employed in a valuation model are first, actual dividends; and then second, a measure representing the dividend-paying-ability of the firm. For each alternative strategy a set of results are generated, then generalised, and a comparison is made to see which strategy works best, on average. This cross-sectional experiment is conducted four times, each time with a different sample over a different horizon of equal length. The findings indicate that a measure of dividend-paying-ability, when compared to actual dividends, (1) generally has greater informational content and (2) generally leads to better firm appraisal when employed in a valuation model.

## **B) MEASURE OF DIVIDEND-PAYING-ABILITY**

The previous studies in this area (mentioned above) are comparing firm-earnings versus dividends as the main determinant of firm value. Implicitly in these studies firm-earnings is taken as the broadest measure of dividend-paying-ability. We define dividend-paying-ability more precisely, in a narrower sense. This more precise dividend-paying-ability measure is equal to the product of firm earnings ( $NE_{i0}$ ) and the historical average firm pay-out-ratio (dividends-to-earnings) of 45%. Firm earnings ( $NE_{i0}$ ) is a normalised earnings measure, taken as the annual average of a firm's previous five-year earnings-per-share, to smooth out any possible cyclical fluctuations. The pay-out-ratio of .45 is the average pay-out-ratio of the firms in our samples over the years of our study.<sup>6</sup>

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<sup>6</sup>This type of precise measure of dividend-paying-ability was successfully applied in a study by financial analysts Sorensen and Williamson (1985). This precise measure of dividend-paying-ability was also successfully used in a combination-forecast study by Terregrossa (1999).

The rationale behind the use of this more narrowly defined measure of dividend-paying-ability in this study is two-fold. First is the inherent signalling effect of this precise measure when compared to actual dividends: If a firm's dividend-paying-ability measure,  $.45(NE_{i_0})$ , is different from its actual dividend,  $D_{i_0}$ , then the dividend-paying-ability measure will embody information that the actual dividend variable will not. More precisely, if a firm is paying an amount of dividends,  $D_{i_0}$ , that is less than its standardised, potential pay-out measure,  $.45(NE_{i_0})$ , this may imply that a firm has profitable economic investment opportunities, financed at least in part by retained earnings. If, on the other hand, a firm is paying dividends,  $D_{i_0}$ , in excess of its standardised, potential pay-out measure,  $.45(NE_{i_0})$ , this may indicate that that a firm has a lack of profitable investment opportunities, and thus less of a need for retained earnings. In the former case, this dividend-paying-ability measure,  $.45(NE_{i_0})$ , may reflect positive information regarding a firm's prospects; in the latter case, negative.

Secondly, this more narrowly defined measure of dividend-paying-ability is in effect a compromise, a middle ground between capitalising earnings and capitalising dividends. By capitalising the standardised, potential pay-out measure we maintain a signalling effect concerning a firm's prospects; and at the same time stay reasonably close to the basic asset-valuation tenet that only actual cash flows are relevant to the valuation process. In this sense, we seem to be having our cake and eating it, too.

### **C) MEASURE OF SYSTEMATIC RISK**

One aspect of modern portfolio theory is that only the systematic part of an asset's total risk is relevant to its intrinsic value. Thus, we use the Capital Asset Pricing Model (CAPM) as a method of security valuation and appraisal.<sup>7</sup>

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<sup>7</sup> Markowitz (1959), Sharpe (1964) and Lintner (1965) shared the 1990 Nobel Prize in Economics for their work in developing the CAPM.

The CAPM has come under close scrutiny lately.<sup>8</sup> The long-run relationship between an asset's expected-return and its index of systematic or market-related risk (beta) has been found to be flat, instead of upward sloping. The main problem seems to be in the measurement of beta. The traditional or conventional approach has been to use historical security- and market-return information to estimate a security's future level of covariance-of-return with the market portfolio. This has been likened to negotiating the forward path of a car solely by looking in the rear-view mirror.

We make an adjustment in the measurement of a firm's beta that allows us to look through the car's front window. We incorporate forward-looking information regarding a firm's systematic-volatility of return in our beta estimation. Specifically, we utilise the dispersion (standard deviation) of financial analysts' earnings forecasts, which has been found to be the most important explanatory risk variable with respect to security returns and prices.<sup>9</sup>

In fact, some researchers maintain that dispersion of analysts' forecasts may actually serve as a more reliable and useful proxy of a security's systematic risk.<sup>10</sup>

Incorporating this forward-looking systematic risk measure into our beta estimation (and our use of a fairly broad measure of the market portfolio) may legitimise the use of the CAPM as a valuation/forecasting model in our study. See the appendix for a detailed explanation of the estimation of a firm's expected-return,  $E(R_i)$ , from the modified CAPM, incorporating the dispersion of analysts' forecasts as a proxy for a firm's ex ante systematic risk.

#### **D) HORIZON:**

Many studies focus on the near- or short-term (quarterly- and one-year horizons) when evaluating security returns, prices, and related variables. We employ a relatively longer horizon (five-year period) in our analysis. The justification for this is that financial markets seem to employ a multi-

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<sup>8</sup> See Fama and MacBeth (1992) and Malkiel (1999).

<sup>9</sup> See Malkiel and Cragg (1982) and Friend, Westerfield and Granito (1978).

<sup>10</sup> See Malkiel (1981), and Carvell and Strebel (1984), Harris (1986) and Conroy and Harris (1987).

year horizon when estimating security returns and prices. Survey research<sup>11</sup> and empirical evidence<sup>12</sup> support this premise that financial markets utilise a multi-year horizon. The implication is that analysts, researchers, and investors may gain more insight into estimating intrinsic security value by focusing on a multi-year horizon.

### III) METHODOLOGY

Specifically, our approach is to employ the CAPM as a valuation model to generate simulated, ex ante forecasts of percentage-change in stock price over a five-year forecast horizon. The central idea is, the more accurate the forecasts of share-price performance, the more accurate the appraisals of firm-value.

For each firm in a given sample, we twice generate a forecast of the five-year growth-rate of price-per-share, using in turn the two alternative strategies mentioned above. Thus, for each sample of firms over a given five-year horizon two sets of share-price growth-rate forecasts are generated, each set reflecting an alternative strategy: One that employs actual dividends as determinant of value; another that utilises our above-defined measure of dividend-paying-ability.

For each firm and both alternative strategies, all other variables that are employed in the model are identical. Thus, any difference between the pair of outcomes for each firm is due solely to the choice of employing actual dividends or employing our more precise, standardised measure of dividend-paying-ability to generate forecasts of share-price growth.

Our valuation/forecasting model is formulated using a technique established by Rozeff (1983) and modified by Terregrossa (1999). Suppressing the time subscript for simplicity, the expected one-period rate of return of security  $i$  is given by:

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<sup>11</sup> See for example Moizer and Arnold (1982) and Arnold, Moizer, and Noreen (1983)

<sup>12</sup> See for example Brown, Foster, and Noreen (1985)

$$E(R_i) = \frac{P_{i1} + D_{i1} - P_{i0}}{P_{i0}}$$

$$E(R_i) = \frac{D_{i1}}{P_{i0}} + \frac{P_{i1} - P_{i0}}{P_{i0}} \quad \text{EQ 1}$$

where

|          |   |  |
|----------|---|--|
| $E(R_i)$ | = | expected one-period return of stock i;         |
| $P_{i1}$ | = | expected end-of-period price per share;        |
| $D_{i1}$ | = | expected dividend per share during the period; |
| $P_{i0}$ | = | current price per share;                       |
| $D_{i0}$ | = | current dividend per share                     |

Hence,

$$\frac{D_{i1}}{P_{i0}} + \frac{P_{i1} - P_{i0}}{P_{i0}} = \frac{D_{i0}(1 + g_{id})}{P_{i0}} + g_{ip} \quad \text{EQ 2}$$

where

|          |   |                           |
|----------|---|---------------------------|
| $g_{id}$ | = | growth rate of dividends; |
| $g_{ip}$ | = | growth rate of price.     |

Assuming  $g_{id} = g_{ip} = g_{ie}$ , where  $g_{ie}$  = growth rate of earnings

then,

$$E(R_i) = \frac{D_{i0}(1 + g_{ip})}{P_{i0}} + g_{ip} \quad \text{EQ 3}$$

Then, solving EQ 3 for  $g_{ip}$ , we formulate our share-price growth forecasting model which employs the strategy of utilising actual dividends ( $D_{i0}$ ) as a major value-determining parameter:

$$g_{ip} = \frac{E(R_i) - \frac{D_{i0}}{P_{i0}}}{1 + \frac{D_{i0}}{P_{i0}}} \quad \text{(Model 1) EQ 4}$$

The CAPM enters into the model by using it to derive an estimate of  $E(R_i)$ .<sup>13</sup> We insert this CAPM derived value of  $E(R_i)$ , along with current dividend,  $D_{i0}$ , and current price,  $P_{i0}$ , into EQ 4 (Model 1) and generate a forecast of the five-year growth of price-per-share of firm  $i$  from our first forecasting model (EQ4), based on actual dividends. The percentage-price-change,  $g_{ip}$ , is considered then as the price-change implicit in the CAPM.

The percentage price-change we extract from our forecasting model is considered to be the percentage change over the next five years for the following reason: A five-year risk-free rate (taken as the yield-to-maturity on a five-year U.S. government security) is entered into the CAPM to estimate  $E(R_i)$ . Doing so gives our forecasting model the desired five-year forecast horizon, following the technique established by Rozeff (1983). We then formulate our alternative percentage price-change forecasting model by substituting our precise measure of dividend-paying-ability,  $(NE_{i0}(.45))$ , for actual dividends,  $(D_{i0})$ , in EQ 4:

$$g_{ip} = \frac{E(R_i) - \frac{NE_{i0}(.45)}{P_{i0}}}{1 + \frac{NE_{i0}(.45)}{P_{i0}}} \quad (\text{Model 2) EQ5}$$

We then generate our alternative forecast of the five-year percentage change in share price of firm  $i$  from model 2 (equation 5), based on dividend-paying-ability. To do so we again estimate  $E(R_i)$  from the CAPM, calculate normalised earnings  $(NE_{i0})$  from historical data, set the dividend pay-out-ratio at the historical average of .45, and observe current price,  $P_{i0}$ .

The extraction of a single percentage-change from each of our alternative models requires the equality of the growth rates of dividends-, price-, and earnings-per-share. In EQ4 (Model 1) this equality holds by assuming that each firm's pay-out ratio is held constant over a given horizon.

In EQ5, (Model 2), the equality of the growth rates of dividends-, price-, and earnings-per-share is ensured by setting the pay-out ratio at the (historical average of) .45 for all firms over each horizon. In this manner, actual pay-

<sup>13</sup> See the appendix for a description of the estimation process by the CAPM.

out policy for each individual firm is allowed to vary over a given horizon. Therefore, the results from this part of the experiment can be considered relatively more robust, since they are based on a less restrictive assumption regarding actual pay-out policy.

## **TEST OF HYPOTHESES: SAMPLES AND TEST PROCEDURES**

### **A. Samples:**

The experiment is conducted four times, each time with a different cross-sectional sample over a different five-year horizon: January 1982-1987; January 1983-1988; January 1984-1989; and January 1985-1990, respectively.

The criteria for choosing a sample of firms from the Center for Research of Security Prices (CRSP) tape for each forecast horizon is as follows:

(a) Return data available for the five-year period preceding a given forecast horizon to allow conventional (traditional) estimation of the firms' beta (systematic-risk index) coefficients, for use in the CAPM in conjunction with dispersion-of-analysts'-forecasts as a proxy for ex ante systematic-risk.

(b) Actual (or realised) share price available for January 1987; 1988; 1989; and 1990, respectively, to allow the computation of forecast error of each of the models' forecasts.

(c) Security price, dividends and historical earnings (previous five-year annual average) available as of January 1982; 1983; 1984; and 1985 for each replication, respectively, to allow the computation of each of the two versions of the valuation-model share-price forecasts, for each firm.

(d) Each sample includes only dividend-paying firms, in order to control the experiment.

Historical earnings, security price, standard deviation of analysts' forecasts, and dividend information are obtained from International Brokers' Estimate System (I/B/E/S) Inc.<sup>14</sup>

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<sup>14</sup> International Brokers Estimate System Inc. (I/B/E/S Inc.) is an information service that delivers data on earnings forecasts on nearly all publicly traded corporations followed by security analysts.

**B. Test Procedures:**

1) The first test procedure is to compare the forecast errors of the two alternative methods (Model 1, based on actual dividends and Model 2, based on dividend-paying-ability). This comparison is accomplished as follows:

Let

$a_i$  = actual five-year growth rate of price-per share for firm  $i$  ;

and

$g_{ij}$  = forecasted five-year growth rate of price-per share for firm  $i$  by method  $j$  (method  $j$  ranges over the two alternate forecast models).  $j = 1, 2$ .

In each test period a vector of forecast errors,

$$|a_i - g_{ij}| = e_{ij} \quad \text{EQ 6}$$

is calculated for each method  $j$ .  $e_{ij}$  is the absolute value of the difference between the forecasted and realised growth-rates of share-price for each firm in a given sample. The mean absolute forecast error (MABE), defined as the sample average of  $|a_i - g_{ij}|$ , is then computed. This measure best reflects the overall forecasting performance of each of the two alternative methods since it takes into account the average error size. For hypothesis tests of the two alternative forecasting methods, we utilise the procedure of match-pairs case for each firm. The members of each pair are the mean absolute forecast errors (MABE) from the two forecasting models. Each pair can be reduced to a single observation by taking the difference in MABE. The Wilcoxon sign rank test is used as a non-parametric test of the mean difference, i.e., a test of the average difference between the mean absolute forecast error of Model 2 and the mean absolute forecast error of Model 1. Thus, our first null hypothesis to be tested: that the percentage price-change forecasts generated by the valuation model which employs a measure of dividend-paying-ability (Model 2), are no more accurate, on average, than forecasts generated by the valuation model which utilises actual dividends (Model 1).

2) The second employed test procedure is an analysis of variance in which we investigate the informational content of the predicted growth-rates of share-price generated by our two forecasting models. As noted above, the only source of difference in the informational content between the two models is that Model 1 uses actual dividends as a parameter, while Model 2 uses a precise measure of dividend-paying-ability. To the extent that  $.45(NE_{i0})$  is different than  $D_{i0}$ , the dividend-paying-ability measure of Model 2 will embody information concerning firm  $i$  prospects that the dividend variable of Model 1 will not, as explained above. All other information contained in the forecasts of each of the two models reflects an otherwise identical common set of inputs.

Actual values are regressed against predicted values, using cross-sectional data, as follows:

$$a_{it} = \alpha + \beta (t-5g_{i1t}) + \gamma (t-5g_{i2t}) + \mu_t \quad \text{EQ 7}$$

where,

$a_{it}$  = actual 5-year percentage share-price change of firm  $i$  at time  $t$ ;

$t-5g_{i1t}$  = forecast of the 5-year percentage share-price change of firm  $i$  made from Model 1 (based on dividends), using information available at time  $t-5$  and using the model's estimation procedure and forecasting method each period;

$t-5g_{i2t}$  = forecast of the 5-year percentage share-price change of firm  $i$  made from Model 2 (based on dividend-paying-ability), using information available at time  $t-5$  and using the model's estimation procedure and forecasting method each period;

$m_t$  = error term;  
 $a$  = constant term.

We estimate equation 7 for the two forecast models and test the null hypothesis that  $b = 0$  and the null hypothesis that  $g = 0$ . The former hypothesis is that Model 1's forecasts contain no information, relevant to forecasting, not in the constant term and in Model 2. The latter hypothesis is that Model 2's forecasts contain no information not in the constant term and in Model 1.

### **DIAGNOSTIC ANALYSIS AND CORRECTIVE PROCEDURES**

Non-normality is not an issue, due to our large, random samples and the Central Limit Theorem. Serial correlation is not a concern, as our regressions are cross-sectional. However, we do find evidence of heteroskedasticity, using White's (1980) test.

It may be that firms with higher growth-rates of share-price may have different variances of forecast error than firms with smaller growth-rates of share-price. Therefore, errors in predicting share-price growth-rates may be associated with one of the right-hand variables. The Newey-West (1987) procedure corrects for heteroskedasticity related to right-hand variables. This procedure produces a heteroskedasticity- and autocorrelation-consistent covariance matrix with the benefit that the estimator is guaranteed to be positive semi-definite. Thus, we use the Newey-West procedure of generating a heteroskedasticity-consistent covariance matrix to construct the required significance tests.

## **IV) EMPIRICAL RESULTS**

### **A) Comparison of Forecast Errors:**

In three out of four test periods (with the first test period being the exception), we find that the forecasts of five-year price-per-share growth rates generated by Model 2 (based on dividend-paying-ability) are superior, on average, to the forecasts generated by Model 1 (based on actual dividends). Over each of the last three test periods the mean absolute forecast error (MABE) of the Model 2 forecasts is lower than that of the Model 1 forecasts. (See Table 1.)

**Table 1: Mean Absolute Forecast Error (MABE)**  
(In Percentages)

|                | <u>1982-87</u> | <u>1983-88</u> | <u>1984-89</u> | <u>1985-90</u> |
|----------------|----------------|----------------|----------------|----------------|
| MABE (MODEL 2) | 15.975         | 14.016         | 14.976         | 18.217         |
| MABE (MODEL 1) | 15.735         | 15.046         | 16.090         | 19.114         |

Note:

Model 1 forecasts are based on actual dividends;

Model 2 forecasts are based on dividend-paying-ability.

Using the Wilcoxon sign-rank test, we test the significance of the average difference between the mean absolute forecast errors of the forecasts generated by Model 2 and Model 1, respectively. Significantly negative differences imply superior forecasting by Model 2. In each of the last three test periods, the mean difference is negative and we are able to reject a null hypothesis of a mean difference equal to zero at the 0.0001 level of significance. (See Table 2.)

**Table 2: Average Difference in Mean Absolute Forecast Error**  
 **$E[\text{MABE}(\text{MODEL}2) - \text{MABE}(\text{MODEL}1)]$  \***  
(In Percentages)

| <u>1982-87</u> | <u>1983-88</u> | <u>1984-89</u> | <u>1985-90</u> |
|----------------|----------------|----------------|----------------|
| 0.240          | -1.031         | -1.115         | -0.897         |

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\*: Each value represents the average difference in mean absolute forecast error across all firms in a given sample for a given forecast horizon.

Therefore, in three out of four test periods, we are able to reject our first null hypothesis, namely, the fact that the forecasts generated by Model 2 are no more accurate than forecasts generated by Model 1.

Thus, in three out of four test periods, the Model 2 forecasts of share-price growth (based on a valuation model employing dividend-paying-ability) were found to be significantly better, on average, than the Model 1 forecasts (based on a valuation model employing actual dividends). Greater accuracy in prediction of share-price performance results implies greater accuracy in firm-value appraisal.

**B) Analysis of Variance:**

Turning to our regression analysis, in three out of four test periods (with the fourth test period being the exception) the estimated regression coefficients (b) of the Model 1 forecasts (based on actual dividends) are not significantly different from zero, each with a t-statistic less than 2.00.

Therefore, in three out of four test periods we are unable to reject the null hypothesis that the Model 1 forecasts contain no information, relevant to forecasting, not in the constant term and in the Model 2 forecasts (based on dividend-paying-ability). (See Table 3.)

**Table 3:** Informational Tests Using the Newey-West Procedure

$$a_{it} = \alpha + \beta (t-5g_{i1t}) + \gamma (t-5g_{i2t}) + \mu_t$$

| <b>Horizon:</b> January 1982-87 |          | <b>Sample Size:</b> 360 |          |
|---------------------------------|----------|-------------------------|----------|
|                                 | $\alpha$ | $\beta$                 | $\gamma$ |
| estimated coefficients          | 12.478   | 0.155                   | -10.252  |
| standard error                  | 1.044    | 0.135                   | 10.398   |
| (t - statistic)                 | (11.956) | (1.162)                 | (-0.987) |
| prob.                           | 0.000    | 0.246                   | 0.325    |

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| <b>Horizon:</b> January 1983-88 |          | <b>Sample Size:</b> 375 |          |
|---------------------------------|----------|-------------------------|----------|
|                                 | $\alpha$ | $\beta$                 | $\gamma$ |
| estimated coefficients          | 10.894   | -2.323                  | 21.000   |
| standard error                  | 0.816    | 2.056                   | 10.148   |
| (t - statistic)                 | (13.344) | (-1.127)                | (2.281)  |
| prob.                           | 0.000    | 0.260                   | 0.039    |

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**Horizon:** January 1984-89

**Sample Size:** 399

|                        | $\alpha$ | $\beta$ | $\gamma$ |
|------------------------|----------|---------|----------|
|                        | _____    | _____   | _____    |
| estimated coefficients | 8.182    | 0.598   | 46.667   |
| standard error         | 0.995    | 2.253   | 15.243   |
| (t - statistic)        | (8.227)  | (0.277) | (3.266)  |
| prob.                  | 0.000    | 0.790   | 003      |

**Horizon:** January 1985-90

**Sample Size:** 455

|                        | $\alpha$ | $\beta$ | $\gamma$ |
|------------------------|----------|---------|----------|
|                        | _____    | _____   | _____    |
| estimated coefficients | 12.779   | 6.102   | 41.248   |
| standard error         | 1.010    | 1.816   | 16.871   |
| (t - statistic)        | (12.649) | (3.361) | (2.546)  |
| prob.                  | 0.000    | 0.001   | 0.014    |

In contrast, in three out of four test periods (with the first test period being the exception) the estimated regression coefficients ( $g$ ) of the Model 2 forecasts (based on dividend-paying-ability) are significantly positive, each with a  $t$ -statistic greater than 2.06. Therefore, in three out of four test periods we are able to reject the null hypothesis that the Model 2 forecasts contain no information, relevant to forecasting, not in the constant term and in the Model 1 forecasts (based on actual dividends). (See Table 3.)

As mentioned above, these findings from our regression analysis result from an autocorrelation-heteroskedasticity-consistent estimate of the least-squares covariance matrix. As such, these regression results may be considered autocorrelation-heteroskedasticity-robust.

Based on the above regression findings we may reasonably argue that, Model 2 forecasts (based on a valuation model employing dividend-paying-ability) generally have greater informational content and therefore greater explanatory power regarding movements in share price performance than Model 1 forecasts (based on a valuation model employing actual dividends).

## **SUMMARY AND CONCLUSIONS**

The results of our empirical analysis indicate that in three out of four test periods, a valuation model incorporating dividend-paying-ability significantly outperformed, on average, a valuation model incorporating actual dividends in forecasting share-price performance. The implication is that the dividend-paying-ability approach to valuation may lead to better appraisals of firm value.

Our findings also indicate that share-price growth forecasts generated by a valuation model based on dividend-paying-ability have greater informational content and therefore greater explanatory power, generally speaking, than the forecasts manufactured by a valuation model based on actual dividends, regarding movements in share price performance. In our controlled experiment the only source of difference is in informational content and therefore, explanatory power, is the use of a precise dividend-paying-ability measure versus the use of actual dividends in the valuation model.

The implication is that modelling dividend-paying-ability in stock valuation implicitly captures one or more factors influencing firm value that modelling dividends does not, and thus may lead to more accurate appraisals of firm value. In our study modelling, dividend-paying-ability, when compared to modelling dividends in stock valuation, led to more accurate appraisals of firm value in a majority of cases.

## APPENDIX

### Deriving $E(R_i)$ from the CAPM:

The Capital Asset Pricing Model states that in equilibrium, an individual security's expected return is a linear function of its covariance of return with the market portfolio. This relationship is depicted in ex-ante form by the equation:

$$E(R_i) = R_f + B_i[E(R_m) - R_f] \quad \text{EQ 8}$$

A firm's expected return,  $E(R_i)$ , is calculated via the CAPM in the following manner:

First, we generate a characteristic line to manufacture a conventional (traditional) estimate a firm's index of systematic risk (beta),  $B_{Ti}$ . We regress actual, monthly security returns,  $R_{i,t}$ , (thirty-day geometric mean) against actual, monthly market returns,  $R_{m,t}$ , (thirty-day geometric mean) over the 60-month period prior to a forecast horizon. This regression in equation form is:

$$R_{i,t} = B_{Ti}(R_{m,t}) \quad \text{EQ 9}$$

The monthly market return,  $R_{m,t}$ , is a value-weighted measure of the returns of all stocks on the Center for Research of Security Prices (CRSP) tape, a relatively broad measure of the market portfolio. All returns (firm and market) include both dividends and price changes.

Once we estimate a firm's traditional beta ( $B_{Ti}$ ), we then combine it with the dispersion (standard-deviation) of analysts' earnings forecasts to form a more reliable and useful measure of a firm's ex ante systematic risk,  $B_{Ni}$ , by implementing the Carvell and Strebel (1984) method:

$B_{Ni} = (B_{Ti}^2 + B_{Ei}^2)^{0.5}$ , where

$B_{Ti}$  = traditional or conventional beta estimated from a characteristic line based on historical information (as shown in equation 9);

$B_{Ei} = \sigma_{im}(\sigma_a/\sigma_m)$ ;

$\sigma_{im}$  = historical correlation coefficient between the return of security  $i$  and the return of the market portfolio;

$\sigma_a$  = standard deviation in analysts' forecasts;

$\sigma_m$  = historical standard deviation in the return of the market portfolio;

$\sigma_i$  = historical standard deviation in the return of security  $i$ .

$\sigma_{im}$ ,  $\sigma_i$ , and  $\sigma_m$  values are obtained from the conventional beta ( $B_T$ ) regressions.

$\sigma_a$  is obtained from the IBES data source.

We then insert this forward-looking proxy of ex ante systematic risk,  $B_{Ni}$ , into equation 8 (in place of  $B_i$ ) to solve for the firm's expected rate of return,  $E(R_i)$ . In equation 8 the risk-free rate,  $R_f$ , is taken as the yield-to-maturity on a five-year U.S. government security prevailing at the beginning of a forecast horizon. The data source is Moody's Municipal and Government Manual. The mean market return,  $E(R_m)$ , is estimated as the average of the monthly market returns over the 60-month period prior to a forecast horizon. This measure is a value-weighted index of all stocks on the CRSP tape.<sup>15</sup>

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# ***Female Inclusion and Economic Development: The Case of Cameroon***

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## **Abstract**

The present paper aims at investigating the status of the economic development in Cameroon and female inclusion problems with the use of annual data on Gross Domestic Product (GDP) and assets of household survey between 2007-2011 and 2012-2016 from National Institute of Statistic of Cameroon and, the different education statistical data available on UNESCO and World Development Indicator of 2016. Our investigation particularly aims to uncover the level of women inclusion in Cameroon while putting a special focus on education. The paper finds that due to a global amelioration in female inclusion effort, Cameroon has also improved its condition. It can be concluded that growth in Cameroon has not been as inclusive because as growth advanced equity did not. Hence, despite positive developments, women inclusion still faces many problems in Cameroon which can be confirmed by their very low representation in important function of the country. In addition, the number of girls having a chance for proper education is low in Cameroon. Furthermore, we move forward in education and we observe that lesser percentages of females are presented in each category of education: pre-primary, primary and secondary.

**Keywords:** *Cameroon, inclusive growth, female inclusion, education, income distribution, income per capita*

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## **INTRODUCTION**

Economic growth is a big concern for every state worldwide due to the impact it can create in the living condition of the population. Developing countries are mostly affected by the change in their GDP without a positive repercussion on their society. Cameroon, among those countries, is facing big challenges which can be confirmed by this relationship. The country is experiencing inequality and poverty which are direct consequences of inclusive growth. Global amelioration in female inclusion effort in Cameroon also benefitted from such change. Hence, despite positive developments, women inclusion still faces many problems in Cameroon which can be confirmed by their very low representation in important function of the country. In addition, the number of girls having a chance for proper education is low in Cameroon. In a global view on economic sector in the country, it can be concluded that growth in Cameroon has not been as inclusive because as growth advanced equity did not.

This paper intends to look at the status of economic development between two time periods, 2007-2011 and 2012-2016, and women participation problems in Cameroon. It also focuses on economic inclusion and the level of women inclusion in Cameroon while putting more attention on education in 2016. In addition, it underlines barriers of developing inclusive growth in political and institutional sectors of developing countries as well as Cameroon.

### **Evolution of Government Policy on Female Inclusion in Education and Entrepreneurship in Cameroon**

Women participation in Cameroon has been a big concern for the state since the big crisis of 1987. The president of the country is mindful and worried about female status in the society thus was created by decree the Ministry of Women Affairs. This Ministry is charged to elaborate on the measures for the respect of female rights and establish equality within political, economic and socio-cultural sectors. Besides, the empowerment of women starts with education and followed by entrepreneurship. For these reasons, the state thought about strategies than can be more suitable and sustainable for the insertion of women in those special areas.

### **Government policy on female inclusion in education in Cameroon**

“Education must once again become one of the cornerstone values of our world, it must once again flourish, and it must be instilled as a force of

happiness, fulfillment and hope.” Nelson Mandela, 1996. Opening an access to basic education for everyone can be considered as a first step for putting boys and girls at the same level. In addition, girls can be allowed to drop out of school if they have an acceptable learning level. Further, they need to be encouraged, pushed and guided at the end of any successful level. We need similar approaches to open the door of education to disadvantaged groups (Tchombe, 1994).

In Cameroon, either money for school or school retirements are the problems that have been slowing female education, especially in the primary education. The number of girls rated as undereducated within the country is 70% which approximately makes them 3 million (Yermishova, 2017). The strategies that are now applied for the good proceedings of female education are:

- A fund is created to finance young girls wishing to study in scientific and technical area,
- Age limitation is removed from the entire education system,
- Formation centers in all fields are opened for girls who are over age for the secondary school,
- National and non-official literacy education program is established for young girls,
- New orientation law for females as well as males is created for the education system in Cameroon.

### **Government policy on female inclusion in entrepreneurship in Cameroon**

Due to the low level of women education in Cameroon, they are mostly investing in agriculture. The strategy used for growth in their activity is ‘food crop’, and it is the reason why they are called ‘female food crop entrepreneurs’ (Fonjong, 2004). They are divided into three specific groups: women who grow and sell local food crops in the rural markets; buyam-sellams who buy food crops from small farmers, transport and sell it in big towns and cities; and finally women who grow their own crops, by-pass the buyam-sellams and sell directly to urban dwellers. Women Food Crop business is important for the country because it really helps to satisfy the increasing demand of the population. The activity remains on a national level and has never been affected with the repeated inflation faces

by the country. The Ministry of Female Condition of Cameroon (Plan d'Action National pour l'emploi des femmes, MINEFOP, 2009) created by the government underlines women problems and came out with some specific points of intervention as solutions which are:

- Support of a firm creation,
- Guaranty the access to formation, information and advice for a suit integration,
- Support easy access to the market,
- Facilitate the access to credit and funds,
- Create a big chain of partnership.

### **Female Participation in Education in Cameroon**

Female inclusion in education is analyzed with a special focus on pre-primary, primary and secondary education. When we look at the pre-primary education in Cameroon the relationship between the number of students enrolled in the education system and the number of full time equivalent teachers (Pupil/teacher ratio) is 20.81%, which means twenty pupils for every full time equivalent teaching position. The examination of those teachers reveals that 54,507% of the teachers teaching in pre-primary education are women. Gross enrollment ratio which is 39.91% showed that there are a very small number of females that were inscribed in the elementary level without age consideration. Since female GER is very low, it means that in Cameroon, many young girls did not enter elementary education despite the fact that it is almost free. The situation is the same with the net enrollment rate which actually informs us that 28.97% of young girls between GER have the age of school participation of the elementary education all over the country. In conclusion, observing the percentage of girls eligible to access elementary education, females are not too much involved in the pre-primary school in Cameroon.

Furthermore, the primary education number of student per teacher ratio is 42.74 which indicates that the whole school in Cameroon has at least 42 pupils for every full time equivalent teacher. Schools in primary level have 104860 teachers in general with 62.2804% trained female teachers. Female Gross intake ratio in the first grade of primary education is 125.79% which means there are a lot of female new comers having the primary education official age. Since it exceeds 100%, we can conclude that the

level of access to primary education for girls is very high with the huge capacity of Cameroon's education system of providing accommodation, and a cheap school fee for everyone. The percentage of female Gross intake ratio in the last grade of primary school is 71.41 which shows that just a few numbers of girls reach the last grade of the primary school. In addition, since it is less than 90% only few girls point out with a high degree of completion of primary education. Many females do not enter last grade of primary education even though school is compulsory to a certain age in Cameroon. Gross enrollment ratio is 112.89% and shows that majority of young girls are present in the primary school without age consideration. Due to the fact that GER is very high and exceeds 100%, Cameroonian young girls massively enter primary education with the help of the state that establishes a kind of free primary education for its youth. Net enrollment rate indicates that 91.02% of girls have the age to be enrolled in the primary. But the total number of girls officially known as joined the primary (adjusted net enrollment rate) are 91.018% with an adjusted net intake rate to Grade 1 of 89.9541% girls. In addition, 11.39 % of girls have repeated primary school, 71.4128% girls complete it and finally, 45.4036% girls are among the gross graduation ratio. Percentages of female presence in the primary education in Cameroon are 47.0053% for students and 54.507% for teachers. Even though many young girls are present in the primary education in Cameroon, 167597 girls are still out of it and do not receive any education at all for one reason or another.

The Pupil/teacher ratio of the secondary education in Cameroon is 19.26 meaning at this stage, there is only 19 students for each full time teacher. So, we have 114601 teachers in secondary education, with 47.0053% of women as trained teachers and also, we have 36.5979% female trained teachers in upper secondary school and 60.0459% female trained teachers in lower secondary school. Furthermore, the secondary education enrolment in technical and vocational education and training is 20.73% for girls reaching this step of education.

Also, the gross enrolment ratio is 57.09% which shows that less are the female adolescents in the secondary education. Since GER is low and less than 90%, the information we get from that is many young girls do not enter secondary level because it is a selective level which requires more

revenue than elementary and primary education. Thus, the net enrollment rate actually informs us that 44.31% of young girls between GER have the age of school participation of the secondary school all over the country. Finally, 45.8987% female students are present in the secondary education and, 48.0446% of girls have the opportunity of successfully completing the lower level of the secondary.

With a net enrolment ratio of 28.97% for female gender, Cameroon did not achieve a universal pre-primary education for all the girls within the territory. Cameroon had a net enrolment ratio for female gender of 91.02%, but only 71.41% of children of primary school with the starting age were expected to complete primary school. Moreover, to determine if universal primary education has been reached, it is recommended to look at the number of completion which often gives a clear picture of it. The net enrolment ratio at lower secondary school of females reaches 44.9%, but the number of adolescents out of school in the country is 410.66%. Sub-Saharan African countries have expanded access to lower secondary school; it will only take time and effort to boom into a high completion rate. Nevertheless, there is still a high inequality in the education system.

In sub-Saharan Africa, the pupil/teacher ratios are among the highest in the world. Out of the 162 countries (Education for All Global Monitoring Report, 2013), Cameroon had a pupil/teacher ratio of 20.81 in pre-primary education, 42.74 in primary education and 19.26 in secondary education. Cameroon put an accent to increase its number of teacher in the workforce. In 2016, Cameroonian government recruited 114601 secondary education teachers to reach a ratio of 19.26 pupils per teacher and 104860 primary education teachers to reach the 42.74 pupils per teacher. Teachers do not only need to be recruited but to be trained as well. The country had as female trained teachers in that year 36.59% in the upper secondary education, 60.04% in the lower secondary education, 47% in the whole secondary education, 62.28% in the primary education and 54.5% in the pre-primary education. To increase the number of female teaching workforce in Cameroon there is a need of creation of flexible policies and require qualifications. With the huge number of female youth in school in Cameroon, we still have a lot outside without any training or opportunity of education. We have in other, 167.597% of female children between 4 to 14 years old and 410.660% of adolescents between 15 to 24 years are out

of school. This is eventually due to the reason that Cameroon has gender equality in education of 0.66667% which gives advantage to boys than girls.

**Table 1:** Adapted UNESCO Statistic Data 2016

| Year2016   | Female                | Male              |
|--|-----------------------|-------------------|
| Pupil/teacher ratio Pre-primary  |                       | 20.81             |
| Gross intake ratio into the first grade of primary (%)   | 125.79                | 139.61            |
| Gross intake ratio into the last grade of primary (%)  | 71.41                 | 79.37             |
| Pupil/teacher ratio primary  |                       | 42.74             |
| Enrolment in technical and vocational education and training (TVET) as % of the total enrolment in secondary education | 20.73                 | 26.48             |
| Pupil/teacher ratio secondary  |                       | 19.26             |
| Percentage of repeaters in primary (%)   | 11.39<br>71.41        | 12.24<br>79.37    |
| Gross intake ratio into the last grade of primary (%)  | 167,597<br>410,660    | 10,140<br>336,810 |
| Out-of-school children (%)   |                       |                   |
| Out-of-school adolescents (%)  |                       |                   |
|  | pre-primary education |                   |
| Gross enrolment ratio (%)  | 39.91                 | 39.22             |
| Net enrolment rate (%)   | 28.97                 | 28.44             |
|  | Primary school        |                   |
| Gross enrolment ratio (%)  | 112.89                | 125.33            |
| Net enrolment rate (%)   | 91.02                 | 99.46             |
|  | Secondary school      |                   |
| Gross enrolment ratio (%)  | 57.09                 | 66.38             |
| Net enrolment rate (%)   | 44.31                 | 50.25             |

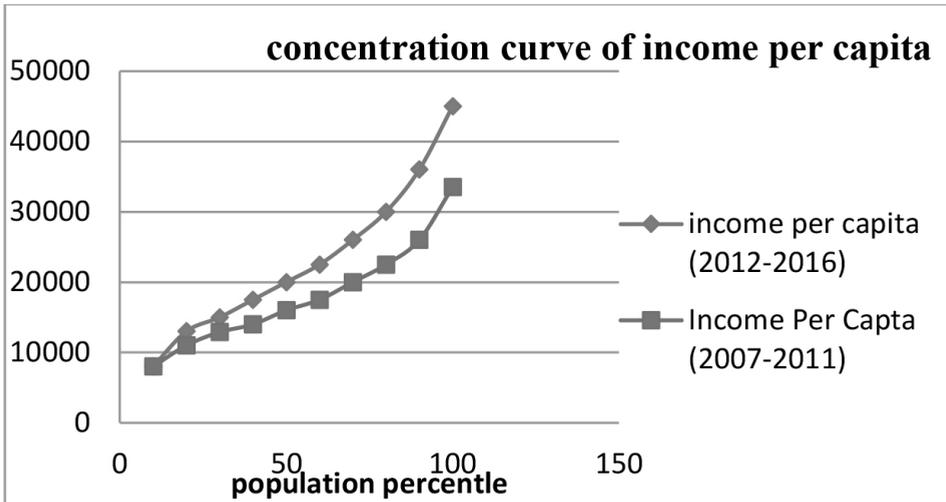
## **Findings on Growth Inclusion in Cameroon**

The study gives a constant inclusive growth measure with the absolute definition of growth in favor of the poor. The methodology for the investigation is a descriptive analysis where inclusive growth will be divided as a component of equity and a component of efficiency. Efficiency demand for the general improvement of the country and equity requires that development be equitably distributed among the different individuals in the population. The measure of welfare applied in this research includes: per capita income and the household index. So, we will explain the social mobility curve of Cameroon during 2007-2011 and 2012-2016 survey of per capita income and households giving by the National Statistics Institute of Cameroon (NIS). So, table 2 summarizes basic elements of the sample. It made use of approximately 100,978 households per year. Throughout that, 60% of households are from urban regions and 40% from rural regions. The average size from the poorest in the upper quintile since in 2007-2011 and 2012-2016 are approximately 3.75 and 3.60 and the average size of households from the bottom quintile is respectively 5.60 and 5.74. The average household income increased for all periods. The social mobility curve of Cameroon is schemed for the periods 2007-2011 and 2012-2016 at a set level using per capita income and the household survey. The principal aim is to gauge the proportion where the rate of economic growth has better the rich and poor condition.

**Table 2:** Descriptive Statistics of Sample Households for the Periods 2007-2011 and 2012-2016

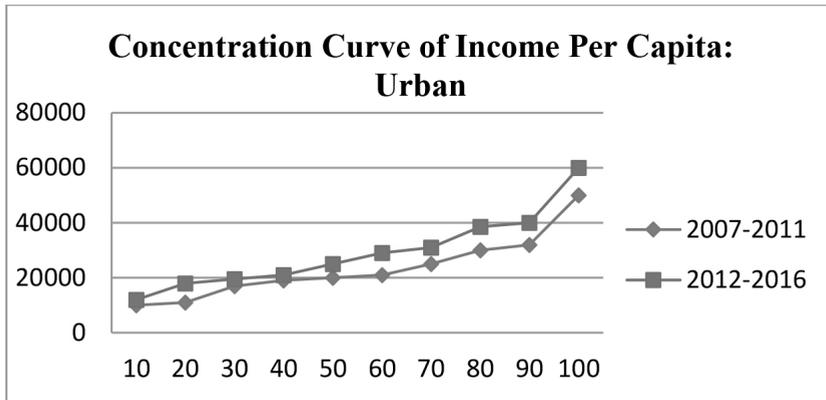
| Year      | region   | Number of household | Average size of the bottom quintile | Average size of the top quintile | Average income of the bottom quintile | Average income of the top quintile |
|-----------|----------|---------------------|-------------------------------------|----------------------------------|---------------------------------------|------------------------------------|
| 2007-2011 | Cameroon | 100,978             | 5.60                                | 3.75                             | 8406                                  | 45199                              |
|           | Urban    | 60%                 | 5.92                                | 3.80                             | 12055                                 | 62342                              |
|           | Rural    | 40%                 | 5.57                                | 3.87                             | 7333                                  | 36450                              |
| 2012-2016 | Cameroon | 100,978             | 5.74                                | 3.60                             | 7713                                  | 37508                              |
|           | Urban    | 60%                 | 5.99                                | 3.60                             | 9897                                  | 51160                              |
|           | Rural    | 40%                 | 5.68                                | 3.83                             | 7247                                  | 3003                               |

When we look at the shape of the curve, the beginning indicates that income growth is equally divides among group of people. But, when the curve is more pronounced, it appears that gradually the portion of income is getting bigger, this states that income is not distributed smoothly among population.



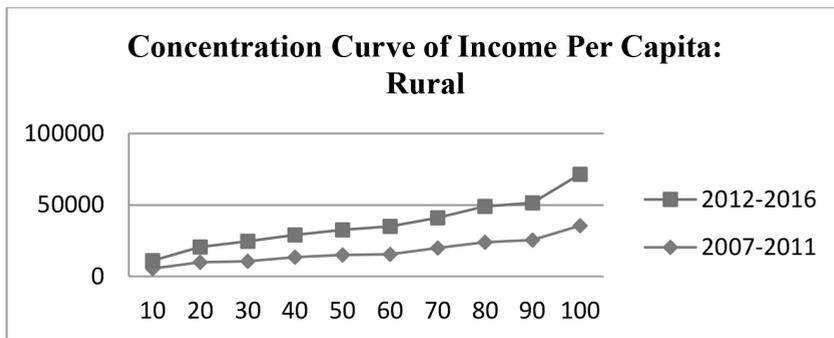
**Figure 1:** Concentration Curve of Income per Capita of Cameroon in 2007-2011 and 2012-2016

- Figure 2 that follows represents the concentration curve of income per capita in urban areas of Cameroon from 2007-2011 and 2012-2016. The curve indicates that at the beginning, the two lines are a little flatter but, as we move forward, it becomes more pronounced, which shows that there is an improvement in the distribution, but the inequality has not diminished in this particular area.



**Figure 2:** Concentration Curve of Income Per Capita of Urban Areas for 2007-2011 and 2012-2016

- Figure 3 below is concentration curve of income per capita of rural Areas for 2007-2011 and 2012-2016. The curve of 2012-2016 is on top of the curve 2007-2011 which means that there is huge increase of income in rural population. It indicates that there is an income distribution, and when the curve becomes more pronounced, there are still some signs that inequality has not diminished in rural area of Cameroon. The betterment of life quality of the population in rural regions of Cameroon is higher than other region during this period.

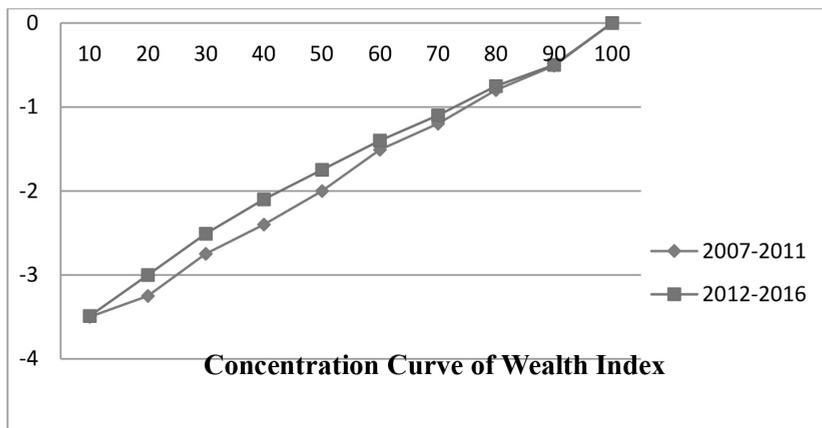


**Figure 3:** Concentration Curve of Income Per Capita of Rural Areas for 2007-2011 and 2012-2016

The wealth index is a composite measure of a household’s cumulative living standard. The wealth index is calculated using easy-to-collect data on a household’s ownership of selected assets, such as televisions

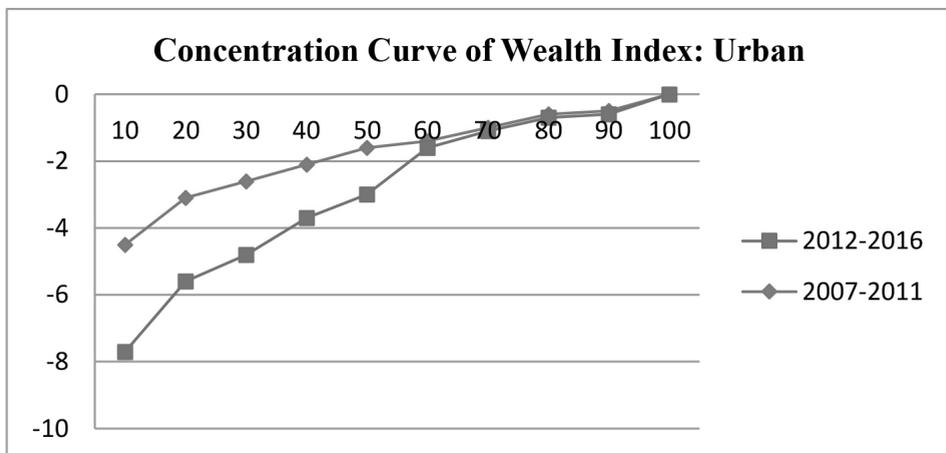
and bicycles; materials used for housing construction; and types of water access and sanitation facilities.

Generated with a statistical procedure known as principal components analysis, the wealth index places individual households on a continuous scale of relative wealth. DHS separates all interviewed households into five wealth quintiles to compare the influence of wealth on various population, health and nutrition indicators. The wealth index allows researchers to identify how much household economic status affects health outcomes by using both bivariate and more sophisticated multivariate methods. Therefore, the wealth index was also used to assess the inclusion of growth in Cameroon. The wealth index was formulated from the data of the Cameroon household survey conducted by the National Institute of Statistics. The data provide information on the ownership of productive and unproductive assets per household. Figures 4, 5, and 6 show the concentration curve using the wealth index. According to the concentration curve, ownership of assets decreased during the 2012-2016 and 2007-2011 periods. The reduction in asset ownership was not seen from the upper quintile of the population. The one fallen is precisely for the lower Quintiles. It indicates that only poor group of the population has suffered from a decrease on the economic situation. In other words, the rich maintain their economic status or get richer. This can be illustrated in the curve below:



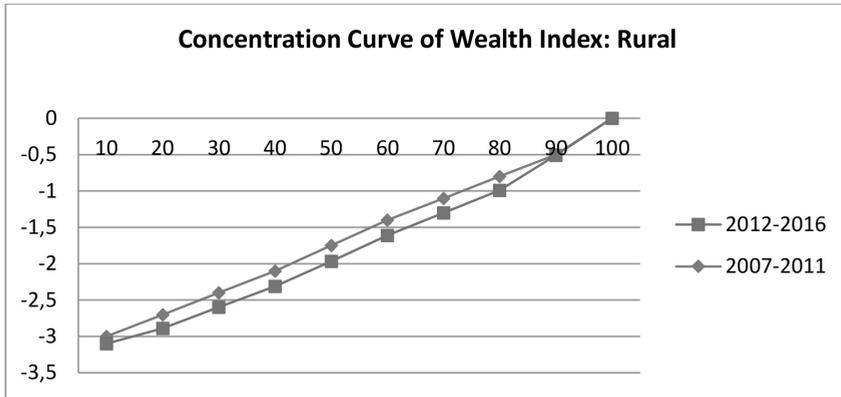
**Figure 4:** Concentration Curve of Wealth index of Cameroon from 2007-2011 and 2012-2016

- The concentration curve of this wealth index shows a difference in results according to the one obtained in the concentration curves of income per capita. The curve of income per capita shows marks of amelioration for all income groups, while the curve of wealth shows a permanent decrease of income, between the end of the study (2007-2011 and 2012-2016). The previous interpretation was the increase in income which has not been able to maintain a rhythm due to an increase of the price of goods as the inflation is rising in the country. When the price of goods increase, income increase will definitively be used for consumption and, it will not allow the increase in savings or the growth of wealth.



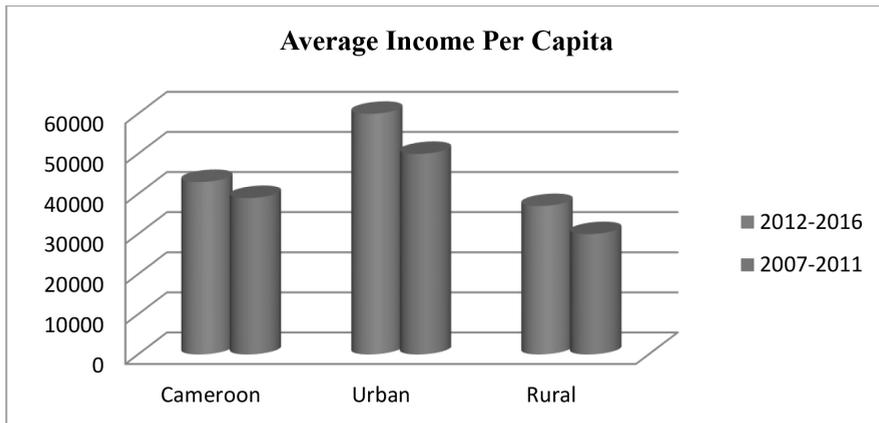
**Figure 5:** Concentration Curve of Wealth Index for Urban Areas of Cameroon in 2007-2011 and 2012-2016

- The result of the concentration curve income per capita shows that there was an improvement for all income groups and, fair improvement was tested using the social mobility index and the income equity index. The figures below expose the differentiation within the average income per capita, the social mobility index and the income equity index for 2007-2011 and 2012-2016 periods of the whole Cameroon. The magnitude of the change in the distribution of income is expressed through the use of the index of social mobility which is the area under the concentration curve.



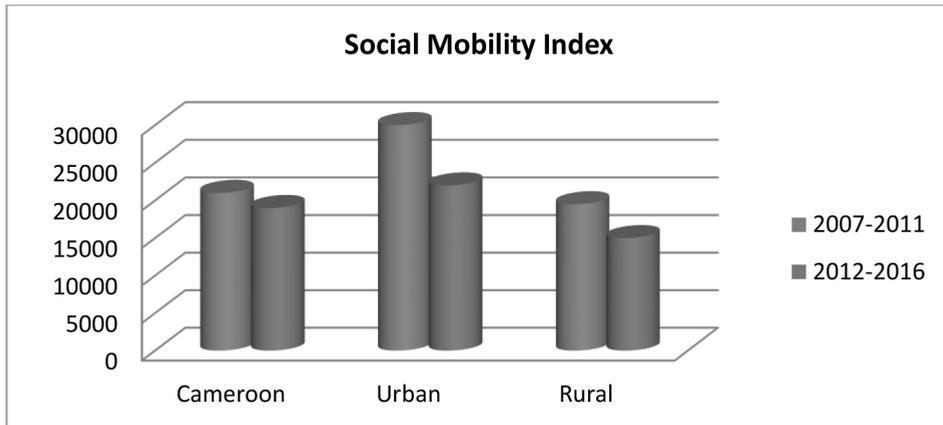
**Figure 6:** Concentration Curve of Wealth index of Cameroon Rural Areas from 2007-2011 and 2012-2016

Figure 7 illustrates an increase in average income per capita for the given period in Cameroon; it reveals some evidence of amelioration in income. This increase is more in urban area than rural area.



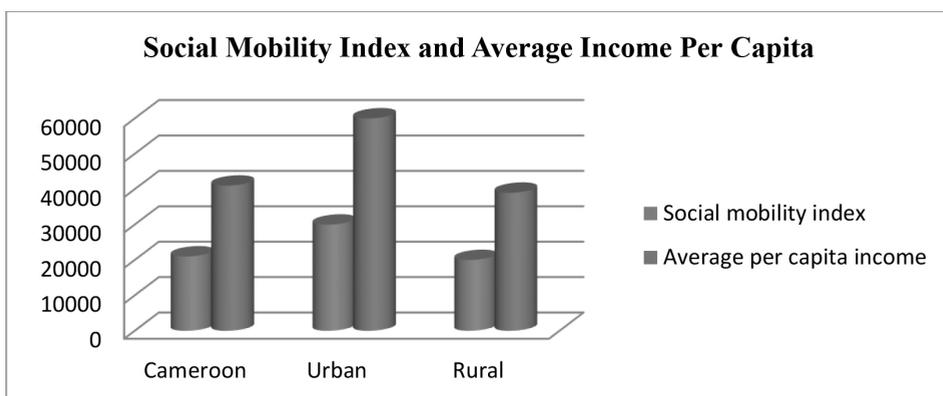
**Figure 7:** Average Income per Capita for 2007-2011 and 2012-2016

Social mobility is the movement of individuals, families, households, or other categories of people within or between social strata in a society. The Social Mobility Index is used to weight up opportunity that children from a disadvantaged back ground will do well at school and get a good job in the urban and rural regions of Cameroon. Thus, Figure 8 illustrates a betterment of the social mobility during the given period in Cameroon; it is a mark of amelioration in income.



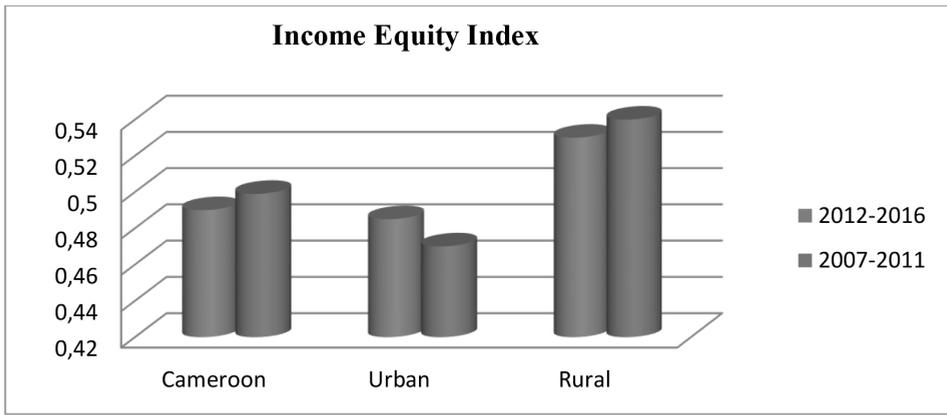
**Figure 8:** Social Mobility Index for 2007-2011 and 2012-2016

Figure 9 is the comparison between the average income per capita and the social mobility index for the given period. It shows that the average income per capita is higher than the social mobility index. This means that the distribution of income is not equal because the average income per capita of all groups is not equal. The population of Cameroon is suffering from an inequality among socio-economic group that increase the level of poverty within the country. Between areas in the territory urban regions have the highest percentage of inequality.



**Figure 9:** Social Mobility Index and Average per Capita Income of 2012-2016 and 2007-2011

Figure 10 below is the income equity index and it is used to measure income inequality. It is between zero and one and as far as equality increases it gets closer to one. In this case, income inequality is less than one in all regions for the given period. The value obtained for the entire Cameroon is less than 0.5, which shows a high level of inequality and the index is lower as the years increase, meaning the income inequality is getting worse.



**Figure 10:** Income Equity index for 2007-2011 and 2012-2016

This study analyses if Cameroon has obtained an inclusive growth between the periods of 2007-2011 and 2012-2016. For that, we needed to see a general amelioration in income and equity. The graphs given above demonstrate the economic development status of Cameroon. We obtain that Cameroon meet all the conditions that implies growth per capita to the detriment of equity. Hence, with the combination of all those income measurements, we can strongly conclude that the growth in Cameroon is not inclusive.

## Conclusion

In conclusion, this paper presents the status of the economic development in Cameroon and female inclusion problems. It also explains the annual data on Gross Domestic Product (GDP) and assets of household survey between two time periods of 2007-2011 and 2012-2016. We found that due to a global amelioration in female inclusion effort, Cameroon has also improved its condition . This positive change can be detected from

the concentration curve on employment. But, because the concentration curves have increased over time, there is a big sign indicating inefficiency. We further used the same approach with the social mobility and the income equity index. Further, the average income per capita is higher than the social mobility index, which means there is inequality in income distribution, with an income index smaller to one which indicates inequality is in the upper level. Nevertheless, inequality level changes by region. With this inclusion of growth condition, rural areas of Cameroon are on the third condition of growth per capita which really affects the equity. With respect to urban regions, the rate of the growth, the income equity index and the average income per capita index are higher than zero, that is a good sign of inclusive growth. The concentration curves of the wealth index fall starting from 2007-2011 to 2012-2016 period, which illustrates a contradiction with the concentration curves of income per capita. It can be explained by the fact that high revenues are used for high expenses without supporting the savings. Unfortunately, with an increase in GDP in Cameroon, the rich socio-group is getting richer and poor socio-group is getting poorer. Thus, it can be concluded that growth in Cameroon has not been as inclusive because as growth advanced equity did not. Hence, despite positive developments, women inclusion still faces many problems in Cameroon which can be confirmed by their very low representation in important functions of the country. Cameroon is successful in the integration of women precisely in the food crop business because the business is successful in helping to satisfy the food demand of the population; and also due to the fact that the business is not into importation, whenever there is inflation in the country the prices are not affected. The traditional place of women in society, as the housekeeper and baby-sitter, has strongly slowed women empowerment in Cameroon. Our discussion reveals that female inclusion still faces a huge problem in all African countries which have sex segregation in both economic activity and education. Without education there is a quasi-absence of women presence in the economic sector. In addition, the number of girls having a chance for proper education is low in Cameroon. Cameroon has gender inequality in education of 0.66667% which gives advantage to boys than girls. All in all, the low female participation in education is most of the time due to the over age, dropping out due to pregnancy, early marriage and family ideas

about the position of a female in the society. We also observed that lesser percentages of females are presented in each category of education: pre-primary, primary and secondary. In order to deal with this state of affairs, Cameroon must focus on encouraging females and creating policies to facilitate their insertion. Since female inclusion plays an important role in the workforce and makes the economic growth sustainable and durable, such policies are required. For the inclusiveness, the government should be more concerned on formulating policies that will award the betterment of growth equally and reduce inequality.

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# ***Transmission Process of Financial Crises: Interdependence and Contagion Effects Across Turkey, Brazil, Russia and the Middle East Countries***

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## **Abstract**

The first aim of the paper is to investigate the interdependence and/or contagion effect of an economic crisis across Turkey, Brazil and Russia as well as some Gulf Cooperation Council countries; Kuwait, Oman, Qatar, and Morocco covering the period from August 2004 to March 2012. The second aim is to present an alternative view on the transmission process of financial crises across the economies via any possible interaction channel between the interdependence effect and contagion. An exchange market pressure index and the outlier test of Favero and Giavazzi (2002) are used in this paper. The estimation results reveal that there are fifteen cases in which the interdependence and the contagion effects could be related to each other. Consequently, it can be suggested that the policy-makers are less likely to prevent the financial crises experienced outside being transmitted to their own country; even if they could exactly predict that, the interdependence effect exists.

**JEL Codes:** G01; C12; C32.

**Keywords:** *Financial crises; Contagion; Interdependence, Favero and Giavazzi Outlier Test, Simultaneous Equation System*

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## **1. INTRODUCTION**

Since Masson (1998, 1999a, 1999b) propounded the monsoonal effect, it has been well-known that the emerging markets are nearly related to the economic climate of the advanced economies. Moreover, some emerging markets, especially BR(IC) countries and Turkey have been started to be classified separately due to their economic performances relative to the others. In keeping up with their economic performances, it has been brought up that new trade and financial linkages may appear between the above-mentioned emerging markets and other emerging markets (e.g. Mlachila and Takebe (2011), and IMF (2011)). However, the transmission of financial turbulences across the GCC economies is not given much concern in the related literature. To the best of our knowledge, there is a lack of research considering the GCC economies to test for the contagion. Therefore, the main purpose of the paper is to investigate the interdependence and/or contagion effect for some GCC economies though Turkey, Brazil and Russia as the core central economies. In other terms, this paper investigates the existence of second generation monsoonal effects from Turkey, Brazil and Russia to Kuwait, Oman, Qatar, and Morocco. Another purpose of the paper is to contribute to a new insight, the transmission mechanism of the financial turbulences across the economies.

This paper considers an exchange market pressure index and the outlier test of Favero and Giavazzi (2002) to identify financial turbulences. The contribution of the paper is to provide a new insight into the relationship between the interdependence and the contagion effects. This is structured by considering a possible interaction channel between the interdependence effect and the contagion phenomenon in such a way that an interdependence effect could weaken, disappear completely or veer during the crisis period as a result of the contagion phenomenon. In the paper, Turkey, Brazil and Russia are pre-determined as the core or central economies, while Kuwait, Oman, Qatar and Morocco are determined as the peripheral economies depending upon the data availability, covering the period from August 2004 to March 2012.

It is noteworthy to overview the impact of global crisis on the selected Gulf Cooperation Council (GCC) countries shortly. Insel and Tekce (2011)

analyse the trade flows of the GCC countries before and after the 2003 Custom Union Agreement. It is found that the trade of the GCC countries are mostly related to the Asian countries after 2003. Their results reveal important implications for the economic and political concerns across their partners. The 2003 Custom Union Agreement and the Common Market in 2008 have reinforced the economics integration among the GCC countries. In addition, decreasing vulnerability of the economies to the fluctuations in the oil and gas prices, high population growth and rising unemployment in the region increased the need for diversification, Insel and Tekce (2010). Since the capital intensive oil and gas industry offers only limited employment opportunities (Sturm et al., 2008: 14), industrial policies towards diversification have focused on different sectors in different GCC countries. Large current account surpluses with investments by corporations and wealthy individuals have allowed a significant portion of GCC investments to take place through Gulf-based sovereign wealth funds<sup>2</sup> (SWF). The GCC sovereign funds are diversified on global equities, hedge funds, real estate, and private equity<sup>3</sup>.

Habibi (2009) states that the global crisis was transmitted to Arab economies through seven different markets: the financial markets, the crude oil market, Arab investments in global asset markets, tourism, the remittance income of Arab workers, and the region's non-oil exports, originating primarily in North Africa and intended for Europe. Noticeably, the impact of global economic crises on the GCC economies diverges depending upon the openness and involvement in the international financial markets. During the 1970s and 1980s, Gulf investments were mainly concentrated in the real estate sector and activities associated with the hydrocarbon sector. The upward trend in the oil prices strengthened the fiscal and current account surpluses and the foreign exchange reserves of the GCC countries. However, decreasing vulnerability of the economies to the fluctuations in the oil and gas prices, high population growth and rising unemployment in the region increased the need for diversification. Large current account

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<sup>2</sup> A sovereign wealth fund (SWF) is a state-owned investment fund composed of financial assets such as stocks, bonds, property, precious metals or other financial instruments. The SWF includes stabilization funds, classical investment funds, and private-equity style government companies. These funds have allowed domestic financial sectors to develop.

<sup>3</sup> Detailed information is given by B. Setser and R. Ziemba, *GCC Sovereign Funds Reversal of Fortune*, Working paper, Council on Foreign Relations, Center for Geoeconomic Studies, January 2009.

surpluses with investments by corporations and wealthy individuals have allowed a significant portion of GCC investments to take place through Gulf-based sovereign wealth funds (SWF). The GCC sovereign funds are diversified on global equities, hedge funds, real estate, and private equity. The GCC countries started to diversify their economies; Qatar has focused its investments on natural gas industry, which is not considered as a solution for the volatile prices in the world energy markets. Oman is still concentrated on oil revenues, despite some efforts to develop manufacturing and tourism industries. Kuwait is highly dependent on oil and recently also develops its finance sector. The GCC countries are characterized with their highly open and liberal trade regimes. The share of total external trade to GDP reveals that Bahrain and the UAE have more open economies; whereas Kuwait is the least open one. Since November 2001, Morocco has received large investment from Gulf investment funds and also from Europe. In addition, agriculture, tourism and worker remittances coming from Europe are also very important sources of income for Morocco.

Orozco and Lesaca (2009) discuss the impact of global crisis on the Arab countries stressing the diversified structure of these economies. The main channels for the transmission of financial crisis are related to the remittances, foreign investment and exports. The 2008 global economic crisis brought about a higher level of speculative real estate investment in the GCC countries, increased the unemployment rate and lowered the income in Morocco. The effect of the crisis was not seriously detected in Qatar, since the country is the main natural gas exporter. In 2007 and 2008, the GCC countries invested more than 100 billion dollars on sovereign wealth funds in US and Europe. Kuwait and Qatar supplied large amount of funds to rescue the banks in the US. Orozco and Lesaca state that Gulf stock markets have followed a parallel path and a strong link with the European and North American markets. However, some Arab markets, such as Morocco and Jordan were not significantly affected by the global fluctuations, since several MENA countries, such as Morocco, depend heavily upon tourism as an important source of service sector jobs and foreign exchange revenue. Besides, during the summer of 2008, the fall in the oil prices distressed mainly Kuwait, Oman, Qatar, and other GCC economies. Despite the fall in the remittances, level of reserves, liquidity

and exports revenue, the economic turndown in the Arab region was less severe on the global level. According to the 2008 Economic Intelligent Unit of UEA Monthly Economic Report, Saudi Arabia and Kuwait have the lowest externally financed projects while UAE and Qatar have the highest percentage of projects financed by the international banks.

Saif and Choucair (2009) discuss the variety of policy responses to the crisis in GCC countries. According to them, Kuwait is the only country that has developed a comprehensive rescue package to sustain its economic program. Oman strengthened the manufacturing and construction sector to respond to the crisis due to limited financial resources. Qatar restructured the financial sector. The financial crisis had a serious impact on Morocco.

Ellaboudy (2010) analyses the impact of the global crisis on GCC countries and states that the effects of crisis were mild compared with the rest of the world due to implemented fiscal and monetary policies to strengthen the robustness of the economies to shocks. Marahdeh and Shrestha (2010) examine the stock market integration among the GCC countries. Among the GCC countries, Saudi Arabia and UAE have the largest stock market; whereas Oman's stock market is the smallest one. Over the period of 2002-2007, all the GCC stock markets grew remarkably and market capitalization reached the highest level in 2007.

A short overview of the impacts of global crisis on the countries of interest is given in the Introduction section. Section 2 reviews the literature on the transmission channels of financial turbulences. Section 3 includes empirical methodology and Section 4 demonstrates the empirical results. Section 5 provides the discussion on the empirical results and the research is concluded in Section 6.

## **2. Transmission Channels of Financial Turbulences**

Dornbusch *et al.* (2000) states that the contagion can be explained by the macroeconomic fundamentals and these fundamentals can capture the interdependence among the economies. On the other hand, the term of contagion involves irrational phenomena which cannot be explained by the macroeconomic fundamentals.

Therefore, the transmission of financial crisis across the economies is explained by the two leading titles. The first is “interdependence” or “fundamentals-based contagion”, and the second is “contagion” or “irrational phenomena”. Channels of the interdependence or “fundamentals-based contagion” consist of spillover effect, monsoonal effect and financial linkages. The spillover effect originates from trade linkages and has a relatively larger effect on volatility than contagion. A competitive devaluation in an economy could -directly and/or indirectly- deteriorate trade balance of the other economy as discussed by Gerlach and Smetz (1995) and Fratzcher (2003).

The monsoonal effect offered by Masson (1998) is a result of the changes in macroeconomic policies of the industrialized economies which could have a potential to affect the economic conjecture of the world. Finally, the financial linkages stem from density of financial relations, for example the competition in banking credit and the borrowing relations, as discussed in Kaminsky and Reinhart (2000) and Fratzcher (2003). Masson (1999a, 1999b), the multiple equilibria approach to the contagion states that a stable equilibrium point on any economy may turn to an unstable one as a result of financial crisis experienced in another economy. Masson (1999b) emphasizes that the lending and investment booms and results of the financial crises experienced in emerging markets could be associated with explicit and implicit government guarantee and moral hazard. The political contagion approach offered by Drazen (1999) states that a financial crisis experienced in a potential member of any economic integration also increases the probability of experiencing several financial crises in the other potential members of the integration. It is defined by any dynamic adjustments to represent cross-market spillovers; and additional movements over and above market fundamentals during crisis periods which are typically called contagion.

Moser (2003) discusses that simultaneous crises are not a sufficient condition for contagion. Contagion requires causal connection. The (near) simultaneous occurrence of financial crises may instead result from coincidence or common cause rather than causal links. In the case of coincidence, independent shocks hit countries at about the same time

with no connection between the different crises, and diagnosing contagion would be a post hoc fallacy. With common cause, several countries are hit by a common global or regional external shock (other than a financial crisis). Candidates for such adverse common shocks with the potential of inflicting balance-of-payment difficulties, particularly in emerging market economies, are changes in global (US) interest rates, exchange rates between major currencies, commodity prices, or recessions in major industrial countries.

Dungey *et al.* (2005) highlight the key similarities and differences between the various approaches. They show that the Favero and Giavazzi (2002) approach is very similar to the Forbes and Rigobon (2002) correlation test as both tests are based on testing the significance of dummy variables in an augmented model. The similarities between the two testing frameworks are made more transparent by defining a crisis period to be where the dummy variable is non-zero. Observations when the dummy variables are not defined, by default correspond to pre-crisis periods. On the other hand, they found two differences between the Forbes and Rigobon and Favero and Giavazzi approaches. Forbes and Rigobon identify a crisis period as a period of higher volatility using a single dummy which has a non-zero value during the entire crisis period. The Favero and Giavazzi test identifies potentially many (short-lived) crisis periods associated with extreme returns. Secondly, the Favero and Giavazzi test assigns a different parameter to each dummy variable whereas the Forbes and Rigobon is based on a single parameter to represent contagion between two countries. However, an important assumption underlying Favera and Giavazzi framework is that variables exhibit autocorrelation. If this assumption is not valid, then the choice of instruments based on lagged returns will not be valid, and identification of the structural model via the inclusion of own lags will no longer be appropriate.

Dungey *et al.* (2010) formulate and implement an empirical model of financial crises both across asset classes and national borders. They review the definition of spillover and contagion effects drawing on the existing theoretical literature, such as Masson (1999a) who essentially views contagion as the effect of residual shocks once the usual linkages

have been accommodated. Overviews of the literature on contagion may be found in Dornbusch *et al.* (2000).

The empirical financial crisis literature tends to concentrate on cross-border transmissions, for instance, Eichengreen *et al.* (1995, 1996) look at currency markets; Bae *et al.* (2003), and Forbes and Rigobon (2002) analyse equity markets; and Favero and Giavazzi (2002) examine bond markets. Baur and Fry (2009) contributes to the literature on contagion testing by proposing a multivariate test based on the cross-sectional and time-series dimension of the data that controls for interdependencies. They indicate that contagion is relatively rare, and that the variables measuring interdependencies are significant. Their interpretation is consistent with Forbes and Rigobon (2002), revealing that there is no (or little) contagion, but only interdependence. They conclude that the detection of contagion depends on the adequate specification of the interdependencies and market fundamentals. The choice of fundamentals is dictated by views on the nature of the crisis and the frequency of data appropriate for the choice of modelling contagion. Korkmaz and Insel (2010) examine the existence of contagion effect among seven former Soviet economies in Eastern Europe and the contagion hypothesis with the exchange market pressure index tested across the EU member and non-member groups by the threshold test of Pesaran and Pick (2007). They find that the contagion dynamics among the EU non-member economies in the region are stronger and asymmetric after the accession of others to the EU.

This paper investigates any possible interaction channel between the interdependence effect and contagion effect for some GCC economies and Morocco through Brazil, Russia and Turkey, and then provides a new insight into the transmission mechanism of the financial turbulences across the economies following the Favera and Giavazzi (2002) approach. In the paper, the interdependency effect is explained through the EMP indexes whereas the contagion effect is explained by means of the crisis or mania dummies.

### **3. Empirical Methodology:**

The Outlier Test of Favero and Giavazzi (2002) is the appropriate one to achieve the main purpose of this research due to the following reasons:

**i)** The Outlier Test focuses on each of the financial turbulence identified in the sample individually, so it is possible to compare a crisis period with non-crisis periods even for low frequency data similar to the one employed in this study.

**ii)** The Outlier Test allows us to take both crises and manias into account, thus the proposed hypothesis can be tested for both mania and crisis periods.

Favero and Giavazzi suggest that the contagion could be asymmetric across the economies, and a financial crisis (mania) experienced in an economy could lead to mania (crisis) in another economy. In addition, the transmission process of financial crises across the economies might be non-linear across economies. In view of the Favera and Giavazzi approach, a simultaneous system of equations is constructed and estimated by the 3SLS method to test the hypothesis that the interdependence effect could weaken, even disappear completely, or veer in a crisis period as a result of the contagion process.

The simultaneous equations system is constructed as follows:

$$\begin{bmatrix} 1 & \dots & -\beta_{1i} \\ \vdots & \ddots & \vdots \\ -\beta_{1i} & \dots & 1 \end{bmatrix} \begin{bmatrix} z_{1,t} \\ \vdots \\ z_{i,t} \end{bmatrix} = \begin{bmatrix} \gamma_{11} & \dots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \dots & \gamma_{ii} \end{bmatrix} \begin{bmatrix} z_{1,t-1} \\ \vdots \\ z_{i,t-1} \end{bmatrix} + \left[ I + \begin{bmatrix} a_{11} & \dots & a_{1i} \\ \vdots & \ddots & \vdots \\ a_{i1} & \dots & a_{ii} \end{bmatrix} \begin{bmatrix} d_{1,t} & \dots & 0 \\ \vdots & \ddots & \vdots \\ 0 & \dots & d_{i,t} \end{bmatrix} \right] \begin{bmatrix} \varepsilon_{1,t} \\ \vdots \\ \varepsilon_{i,t} \end{bmatrix}$$

where ( $z_i$ )s are the EMP indexes related to each of the economies included in the sample, ( $\beta$ 's,  $\gamma$ 's and  $a$ 's) are the parameter values of the system, ( $\varepsilon_i$ 's) are the normally distributed econometric error terms, and ( $d_i$ )'s are exogenous dummy variables.

The Outlier Test is applied to the exchange market pressure index (EMP), offered by the Eichengreen *et al.* (1996), in the analysis.<sup>4</sup> The EMP index for each economy is constructed as:

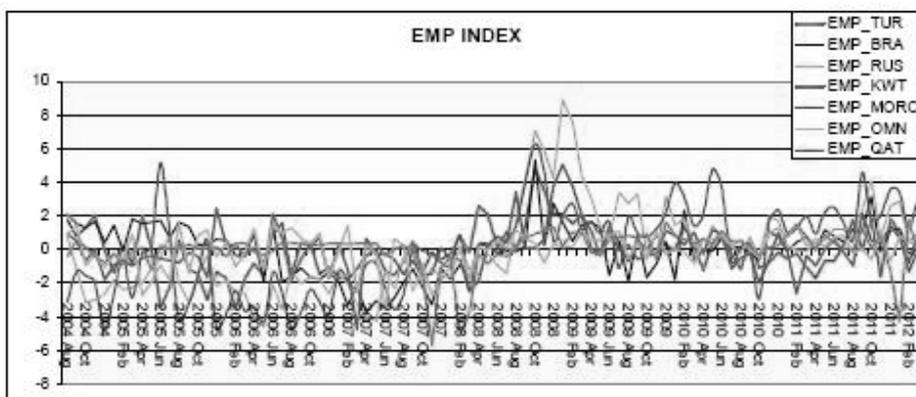
$$EMP_{i,t} = \left[ \left( \frac{\Delta E_t}{E_{t-1}} \right) + (i_t - i_t^{us}) - \left( \frac{\Delta NFA_t}{M_{t-1}} \right) \right]$$

<sup>4</sup> EMP index is similar to the Korkmaz and Insel (2010) index. India, China, Bahrain, UAE and Saudi Arabia are eliminated from the econometric analysis due to limitations on data.

where  $(EMP_{j,t})$  is the exchange market pressure index for economy (j) at time (t).  $(\bar{E})$  is the nominal exchange rate per the U.S. dollar, (i) is the money market interest rates for each of the economy and the U.S. (NFA) is the net foreign assets, and (M) is the money stock.

Financial turbulence periods are identified by the help of exchange market pressure index (EMP) shown in Figure 1. Each EMP index is constructed as the sum of unweighted average of devaluation (or revaluation) rate and interest rate differential minus the contribution of net foreign assets to change in money stock. The EMP indexes are standardized (i.e. taking difference mean and divide by standard deviation) for each of the components.

**Figure.1: Exchange Market Pressure Index Movements**



Built on the above definitions; the financial turbulence periods are identified and the interdependence and contagion effects are examined for Turkey (TUR), Russia (RUS), Brazil (BRA), Kuwait (KWT), Qatar (QAT), Oman (OMN), and Morocco (MORC) covering the period from August 2004 to March 2012.

The first aim of this paper consists of five investigation stages:

First, the VAR (3) model is estimated for the EMP indexes, separately. The order of VAR is selected using the LR and AIC statistics.

Second, the residuals are obtained from each of the VAR (3) models. Favero and Giavazzi suggest that each of the positive and negative residuals from the VAR model should be focused on separately, since they can represent the financial crisis or mania periods. The each one of the crisis or mania periods is presented by dummy variables, which are constructed by filtering the residuals obtained from the VAR (3) model.

Standard deviation for each of the residual series is calculated to determine the threshold level for the outlier value for each of the economies; such as

$$d_{i,t} = \begin{cases} \mathbf{1}: & |u_{i,t}| > 3\sigma_{u_{i,t}}^2 \\ \mathbf{0}: & \text{Otherwise} \end{cases}$$

Furthermore, a dummy variable is defined separately by filtering the residuals from VAR (3) model. If a positive (negative) residual exceeds the three standard deviation of its sample distribution, then the dummy variable takes the value of one (minus one) for this period and zero for the other periods. In other words, a dummy variable is constructed for each of the crisis or mania periods separately considering the sign and value of thresholds for each country. Total 13 dummy variables are defined regarding the value of (+1) for crisis (if positive) or (-1) for mania (if negative) period; and 0 elsewhere.

Third, the VAR (3) model is re-estimated with the exogenous (13 dummy) variables, and the normality of the residuals are accepted for each of the indexes. In order to ensure the normality, in addition to the Jarque-Bera (JB) test statistics; the box-plots are used to confirm the outlier(s).

Fourth, the general form of seven equations are estimated for each EMP index simultaneously to capture the possible non-linear transmission process of financial crisis across economies. Seven equations including predetermined and exogenous variables<sup>5</sup> on the right hand side are estimated simultaneously by the 3SLS method. The method is applied to the general form of the system using adequate instruments<sup>1</sup>. Apparently, the specific form of the system with statistically significant coefficients is confirmed by the successive elimination of each insignificant variable with the highest p-value through the re-estimation of the system.

<sup>5</sup> Constant, 3 lags values of related country EMP index, other country EMP indexes; the 13 dummy variables.

Finally, the existence of the contagion is tested through the null hypothesis representing the non-existence of the contagion phenomenon while the alternative implies its existence.

#### 4. Empirical Results

Descriptive statistics presented in Table 1, part (a) shows the distribution of each EMP index. The JB test statistic reveals that these indexes are not normally distributed. The Russian and Moroccan EMP indexes show the highest volatilities; whereas the lowest volatilities occur for Oman, Qatar, and Kuwait, respectively. Table 1, part (b) displays the descriptive statistics and the threshold values for the residuals obtained from VAR (3) models. The threshold value is calculated from 3 times the SD of residuals for each of the countries. Thus, it is 3.24 for Turkey, 3.48 for Russia, 2.94 for Brazil, 3.24 for Kuwait, 2.73 for Qatar, 2.50 for Oman, and 4.89 for Morocco.

Any outlier above the (+) threshold shows the “crisis period” whereas any value below the (-) threshold displays the “mania period”. For example, the threshold value for Brazil is 2.94. Inspection of residuals from VAR (3) shows that there is only one outlier value 3.81 for the period 2008:10 whereas the box plot diagram indicates two values for the periods 2008:10 and 2011:10. Since these positive outliers are above the threshold, these two periods are accepted as crisis period for Brazil.

**Table 1:** Descriptive Statistics Sample: 2004M08 2012M03 (N=92) (a)  
EMP\_ Indexes

|             | EMP_<br>TUR      | EMP_<br>RUS      | EMP_<br>BRA      | EMP_<br>KWT      | EMP_<br>QAT | EMP_<br>OMN      | EMP_<br>MORC |
|-------------|------------------|------------------|------------------|------------------|-------------|------------------|--------------|
| Mean        | <b>-0.023378</b> | <b>-0.002222</b> | <b>-0.013596</b> | <b>-0.006429</b> | 0.004500    | <b>-0.000446</b> | 0.014178     |
| Median      | -0.061333        | -0.274239        | 0.211108         | -0.116127        | 0.214843    | 0.179729         | 0.268415     |
| Maximum     | 4.831420         | 8.885007         | 5.314080         | 5.026518         | 1.763973    | 1.543064         | 6.314798     |
| Minimum     | -3.555280        | -4.621303        | -3.721791        | -4.772387        | -5.675954   | -3.626383        | -4.772989    |
| Std. Dev.   | 1.473762         | 2.616287         | 1.581442         | 1.380056         | 1.186130    | 1.086316         | 2.567496     |
| JB          | 2.681285         | 19.21552         | 1.357830         | 39.21884         | 472.2775    | 18.91712         | 1.751435     |
| Probability | 0.261678         | 0.000067         | 0.507167         | 0.000000         | 0.000000    | 0.000078         | 0.416563     |

**(b) Residuals obtained from VAR (3) Model**

|                  | <b>RES_<br/>TUR</b> | <b>RES_<br/>RUS</b> | <b>RES_<br/>BRA</b> | <b>RES_<br/>KWT</b> | <b>RES_<br/>QAT</b> | <b>RES_<br/>OMN</b> | <b>RES_<br/>MORC</b> |
|------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|----------------------|
| Mean             | <b>-3.99E-17</b>    | 7.48E-17            | <b>-2.99E-17</b>    | 1.62E-17            | <b>-3.99E-17</b>    | <b>-7.48E-17</b>    | 8.98E-17             |
| Median           | -0.193308           | -0.226332           | -0.185030           | -0.100121           | 0.018453            | 0.013405            | -0.038054            |
| Maximum          | 3.602587            | 3.416234            | 3.815731            | 3.362213            | 1.986159            | 1.627945            | 5.203563             |
| Minimum          | -1.997238           | -2.512880           | -2.074038           | -3.274930           | A-4.462201          | -2.098461           | -3.902244            |
| Std. Dev.        | 1.079497            | 1.161084            | 0.982751            | 1.079213            | 0.910971            | 0.833282            | 1.631702             |
| <b>Threshold</b> | <b>3.24</b>         | <b>3.48</b>         | <b>2.94</b>         | <b>3.24</b>         | <b>2.73</b>         | <b>2.50</b>         | <b>4.89</b>          |
| JB               | 20.27989            | 6.801840            | 19.35941            | 9.631802            | 238.3987            | 0.712589            | 1.838412             |
| Probability      | 0.000039            | 0.033343            | 0.000063            | 0.008100            | 0.000000            | 0.700266            | 0.398836             |

In some cases, outlier value shows the same period for different countries. As a result, only one dummy variable is constructed to represent the related period for these countries. For example, Dummy variable BRATURRUS\_2008:10(+) represents three crises at the same period for Turkey, Russia and Brazil through their threshold values. The positive (+) sign shows the concurrent increase of the EMP indexes in these countries. Table A in the appendix shows the related events to the financial turbulences and manias for each of the economies. Accordingly, a dummy variable for Kuwait, KWT\_2007:03 (-) displays that the residuals obtained from VAR (3) model has a negative value below the threshold (-3.24). This is an evidence for the mania period for Kuwait in 2007:03.

Table 2 shows the simple and cross correlation coefficients between the indexes. In part (a), the simple correlation coefficients show the strength of the co-movements between the EMP indexes. The values confirm the relatively strong relationship between Turkey, Russia and Brazil about the EMP indexes. As the core economies of this research, these three economies also move on the same direction. The Middle East economies also follow the similar patterns.

**Table 3:** Correlation Coefficients Sample: 2004M08 2012M03 (N=92)

**(a) Correlation Coefficients:**

|          | EMP_TUR | EMP_RUS | EMP_BRA | EMP_KWT | EMP_QAT | EMP_OMN |
|----------|---------|---------|---------|---------|---------|---------|
| EMP_RUS  | 0.4915  |         |         |         |         |         |
| EMP_BRA  | 0.4372  | 0.4708  |         |         |         |         |
| EMP_KWT  | 0.3515  | 0.5170  | 0.2770  |         |         |         |
| EMP_QAT  | -0.0165 | 0.1898  | 0.1844  | 0.2234  |         |         |
| EMP_OMN  | 0.0843  | 0.2016  | 0.2276  | 0.2715  | 0.3078  |         |
| EMP_MORC | 0.3644  | 0.7145  | 0.3510  | 0.3331  | 0.1428  | 0.1202  |

**(b) Cross Correlation Coefficients:**

|          | EMP_TUR            | EMP_RUS            | EMP_BRA     | EMP_KWT            | EMP_QAT     | EMP_OMN     |
|----------|--------------------|--------------------|-------------|--------------------|-------------|-------------|
| EMP_RUS  | 0.5550 (+3)        |                    |             |                    |             |             |
| EMP_BRA  | 0.4372 ( $\pm 0$ ) | 0.4709 ( $\pm 0$ ) |             |                    |             |             |
| EMP_KWT  | 0.4153 (+3)        | 0.5171 ( $\pm 0$ ) | 0.3653 (+3) |                    |             |             |
| EMP_QAT  | -0.2953 (-8)       | 0.289 (+11)        | 0.3711 (+9) | 0.2382 (-1)        |             |             |
| EMP_OMN  | 0.1565 (+2)        | 0.2848 (+5)        | 0.3028 (+7) | 0.2715 ( $\pm 0$ ) | 0.3805 (+5) |             |
| EMP_MORC | 0.3836 (+6)        | 0.7145 ( $\pm 0$ ) | 0.3590 (-3) | 0.4018 (-3)        | 0.1940 (-8) | 0.2725 (-4) |

**(+) lead; (-) lag**

In Part b, a positive cross correlation coefficient indicates the leading economy. This means a leader economy tends to move in advance of the other economy. A negative cross correlation coefficient indicates the follower economy, since it follows the leader in a systematic or unsystematic pattern. In both cases there is a period of movement. However, if there is

not any lag or lead interval, then the standard pattern of the index follows a persistent pattern at irregular and unpredictable intervals since an increase (decrease) in EMP index might be followed by further increase (decrease). For example, the Turkish EMP index is a leading index for Russia, Kuwait, Oman and Morocco. The Russian index is a leading index for Qatar and Oman. The Brazilian index is a leading index for Kuwait, Qatar, and Oman. It can be seen that the Turkish and Brazilian indexes move contemporaneously implying that their movement is not periodic but they follow a standard pattern. On the other hand, for the economies of the same region, Qatar index is the leading index for Turkey and Kuwait; Moroccan index is a leading for Brazil, Kuwait, and Oman. In addition, the Russian index has a contemporaneous relationship with the Brazilian, Kuwaiti and Moroccan indexes. The Kuwaiti index has the same pattern with Oman index.

It is assumed that the relationship between the EMP indexes shows the interdependence effect and the statistically significant dummies determines the contagion effect. Table 3 presents the estimation results regarding the interdependence and contagion effects. Considering the 3SLS estimation results for the Turkish economy, the EMP index for Turkey has a statistically significant and negative relationship with Russian EMP index whereas the Russian EMP index has a positive significant coefficient on the Turkish EMP index. The sizes of the coefficients are almost the same. This means that the interdependence effect from Turkey to Russia has a feed-back mechanism, but the feed-back mechanism occurs on the opposite direction. This means that a one-point increase (decrease) in the Russian EMP index results in approximately 0.248 points decrease (increase) in the Turkish EMP index. This can be interpreted as follows: when Russian economy experiences a financial crisis, some international funds are exiting from Russia to enter to Turkish economy whereas when Turkish economy experiences a financial crisis some international funds exit from not only Turkish economy but also Russian economy.

Moreover, the financial crisis experienced in the Turkish economy in June 2006 affected the Russian EMP index adversely by about 4 points. The above results imply that the Turkish economy affected the Russian

economy both linear (via the interdependence effect) and non-linear (via the contagion effect) manner in June 2006, but at the opposite ways. This case is an example of the “flight to quality” behaviour because the financial crisis experienced in the Turkish economy resulted in a decrease in the Russian EMP index.

Based upon the estimation results for the Russian economy, it can be suggested that the Russian EMP index is affected linearly by the EMP indexes of Kuwait, Oman, Morocco and Turkey at the same direction. A one-point increase (decrease) in the EMP indexes of those countries leads the Russian EMP index to rise (reduce) by about 1.286, 0.690, 0.686 and 0.262 points, respectively. Thus, this outcome shows that Russian economy have experienced interdependence effect from these countries because this mechanism works even in tranquil periods. Furthermore, the estimation results indicate the presence of the contagion effects from Turkey, Brazil, Kuwait, and Qatar to the Russian economy.

It must be highlighted that the direction of the interdependence and the contagion effects from Brazil to Russia are the same. In other words, the financial crisis experienced in Brazil in October 2011 caused the Russian EMP index to increase both linearly and non-linearly since the signs of the interdependence and the contagion coefficients are the same.

**Table 3:** Simultaneous Equations Estimation iterative 3SLS Results

|                          | <i>Dependent Variable</i> |                          |                           |                          |                           |                           |                           |
|--------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------------------|---------------------------|---------------------------|
|                          | <i>EMP<sub>TUR</sub></i>  | <i>EMP<sub>RUS</sub></i> | <i>EMP<sub>BRA</sub></i>  | <i>EMP<sub>KWT</sub></i> | <i>EMP<sub>QAT</sub></i>  | <i>EMP<sub>OMN</sub></i>  | <i>E M P<br/>MORC</i>     |
|                          | <b>INTERDEPENDENCE</b>    |                          |                           |                          |                           |                           |                           |
| <b>EMP<sub>TUR</sub></b> |                           | <b>0.262<br/>(0.073)</b> |                           |                          | <b>-0.168<br/>(0.081)</b> |                           |                           |
| <b>EMP<sub>RUS</sub></b> | <b>-0.248<br/>(0.092)</b> |                          | <b>-0.222<br/>(0.094)</b> | <b>0.640<br/>(0.058)</b> | <b>0.125<br/>(0.045)</b>  | <b>0.435<br/>(0.090)</b>  | <b>1.037<br/>(0.093)</b>  |
| <b>EMP<sub>BRA</sub></b> |                           |                          |                           |                          | <b>-0.125<br/>(0.069)</b> | <b>0.151<br/>(0.076)</b>  |                           |
| <b>EMP<sub>KWT</sub></b> |                           | <b>1.286<br/>(0.110)</b> | <b>0.436<br/>(0.144)</b>  |                          |                           | <b>-0.623<br/>(0.141)</b> | <b>-1.420<br/>(0.193)</b> |
| <b>EMP<sub>QAT</sub></b> | <b>0.217<br/>(0.053)</b>  |                          | <b>-0.629<br/>(0.142)</b> |                          |                           |                           |                           |

|                           |                          |                          |                          |                          |                          |                          |                          |                           |
|---------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|
| EMP_ OMN                  |                          | <b>0.690</b><br>(0.195)  | <b>0.373</b><br>(0.158)  | <b>-0.395</b><br>(0.151) | <b>0.399</b><br>(0.114)  |                          | <b>-0.655</b><br>(0.219) |                           |
| EMP_ MORC                 |                          | <b>0.686</b><br>(0.069)  | <b>0.252</b><br>(0.071)  | <b>-0.451</b><br>(0.069) |                          | <b>-0.337</b><br>(0.074) |                          |                           |
|                           |                          | <i>EMP<sub>TUR</sub></i> | <i>EMP<sub>RUS</sub></i> | <i>EMP<sub>BRA</sub></i> | <i>EMP<sub>KWT</sub></i> | <i>EMP<sub>QAT</sub></i> | <i>EMP<sub>OMN</sub></i> | <i>EMP<sub>MORC</sub></i> |
|                           |                          | <b>CONTAGION</b>         |                          |                          |                          |                          |                          |                           |
| TUR_2005:04 (+)           | 2.696<br>(0.756)         |                          | <b>2.020</b><br>(0.970)  |                          | <b>1.983</b><br>(0.798)  | <b>-2.342</b><br>(0.807) |                          |                           |
| TUR_2006:06 (+)           | 3.095<br>(0.951)         | <b>-3.998</b><br>(1.612) |                          | <b>2.286</b><br>(1.100)  |                          | <b>2.405</b><br>(0.907)  | <b>4.054</b><br>(1.674)  |                           |
| RUS_2010:11 (+)           |                          |                          | <b>1.462</b><br>(0.746)  |                          |                          |                          |                          |                           |
| BRA_2011:10 (+)           |                          | <b>2.981</b><br>(1.472)  | 2.696<br>(0.839)         | <b>-1.846</b><br>(1.126) |                          | <b>-2.202</b><br>(0.945) | <b>-3.225</b><br>(1.668) |                           |
| BRATUR-<br>RUS_2008:10(+) | 2.637<br>(0.781)         |                          | 5.244<br>(0.933)         |                          | <b>1.477</b><br>(0.767)  |                          |                          |                           |
| KWT_2005:12 (+)           |                          |                          |                          |                          |                          |                          |                          |                           |
| KWT_2007:03 (-)           |                          | <b>6.716</b><br>(1.615)  | <b>2.237</b><br>(1.135)  | <b>-4.806</b><br>(1.182) | <b>1.202</b><br>(0.748)  | <b>-4.192</b><br>(1.071) | <b>-6.877</b><br>(1.881) |                           |
| KWT_2008:08 (+)           |                          | <b>-5.167</b><br>(1.507) | <b>-1.710</b><br>(0.926) | 3.651<br>(1.117)         |                          | <b>3.135</b><br>(1.001)  | <b>5.447</b><br>(1.746)  |                           |
| KWT_2011:02 (-)           |                          |                          |                          |                          |                          |                          |                          |                           |
| QAT_2007:11(-)            |                          |                          | <b>-4.563</b><br>(1.124) |                          | <b>-4.514</b><br>(0.751) | <b>-2.014</b><br>(0.815) |                          |                           |
| QAT_2012:01 (-)           | <b>-1.503</b><br>(0.827) |                          | <b>-2.640</b><br>(1.136) |                          | <b>-4.323</b><br>(0.690) |                          |                          |                           |
| OMN_2005:05 (-)           |                          |                          |                          |                          |                          | <b>-1.496</b><br>(0.760) |                          |                           |
| MORC_2005:06 (+)          | <b>-3.332</b><br>(0.765) |                          |                          |                          |                          |                          | 3.088<br>(1.056)         |                           |

±: Crisis -: Mania  
 Interdependence in yellow  
 Contagion pink area in bold  
 Standard errors in parentheses

**(1) 5. Discussion on the Empirical Results** The overall empirical analyses of the outlier(s) tests and the simultaneous equations estimations results reveal that:

- (2) There are thirteen financial turbulence periods in the sample period.
- (3) All of the financial turbulence periods display contagious at least one country.
- (4) All of the countries have at least two interdependence relations from the others.
- (5) All of the peripheral economies, i.e. Kuwait, Oman, Morocco and Qatar, are influenced by one of the core economies, i.e. Brazil, Russia and Turkey.
- (6) Almost all of the five financial turbulence periods experienced in the core economies also influenced the peripheral economies, except November 2010 Russian turbulence.
- (7) A second generation monsoonal effect does not matter for the peripheral countries.

The core economies are related to each other either linearly (interdependence effect) or non-linearly (contagious effect) or both. For example, both the Turkish and Russian economies and the Russian and Brazilian economies are related to each other and both in a linear and non-linear manner. However, the interaction mechanism between Brazil and Turkey works only at a non-linear fashion.

This paper proposes a new understanding of the relationship between the interdependence and the contagion effects. An alternative perspective<sup>6</sup> on the transmission process of financial crises across the economies is suggested considering any possible interaction channel between the interdependence effect and the contagion phenomenon. It is proposed that an interdependence effect could weaken, disappear completely or veer during the crisis period as a result of the contagion phenomenon. This proposed view brings about an important policy implication.

The empirical analysis reveals that there are fifteen cases in which the interdependence and the contagion effects could be related one to another.

<sup>6</sup> Korkmaz (2012).

Then we have defined the interdependence effect and the contagious effect as follows: The interdependence effect is equal to the interdependence coefficient (in Table3, above) times the current value of the EMP performance indicator when the economy experiences turbulence. The contagious effect equals the contagious coefficient (in Table 3, below) estimated by the 3SLS method. Net effect is the sum of the interdependence and contagious effects. These cases found in this paper are presented in Table 4.

**Table 4: Test Results of the Hypothesis of the Paper**

|  | <b>Interdependence Effect</b>                               | <b>Contagion Effect</b> | <b>Net Effect</b> | <b>Result</b> |
|--|---|-------------------------|-------------------|---------------|
| <b>from Turkey to Russia (in June 2006)</b>                      | 0.544<br>(0.262*2.076)                                      | -3.998                  | -3.454            | Veering       |
| <b>from Kuwait to Russia (in March 2007)</b>                     | -7.568<br>(1.586*-4.772)                                    | 6.716                   | 0.852             | Veering       |
| <b>from Kuwait to Russia (in August 2008)</b>                    | 5.407<br>(1.586*3.409)                                      | -5.167                  | 0.240             | Disappearing  |
| <b>from Russia to Brazil (in November 2011)</b>                  | -0.437<br>(-0.222*1.968)                                    | 1.462                   | 1.025             | Veering       |
| <b>from Kuwait to Brazil (in March 2007)</b>                     | -2.081<br>(0.436*-4.772)                                    | 2.237                   | 0.156             | Disappearing  |
| <b>from Kuwait to Brazil (in August 2008)</b>                    | 1.486<br>(0.436*3.409)                                      | -1.710                  | -0.224            | Veering       |
| <b>from Qatar to Brazil (in November 2007)</b>                   | 3.570<br>(-0.629*-5.676)                                    | -4.563                  | -0.093            | Disappearing  |
| <b>from Qatar to Brazil (in January 2012)</b>                    | 2.667<br>(-0.629*-4.240)                                    | -2.640                  | 0.027             | Disappearing  |
| <b>from Turkey to Qatar (in April 2005)</b>                      | -0.332<br>(-0.168*1.974)                                    | 1.983                   | 1.649             | Veering       |
| <b>from Brazil, Russia and Turkey to Qatar (in October 2008)</b> | -0.596<br>(-0.125*5.314)<br>(0.125*7.035)<br>(-0.168*4.831) | 1.477                   | 0.881             | Veering       |
| <b>from Brazil to Oman (in October 2011)</b>                     | 0.474<br>(0.151*3.137)                                      | -2.202                  | -1.728            | Veering       |
| <b>from Kuwait to Oman (in March 2007)</b>                       | 0.474<br>(-0.623*-4.772)                                    | -4.192                  | -1.219            | Veering       |

|  |                          |        |        |              |
|--|--------------------------|--------|--------|--------------|
| <b>from Kuwait to Oman<br/>(in August 2008)</b>    | -2.124<br>(-0.623*3.409) | 3.135  | 1.011  | Veering      |
| <b>from Kuwait to Morocco<br/>(in March 2007)</b>  | 6.776<br>(-1.420*-4.772) | -6.877 | -0.101 | Disappearing |
| <b>from Kuwait to Morocco<br/>(in August 2008)</b> | -4.840<br>(-1.420*3.409) | 5.447  | -0.606 | Veering      |

**Notes:** The interdependence effect is calculated as the interdependence coefficient from 3SLS estimation times the current value of the performance indicator of the economy experiencing the turbulence. The contagion effect equals to the related contagion coefficient from the 3SLS estimation. Net effect is the sum of the interdependence and the contagion effects. If the net effect is positive (negative) when the interdependence effect is negative (positive), it is concluded that the interdependence effect veered. At last, if the net effect is smaller than the ten percent of the interdependence effect, it can be concluded that the interdependence effect has disappeared.

As can be seen from Table 4, the Russian economy has interdependence effects from the Turkish economy. A point increase in the Turkish performance indicator leads to increase in the Russian performance indicator by 0.544 points. It is necessarily expected that the June 2006 Turkish turbulence leads to the Russian performance indicator to increase. However, surprisingly, the June 2006 Turkish turbulence resulted in decrease of the Russian performance indicator. Roughly speaking, the interdependence relation from Turkey to Russia turned to opposite direction during the crisis period. Another example is the August 2008 Kuwait case for Russia. According to the interdependence effect, the Russian performance indicators should have been increased by 5.407 points as calculated in Table 4. However, the impact of the Kuwait turbulence in August 2008 has never disappeared because the contagion effect almost completely removed the expected effect of the interdependence relation. Table 4 shows similar examples of thirteen other cases. Based upon the empirical results, it can be suggested that an interdependence effect could weaken, disappear completely or veer during the crisis period as a result of the contagion phenomenon.

## **6. Conclusion**

This paper investigates whether a second generation monsoonal effect could be a matter for Kuwait, Qatar, Oman and Morocco through Turkey, Brazil and Russia to contribute to the transmission mechanism of the financial turbulences across the economies and test for the contagion. In the paper, Brazil, Russia and Turkey are pre-determined as the core or central economies while Kuwait, Qatar, Oman and Morocco are the peripheral economies.

The economies and the sample period in this paper are defined to test for the interdependence and contagion effects. The interdependency is explained through the EMP indexes however, the contagion is explained by means of the crisis or mania dummies. According to estimation results, there exist fifteen cases in which the interdependence and the contagion effects could be related to each other. There is enough evidence to suggest that a second generation monsoonal effect is matter for the peripheral countries.

This paper proposes an alternative perspective on the transmission process of financial crises across the economies by considering a possible interaction channel between the interdependence effect and the contagion phenomenon. That is, an interdependence effect could weaken, or disappear completely, or veer during the crisis period as a result of the contagion phenomenon. Hence, it can be suggested that the policy-makers are less likely to prevent the financial crises experienced outside from being transmitted to their own country, even if they could exactly predict that the interdependence effect exists.

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## APPENDIX

**Table A:** Events related to the Dummy Variables

|                         |               |            |   |
|-------------------------|---------------|------------|---|
| Turkey                  | April 2005    | Turbulence | NFA decreased sharply and a letter of intent to IMF, April 26, 2005.  |
| Turkey                  | June 2006     | Turbulence | The CBRT raised short term interest rates significantly. Exchange rate depreciated by about 7.8%. Reversal of capital flows.  |
| Brazil Russia<br>Turkey | October 2008  | Turbulence | In September 15, the Lehman Brothers bankrupted. This date can be considered as the beginning of the global financial crisis and its effects was started to be experienced in October due to the calendar effect on balance sheets. |
| Brazil                  | October 2011  | Turbulence | NFA decreased by about 7.8%. Exchange rate had already depreciated by about 8.9% in September, so Brazilian Central Bank may have defended exchange rate by selling international reserve in October.                               |
| Russia                  | November 2010 | Turbulence | Russian market share declined 5% in the European FDI market.  |
| Kuwait                  | December 2005 | Turbulence | Both monetary base and NFA decreased dramatically. ( $\Delta$ NFA/MB) decreased   |
| Kuwait                  | March 2007    | Mania      | Both monetary base and NFA rose sharply. ( $\Delta$ NFA/MB) increased   |
| Kuwait                  | August 2008   | Turbulence | Interest rate increased (from 2.09% to 3.68%), Stock  |
| Kuwait                  | February 2011 | Mania      | Both monetary base and NFA rose sharply. ( $\Delta$ NFA/MB) increased   |

*Transmission Process of Financial Crises: Interdependence and Contagion Effects Across Turkey, Brazil, Russia and the Middle East Countries*

|         |               |            |   |
|---------|---------------|------------|---|
| Morocco | June 2005     | Turbulence | Interest rate rose sharply (from 2.32 to 4.31)        |
| Oman    | May 2005      | Mania      | NFA increased dramatically.                           |
| Qatar   | November 2007 | Mania      | Interest rate decreased sharply (from 2.15% to 0.86%) |
| Qatar   | January 2012  | Mania      | NFA rose dramatically.                                |

## **GUIDELINES TO AUTHORS**

### **Manuscript submission**

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1. One work by one author.

Example: Leary (2008) argued that...

Example: ...self-motives are actually interpersonal motives (Leary, 2008).

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<sup>1</sup> APA citation style information is directly taken from the document prepared by Prof. Borton for <sup>11</sup>SEP Hamilton College, Department of Psychology.

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2. Quoting directly . Example: When you think of the long and gloomy history of man, you will find more hideous crimes have been committed in the name of obedience than have ever been committed in the name of rebellion” (Snow, 1961, p. 24).

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### **Examples of References:**

#### 1. Journal article

Horberg, E. J., & Chen, S. (2010). Significant others and contingencies of self-worth: Activation and consequences of relationship-specific contingencies of self-worth. *Journal of Personality and Social Psychology*, 98, 77 – 91. doi: 10.1037/a0016428.

#### 2. Article or chapter in an edited book

Chang-Schneider, C., & Swann, W. B. The role of uncertainty in self-evaluative processes: Another look at the cognitive-affective crossfire. In R. M. Arkin, K. C. Oleson & P. J. Carroll (Eds.), *Handbook of the uncertain self* (pp. 216-231). New York, NY: Psychology Press.

#### 3. Entire authored book

Gilovich, T., Keltner, D., & Nisbett, R. E. (2011). *Social psychology* (2<sup>nd</sup> ed.). New York: W. W. Norton.

#### 4. Entire edited book

Vohs, K. D., & Baumeister, R. F. (Eds.). 2011. *Handbook of self-regulation: Research, theory, and applications*. New York, NY: Guilford.

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# KÜTÜPHANE VE BİLGİ MERKEZİMİZ 7/24 HİZMET VERİYOR



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Basılı Kaynak



**1.000.000**  
E-Kaynak



**Engelsiz**  
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Uygulamalar

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