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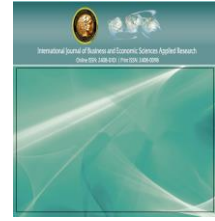
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An empirical inquiry into the relationship between corporate governance and human resource management

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Abstract

Purpose – Based on the tenets of the stakeholder theory, the study investigates the influence of corporate governance best practices on 'hard' and 'soft' human resource management practices in public listed companies in Malaysia.

Design/methodology/approach – Data was collected from public listed companies in the consumer product sector via structured questionnaire. Multiple regression analysis is conducted using SPSS to test the hypotheses.

Findings – The findings suggest that board of directors' independence significantly predicts training and development practices. It is also evidenced that audit committee's effectiveness is significantly related to team-based work.

Research limitations/implications – The study is conducted in a single sector of the economy resulted to a small number of listed companies.

Originality/value – The significant relationship between board of directors' independence and training and development; and audit committee effectiveness and team-based work indicate that training and development and team-based work are ingrained in the companies' HRM practices, more acceptable and the least complicated to implement. Indicating that public listed companies are answerable to various stakeholders, thus, making it difficult to introduce and implement certain HRM practices.

Keywords: Corporate Governance, Human Resource Management

JEL Classification: G34, M50

1. Introduction

It has been argued in previous works that the domain of corporate governance and HRM are intertwined and the role of human resource in the governance of the organizations has received increased attention in the post-Enron era (Hall & Soskice, 2001; Aguilera & Jackson, 2003; Caldwell, Hayes, Karri & Bernal, 2008; Hernández, 2005). The success of the strategic management of human resources involves the design and implementation of a set of policies and practices to ensure that employees share knowledge, skills and abilities that contribute to achieving the objectives of the organization (Huselid, Jackson & Schuler, 1997). According to Lamba and Choudary (2013), good HR practices enhance internal capabilities of an organization to deal with current or future challenges. Apart from that, it also energize people working in the organization to be committed and motivated.

Becker and Huselid (2006) noted that the intangibility of human resources is essential to achieve a sustainable competitive advantage, which depends on whether the leader of a company understands how to integrate people into the achievement of organizational goals. Supangco (2006) mentioned that successful

human resource practices in organizational capacity building help the organization to adapt to changes in a global environment; these practices provide the necessary infrastructure to enable the organization to create value in the market. Considering human capital as part of unique and valuable knowledge of the employees, they will be relevant in generating a sustainable competitive advantage for the organizations. The value of knowledge reflects the power to improve efficiency and effectiveness of the firm, exploiting market opportunities and/or neutralize potential threats, while the unique knowledge helps to differentiate firms from their competitors (Pelayo-Maciel, Calderon- Hernandez & Sema-Gomez, 2012).

Corporate governance is defined as "the system by which companies are directed and controlled" (Cadbury Committee, 1992). In the Malaysian context, the Finance Committee Report (2001) defines corporate governance as, "the process and structure used to direct and manage the business and affairs of the company towards enhancing business prosperity and corporation accountability with the ultimate objective of realizing long term shareholder value, whilst taking into account the interests of other stakeholders."

According to Wan Izyani Adilah (2008), in order to enhance business prosperity, corporate governance cannot be dictated by law since it involves the function of people, teamwork, leadership, enterprise and experience. Meanwhile, enhancing accountability requires rules and regulators; and providing this is the duty of directors to shareholders as prescribed by law. This occurs because the regulation will require greater disclosure of accounting policies to avoid any manipulation of accounting numbers (Dewing & Russell, 2004).

Currently, attention is increasingly focused on more recent debates around the appropriate balance between the exclusive pursuit of shareholder interests and the aims of other stakeholders as the main purpose of a firm. Firms are encouraged to measure and assess whether human resource management (HRM) practices, and indeed the HRM function itself, create or destroy shareholder value. Translating the desire to maximize shareholder value into management practice involves the assessment of the likely impact of any management decision on shareholder value, including decisions related to labour management and HRM. As a result, various links and complementarities have been posited between HRM and corporate governance (Filatotchev & Guest, 2005). Corporate governance role in ensuring good employment practice and effective management of human capital is that this is both an end in itself in ensuring the well-being and satisfaction of employees but also a means to an end of a higher performance (Guest, 2005). On the premise of stakeholders theory, this study is conducted to evaluate the influence of corporate governance best practices on 'hard' and 'soft' human resource management practices in public listed companies in Malaysia

2. Literature Review

2.1 Corporate Governance and HRM

Corporate governance is essentially concerned with issues of ownership and control within the firm (Berle and Means, 1932). It sets the terms and conditions of the legal allocation of property rights among the different stakeholder groups; and this affects their incentives and hence their willingness to cooperate with one another in productive activities. Due to the diffusion of responsibility for production, process improvement and innovation has been shown to significantly improve organizational performance through the cooperation of stakeholders in the productive process and their voluntary contribution of skills, experience and commitment to meet organizational objectives, corporate governance plays a central role in the ability of firms to perform effectively over the long term (Baker, Gibbons and Murphy, 1999; Black and Lynch, 1997; Huselid, 1995; Ichniowski, Shaw and Pennushi, 1995; Konzelmann, 2003).

O'Donovan (2003) described corporate governance from a stakeholder perspective as a system of structuring, operating and controlling a firm with a view to achieve long-term strategic goals to satisfy shareholders, employees, customers, creditors and suppliers, and complying with the legal and regulatory

requirements, apart from meeting environmental and local community needs. Thus, firms pursuing similar strategies are assumed to converge toward similar organisational structures of HRM practices which flow from the need to accommodate those structures.

According to Martin and McGoldrick (2009), little has been written about HR and governance and only a small number of HR articles cite corporate governance in their keywords, though prominent HR theorists have recently called for ways of conceptualizing HRM from a governance perspective (Gospel and Pendelton, 2005; Legge, 2004; Sisson, 2007). The important link between corporate governance and HRM can be referred to the work of Conway et al. (2008) who identify corporate governance as one of the major forces reshaping organisations, with repercussions for the employment relationship. It is also argued that there is lack of systematic evidence on the possible relationships between governance and labour over a large number of companies and/or workplaces (Pendleton and Deakin, 2007). Nevertheless, there have been a number of useful attempts to map out the links between governance and HRM (Boxall and Purcell, 2008), including those writing from an 'employee voice' perspective (Gollan and Wilkinson, 2007).

Konzelmann et al. (2006) stated that the central purpose of HRM is enhancing performance and in turn HRM itself, is affected by the implementation of corporate governance practices. Therefore, the demands of the stakeholder could impact on the HRM practices developed and implemented. Tangthong, Trimetsoontorn, and Rojniruntikul (2014) highlights that HRM practices as a set of distinct yet interrelated activities, functions, and processes aimed at attracting, developing, and maintaining a firm's human resources. Two streams of HRM, the *hard* HRM and *soft* HRM, have been identified to be the result of the extent of corporate governance practices implemented (Martin and McGoldrick, 2009; Konzelmann et al. 2006) 'Hard' and 'Soft' HRM, were terms introduced by (Storey, 1987), *hard* HRM focused on the resources management aspects of HRM, most notably cost control and job design to align them with shorter-term product demand variables, and the *soft* HRM focused on human aspects of HRM, including communication, motivation, engagement, learning and leadership (Martin and Hetrick, 2006). Konzelmann et al. (2006) outline four variables considered as *soft* and *hard* HRM, namely, employee consultation and incentive systems (*soft* HRM) and training and teamwork (*hard* HRM).

However, it is argued here that even as governance structures are in place at the board level, there needs to be a strong link between the board structure and actions, and the implementation of board decisions at the operational level. Since human resources are at the heart of implementing strategies, the human resource management function should play a key role in implementing such strategies. It is argued here that a closer integration among corporate governance and human resource management increases an organization's performance. The experience of HR in the acquisition, development, compensation, and

management of performance of employees can become handy in meeting challenges at the board level (Mendoza et al., 2005). However, certain changes must take place in both HR activities and competency of the HR executive in order for HR to fully take part in board selection, development, and evaluation (Fuller, 1999).

Insight into the interrelationship between systems of governance and systems of employment can also be found in the work of Gospel and Pendleton (2003), who, for example, argue that the incentives and governance structures found in the Anglo-American shareholder-based model force managers during hard times to discard labour and avoid investments that have uncertain returns, such as training. Although the assumption is usually made that the firm's primary objective is profit maximization, Gospel and Pendleton (2003) found that whereas institutional investors may prioritize short term profits, shareholder value and liquidity, family owners are more likely to consider long-term organizational viability, control and private benefits to be the more important objectives.

2.2 Soft HRM Practices-Work Flexibility

Raines (1998) reported that studies conducted in Sweden found that firms with flexible work arrangement were estimated to have 20 per cent higher productivity than those without. Similarly, research on the US steel industry showed that the introduction of more flexible working practices was associated with productivity increases.

Begin (1992) proposed four types of workforce-related flexibility: 1) external numerical; 2) internal numerical; 3) functional; and 4) financial flexibility. External numerical flexibility refers to the freedom to adjust the size of the workforce; internal numerical flexibility on the other hand refers to a firm's ability to adjust the working hours of the existing workforce; functional flexibility refers to the freedom to deploy workers across different task; and financial flexibility refers to the flexibility to adjust employee rewards (Wan, Ong, & Kok, 2000). Bae and Lawler (2000) proposed that these flexibilities, especially functional flexibility, should enable firms to tap into the benefits of multi-skilling, cross utilization and cross training amongst their employees. Furthermore, the introduction of workforce flexibility enables the organizations to ensure operational effectiveness, for example, firms are able to make decisions on material control process and just-in-time (JIT) process effectively and at the same time satisfy customers' demand for differentiated product or services (Youndt et al., 1996). However, the downside to workforce flexibility is the redundancy of workforce as this practice is usually implemented when firms are facing high demands period (Bolwijn & Kumpee, 1990).

From the above mentioned discussions, it is suggested that corporate governance practices are significantly related to soft HRM practices. In accordance to work flexibility, the hypotheses for this research are formulated as follows:

H 1(a) (i): Board of directors' independence is significantly related to work flexibility

H 1(a) (ii): External directors' independence is significantly related to work flexibility

H 1(a) (iii): Firm's disclosure and transparency is significantly related to work flexibility

H 1(a) (iv): Audit committees' effectiveness is significantly related to work flexibility

2.3 Soft HRM Practices-Empowerment

Del Val and Lloyds (2002) defined empowerment as the involvement of employees in the decision-making process, inviting the members of the organizations to think strategically and to be personally responsible for the quality of their tasks; animating, favoring and rewarding employees for behaving in a way more suitable to satisfy the customers and to improve organization's functioning (Vroom & Jago, 1988; Hermel, 1990; Bowen & Lawler, 1992; Bowen & Lawler, 1995). However, empowerment does not exclude an initial supervision to organize, train, and guide employees as well as self-control (Lawler, 1993).

In essence, empowerment is the management style where managers share with the rest of the organizational members their influence in their decision-making process. That is to say, the collaboration in the decision-making process is not limited to those with formal power- with certain characteristics as far as information systems, training, rewards, power sharing, leadership style and organizational culture are concerned (de Val & Lloyds, 2002). According to Guerrero and Barraud- Didier (2004) empowerment encompasses a set of methods based on task enrichment-enlargement of responsibilities, encouragement of initiatives, job rotation and on work organization-project groups, quality circles and self-managed teams. Decentralized organization of work and participative decision-making has been found to contribute towards positive financial performance and productivity (Pfeffer, 1994; Chang & Chen, 2002). Based on the above statements, it is obvious that empowerment is a developmental process that promotes an active approach to problem solving, understanding of work environment and an increased ability to exercise control in work environment. However, such autonomous atmosphere may also lead the employee to believe that his or her job has become harder and therefore, deserve more compensation (Baron & Kreps, 1999).

As corporate governance practices are significantly related to soft HRM practices, the following hypotheses are formulated linking corporate governance and empowerment.

H 1(b) (i): Board of directors' independence is significantly related to empowerment

H 1(b) (ii): External directors' independence is significantly related to empowerment

H 1(b) (iii): Firm's disclosure and transparency is significantly related to empowerment.

H 1(b)(iv): Audit committees' effectiveness is significantly related to empowerment.

2.4 Hard HRM practices - Team-Based Work

Teamwork culture has been widely acknowledged as a way to face today's turbulent environment and to create highly flexible organization highly responsive to ongoing change (Castka, Bamber & Sharp, 2003). Team-

based work is a promising concept which offers autonomy, responsibility, and job enrichment in order to meet the aspirations of the employees and at the same time, team-based work is also believed to enhance performance such as productivity and quality, on the both the team and organizational level (Dooreward, Hootegem, Huys, 2002).

According to Hickey & Cassner-Lotto (1998) as organizations get flatter through restructuring and downsizing, teams have become their favored vehicles to organize and distribute responsibility, authority and information otherwise given only to supervisors and managers. Team members can respond rapidly and flexibly to changing business demand when they have decision-making authority and share information directly. Different practices that characterized successful team-based work systems are committees or task forces. The practices are designed to enable employee involvement in problem solving and decision making. The involvement is supported by the processes such as job design, performance rating, training and communication channels. Team should be able to coordinate production. According to Zwick (2004) employee participation affects organizational outcomes. First, this practice take advantages of the specific knowledge employees have about their own work processes and combines the skills and expertise of a group of workers (Levine & Tyson, 1990; Cooke, 1994). Second, individuals are expected to have a higher identification with their enterprise and the decision taken so that they feel more committed and consequently perform their jobs better (Huselid, 1995; Godard & Delaney, 2002). Third, employees participating at decisions can balance production more effectively and this will eliminate bottlenecks or interruptions of the production process. Finally, autonomous employees may be able to diminish waste, inventories and inefficiencies (Appelbaum et al., 2000). Employee participation is a supported because: first, it contributes to personal growth and job satisfaction; second, participation will protect employees' interest and third, it promotes organizational efficiency because participation might result better decision-making, enhanced motivation, and it promotes management-employee communication (Zwick, 2004).

Based on the above mentioned discussions, it is hypothesized that corporate governance practices are significantly related to hard HRM practices. Therefore, the hypotheses on team-based work for this research are formulated as follows:

H 2(a) (i): Board of directors' independence is significantly related to team-based work.

H 2(a) (ii): External directors' independence is significantly related to team-based work.

H 2(a) (iii): Firm's disclosure and transparency is significantly related to team-based work

H 2(a) (iv): Audit committees' effectiveness is significantly related to team-based work

2.5 Hard HRM practices - Training and Development

The purpose of employee development can be defined as developing human potential to assist organizations and individuals to achieve their

objectives. Employers must develop their employee's knowledge, skills, and emotions/attitude/values in order to realize their full potential. The capacity to learn and become competent and be able to achieve the performance standards expected by the firms can only be fulfilled through integrated development of these three aspects (Gibb & Meginson, 2001).

Employee development typically involves organizations providing training courses, on their own or through external private providers and also with organizations providing or working in partnership with accrediting institutions to offer programs of study and development. These are three primary fields of development within employment "short and sharp courses, extended short course and longer program" (Gibb & Menginson, 2001).

Training is a traditional focus of human capital theory, which suggests that firms invest in skill development when they expect increased employees' productivity to offset such training costs as payment of instructors, purchase of materials and downtime. Previously, training efforts in manufacturing firms traditionally have been limited, informal and unstructured (Majchrzak, 1988). The most predominant method of training has been on-the-job training (OJT), which reflects an orientation towards immediate utilization of a general pool of labour (Wexley & Latham, 1981; Wiggenhorn, 1990). As OJT's advantages-low cost, minimal training time, immediate productivity and concurrent trial period-may be beneficial when only basic skills are required (Snell & Dean, 1992).

The current turbulent business environment requires employees to be equipped with broader and more advanced skills, which implies a need for more formal and comprehensive training where it is expected for firms to conduct more frequent and extended training periods and more structured programs to ensure skill acquisition and transfer. Training would also likely involve greater number of employees and include a broader range of skills. The cost of training would be justified by the long-term expected contribution of skilled employees to the productivity of the firm (Snell & Dean, 1992). Training and development contributes towards development of collective competencies and organizational learning, by acquiring new skills, training to develop them and organizing them for better career planning, coaching and internal mobility (Guerrero & Barraud-Didier, 2004).

From the above mentioned discussions, the hypotheses for this research are formulated. As indicated earlier, corporate governance practices are significantly related to hard HRM practices. Relating corporate governance practices and; training and development, the proposed hypotheses are stated as follows:

H 2(b) (i): Board of directors' independence is significantly related to training and development.

H 2(b)(ii): External directors' independence is significantly related to training and development.

H2(b)(iii): Firm's disclosure and transparency is significantly related to training and development.

H2(b)(iv): Audit committees' effectiveness is significantly related to training and development

3. Methodology

3.1 Sampling and Data Collection

Sample of study was collected from public listed consumer product firms listed in the Bursa Malaysia. The consumer product sector was chosen as the firms listed are more visible and well-known to the public, thus, there is a higher probability that they are much more stringent in the implementation of corporate governance. This study is conducted at the firm level. The survey was distributed to all 132 companies in the consumer product sector and the Human Resource manager was made the respondent. Data was collected via structured questionnaire by using self-addressed stamped envelope. Phone calls were conducted as a follow up to all companies. However, only 35 firms cooperated and answered the survey. Roscoe (1975) suggested a simple rule of thumb for determining appropriate sample size. The recommendation is that sample size is at least 30 and need not be larger than 500.

3.2 Variables

Corporate governance practices: The corporate governance practices utilized for this study is adopted from Sang & Il (2004) survey instrument that covers the elements stipulated by MCGG. The instruments consists of board of directors' independence, external directors' independence, disclosure and transparency and audit committees' effectiveness. For board of director's independence, response were provided in the form of a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree). For external directors' independence, response were provided in the form of a 5-point Likert scale (1=Never disagree to 5=Always). For disclosure and transparency, response were provided in the form of a 5-point Likert scale (1=Never disagree to 5=Always). For audit committees' effectiveness, response were provided in the form of a 5-point Likert scale (1=Strongly Disagree to 5=Strongly Agree).

Human resource management (HRM) practices: The HRM practices utilized for this study is adopted from Delery & Doty (1996) survey instrument, following Konzelman et al. (2006) approach of using soft and hard HRM, the study categorized workforce flexibility and empowerment as soft HRM and while hard HRM consists of team-based work and training and development. All the responses in HRM practices were provided in the form of a 5-point Likert scale (1=Never disagree to 5=Always).

3.3 Model Specification

The study intends to test the relationship between corporate governance best practices on 'hard' and 'soft' human resource management practices in public listed companies in Malaysia. Using multiple regression analysis, the models are specified as follows:

Model 1:

$$WFL_i = \beta_0 + \beta_1 BIND + \beta_2 EXD + \beta_2 TRANS + \beta_4 AUDIT + \epsilon_{it}$$

Model 2:

$$EMP_i = \beta_0 + \beta_1 BIND + \beta_2 EXD + \beta_2 TRANS + \beta_4 AUDIT + \epsilon_{it}$$

Model 3:

$$TBW_i = \beta_0 + \beta_1 BIND + \beta_2 EXD + \beta_2 TRANS + \beta_4 AUDIT + \epsilon_{it}$$

Model 4:

$$TND_i = \beta_0 + \beta_1 BIND + \beta_2 EXD + \beta_2 TRANS + \beta_4 AUDIT + \epsilon_{it}$$

Where; β_0 =constant term; WFL=Work Flexibility; EMP=Empowerment; TBW=Team Based Work; TND=Training and Development; BOD=Board of Directors' Independence; EXD=External Directors' Independence; TRANS=Disclosure and Transparency; AUDIT=Audit Committee's Effectiveness; ϵ_{it} =Error Term

4. Data analysis

To investigate hypothesis 1(a) that corporate governance practices is related work flexibility, a multiple regression analysis (Model 1) was conducted using SPSS. The result of the analysis is exhibited in table 1.

Table 1: Corporate Governance and Work Flexibility

Model	Standardized Coefficients	t	Sig.
	Beta		
1 (Constant)		2.151	.040
BIND	.302	1.555	.131
EXD	.027	.143	.887
TRANS	.034	.186	.854
AUDIT	.060	.301	.766

The result indicates that hypothesis H1(a) (i), (ii), (iii) and (iv) should be rejected as the none of the corporate governance practices has any significant impact on work flexibility, as none of the independent variable reach significance ($p < 0.05$).

To investigate hypothesis 1(b) that corporate governance practices is related to empowerment, a multiple regression analysis (Model 2) was conducted using SPSS. The result of the analysis is tabulated in table 2.

Table 2: Corporate Governance and Empowerment

Model	Standardized Coefficients	t	Sig.
	Beta		
1 (Constant)		2.101	.044
BIND	.284	1.538	.135
EXD	-.015	-.083	.934
TRANS	-.147	-.836	.410
AUDIT	.265	1.404	.171

The result indicates that hypothesis H1(b) (i), (ii), (iii) and (iv) should be rejected as none of the corporate governance practices has any significant impact on work flexibility, as none of the independent variable reached significance ($p < 0.05$).

To investigate hypothesis 2(a) that corporate governance practices is related team-based work, a multiple regression analysis (Model 3) was conducted using SPSS. The result of the analysis is exhibited in table 3.

Table 3: Corporate Governance and Team-Based Work

Model	Standardized Coefficients	t	Sig.
	Beta		
1 (Constant)		2.300	.029
BIND	.013	.067	.947
EXD	-.130	-.717	.479
TRANS	.145	.819	.420
AUDIT	.336	1.763	.089

The result indicates that hypothesis H2(a) (i), (ii) and (iii) should be rejected as none of the these corporate governance practices has any significant impact on team-based work. However, hypothesis H2(a)(iv) is accepted as it is significant at 10% level concluding that audit committees' effectiveness is related to team-based work.

To investigate hypothesis 2(b) that corporate governance practices is related training and development, a multiple regression analysis (Model 4) was conducted using SPSS. The result of the analysis is exhibited in table 4.

Table 4: Corporate Governance and Training and Development

Model	Standardized Coefficients	t	Sig.
	Beta		
1 (Constant)		2.384	.024
BIND	.471	2.762	.010
EXD	.244	1.474	.151
TRANS	-.034	-.212	.833
AUDIT	-.040	-.227	.822

The result indicates that hypothesis H 2(b) (i) is accepted as the results showed that sig= .010 ($p < 0.05$), thus providing evidence that Board of Directors' independence is related to the training and development policy implemented in the firms. However, H 2(b) (ii), (iii) and (iv) are rejected as they do not have any significant impact on training and development because none of the three sub-hypotheses reached significance ($p < 0.05$).

5. Conclusion

Studies by Boxall & Purcell (2008), Golan & Wilkinson (2007) and Konzelmann et al. (2006) have established, theoretically and empirically, the notion that corporate governance exerts some form of

influence on the formulation of HRM practice. This is an important factor as studies by Delery and Doty (1996) and Youndt et al. (1996) have empirically provided evidence that where the HRM practices are perfectly aligned with the strategies of the organization, this will positively impact on the organizational performance. However, the non-significance of hypotheses H1(a) (i), (ii), (iii) and (iv); H1(b) (i),(ii), (iii) and (iv); H2(a) (i),(ii), (iii) and H 2(b) (ii), (iii) and (iv), could be attributed to the nature of public-listed companies (PLC) itself, as they are more conspicuous, they are answerable and closely monitored by the authorities and they are accountable to several dominant stakeholders- shareholders, customers, suppliers and the employees. Due to such constraints, PLCs are not able to introduce certain types of HRM practices at it might affect companies' performance. The significant relationship between board of directors' independence and training and development; and audit committee effectiveness and team-based work indicate that training and development and team-based work are ingrained in the companies' HRM practices. Furthermore, training and development and team-based work is also the more conventional type of HRM practices compared to the other HRM practices utilised for the study. Naturally, both practices are more acceptable and the least complicated to implement. This study is conducted based on 35 listed companies in the consumer product of bursa Malaysia. This small sample size is identified as the limitation of the study. The low response rate is suspected due to unwillingness of the companies to reveal their corporate information. It is recommended that further study on the relationship between corporate governance and HRM practices to be conducted by integrating various sector of the economy with a higher number of observations. In addition, it is also interested to understand the relationship involving other stakeholders.

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APPENDIX

SURVEY FOR CORPORATE GOVERNANCE PRACTICES AND HRM PRACTICES

SECTION I: Effectiveness of Board of Directors

Please circle the relevant number based on the rating scale provided.

A. Board Independence

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1.	The independent directors of your company are truly independent from the CEO or controlling shareholders.	1	2	3	4	5
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2.	The following reasons for independent directors being fully independent from the CEO or controlling shareholders:					
	a. the CEO did not select the board members.	1	2	3	4	5
	b. Independent directors have no concern over personal relationships with other directors.	1	2	3	4	5
	c. Openly objecting to management proposed agenda is not viewed as an act contrary to behavioural norm.	1	2	3	4	5

d. The CEO does not decide the extension or termination of the directorship.	1	2	3	4	5
e. Independent Directors are not concerned of possible repercussion if their views turn out to be wrong in the future.	1	2	3	4	5

B. Independent Directors

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

How prevalent are the following practices?

1.	Independent directors meeting formally or informally without management to discuss corporate matters.	1	2	3	4	5
2.	Independent directors altering or adding the board meeting agenda.	1	2	3	4	5
3.	Independent directors participating actively in board discussions.	1	2	3	4	5
4.	Agenda items disapproved at the board meetings by independent directors.	1	2	3	4	5
5.	Individual directors' positions on board meeting agendas recorded in minutes.	1	2	3	4	5

C. Disclosure and Transparency

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

How good do you think is access to information for independent directors?

1.	Meeting with managers (who are not board members) and workers of the company.	1	2	3	4	5
2.	Access to business records and books of account.	1	2	3	4	5
3.	Enough information in time to be digested before every board meeting.	1	2	3	4	5
4.	Permitted to obtain the services of outside legal, financial and other professional advisors at the company's expense.	1	2	3	4	5

D. Independence/Effectiveness of Your Organization's Audit Committee

1	2	3	4	5
Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree

1.	It has someone with accounting/finance expertise.	1	2	3	4	5
2.	It is chaired by a genuine independent director.	1	2	3	4	5
3.	Minutes are written for each audit committee meeting.	1	2	3	4	5
4.	Each member of the audit committee remuneration is approved separately at shareholders' meeting.	1	2	3	4	5
5.	There are written rules for audit function.	1	2	3	4	5
6.	It autonomously select/recommend the external auditor and conducts a proper review of his work.	1	2	3	4	5
7.	It approves the appointment of internal auditor and supervises him to routinely review risk exposure and accounting procedures.	1	2	3	4	5

SECTION II: Human Resource Practices

Please circle the relevant number based on the rating scale provided.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

A. Team-based Work

1.	Team members are responsible for work preparation, work support and work control.	1	2	3	4	5
2.	In our firm, coordination and control are based more on shared goals and values rather than rules and regulation.	1	2	3	4	5
3.	Targets to be achieved for production are set by the team members.	1	2	3	4	5

B. Workforce Flexibility

1.	Our firm has the ability to deploy and transfer employees across job boundaries in non-managerial jobs.	1	2	3	4	5
2.	The employees of our firm have the competencies to do several different jobs.	1	2	3	4	5
3.	The firm deploys employees across job boundaries whenever it is necessary.	1	2	3	4	5
4.	Non-managerial employees in this firm willingly take other jobs in the firm.	1	2	3	4	5
5.	The jobs in our firm require employees to do many different things at work, using variety of skills and talents.	1	2	3	4	5

C. Internal Career Opportunities

1.	Individuals in this firm have clear career paths within the organization.	1	2	3	4	5
2.	Individuals in this job have very little future within this organization.	1	2	3	4	5
3.	Their immediate supervisors know employees' career aspirations.	1	2	3	4	5
4.	Employees in this job who desire promotion have more than one potential position they could be promoted to.	1	2	3	4	5

D. Employment Security

1.	Employees can expect to stay in the organization for as long as they wish.	1	2	3	4	5
2.	It is difficult to dismiss an employee in this organization.	1	2	3	4	5
3.	Job security is almost guaranteed to employees in this organization.	1	2	3	4	5
4.	If the firm were facing economic problem, retrenchment of employees would be the last option for the firm.	1	2	3	4	5

E. Employee Participation

1.	Employees are allowed to make many decisions.	1	2	3	4	5
2.	Employees are often asked by their supervisors to participate in decision-making.	1	2	3	4	5
3.	Employees are provided the opportunity to suggest improvement in the way things are done.	1	2	3	4	5
4.	Superiors keep communication open with subordinates in this organization.	1	2	3	4	5

F. Training and Development

1.	Employees in this company normally attend training programs annually.	1	2	3	4	5
2.	There are formal training programs to teach new employees the skills they need to perform the job.	1	2	3	4	5
3.	The company conduct systematic analysis to determine the needs for training programs.	1	2	3	4	5
4.	The company conducts cost-benefit analysis to assess the effectiveness of the training programs.	1	2	3	4	5
5.	The firm evaluates the training programs to determine whether the training objectives are met.	1	2	3	4	5

G. Performance-based Pay

1.	Job performance of an individual is very important in determining the earnings of employees in this organization.	1	2	3	4	5
2.	The range in pay across non-managerial employees is generally wide in our firm even within the same job grade.	1	2	3	4	5
3.	Pay for non-managerial employees are closely tied to individual or group performance.	1	2	3	4	5
4.	Promotion is based primarily on seniority.	1	2	3	4	5

H. Empowerment

1.	The jobs in this firm provide employees with many chances, personal initiative or judgment in carrying out their work.	1	2	3	4	5
2.	Employees in our firm engage extensively in	1	2	3	4	5

	problem-solving and decision-making in matters which involve their jobs and their job condition.					
3.	Employees are permitted to decide on their own how to go about doing their work.	1	2	3	4	5
4.	In our firm, we have minimum status differentials between management and employees to enhance egalitarianism (e.g. common parking/uniform/cafe etc.)	1	2	3	4	5

I. Profit Sharing

1.	Individuals in this firm receive bonuses based on the profit of the organization.	1	2	3	4	5
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J. Performance Appraisal

1.	Performance is measured with objective quantifiable results.	1	2	3	4	5
2.	Performance appraisals are based on objective, quantifiable results.	1	2	3	4	5

K. Employee Relations

1.	Union and management work together to make this organization a better place to work in.	1	2	3	4	5
2.	Union and management have respect for each other's goals.	1	2	3	4	5
3.	Management often seeks input from the union before initiating changes.	1	2	3	4	5
4.	Grievances are normally settled promptly in this organization.	1	2	3	4	5



The Beta intervallling effect during a deep economic crisis- evidence from Greece

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Abstract

Purpose – The intervallling effect bias of beta refers to the sensitivity of beta estimation with respect to the reference time interval on which returns are measured and its manifestation may indicate the degree of market inefficiencies. The purpose of this paper is to study the intervallling effect bias within an environment and during a sample period that embraces the evolution of a deep economic crisis and show in particular that its intensity is profoundly magnified.

Design/methodology/approach – The Athens Stock Exchange is studied via the market model during the sample period 2007-2012 that embraces the Greek debt restructuring. Two portfolios are formed to distinguish between large and small market capitalizations, three reference intervals are considered for measurement of returns (daily, weekly, monthly) and the respective betas are calculated via OLS simple regression. The results are compared to similar studies. The results are further confirmed by using a second proxy for the market portfolio.

Findings – The intensity of the intervallling effect bias was very pronounced during this sample period with regard to all aspects of the phenomenon that similar studies have reported and to which the results of this paper are compared.

Originality/value – This is the first time that the intervallling effect is examined in conjunction to a deep economic crisis environment. The intensity of the intervallling effect reflects the depth of the inefficiencies of a market for some period. As a consequence, some function measuring this intensity may be devised to serve as a measure of market inefficiencies.

Keywords: intervallling effect; systematic risk; economic crisis; market inefficiency

JEL Classification: C10; G10; G12

1. Introduction

Under a set of rather strong assumptions, the Capital Asset Pricing Model (CAPM), introduced by (Sharpe, 1964), (Lintner, 1965) and (Black, 1972), suggests that:

$$E(R^{(i)}) = r_f + \beta_i [E(R^{(M)}) - r_f] \quad (1)$$

where $R^{(i)}$ denotes the return of asset i , r_f is the risk free rate, $R^{(M)}$ is the return of the market portfolio M , $E(.)$ denotes the expectation operator and β_i denotes the beta coefficient (or systematic risk coefficient) of asset i , with

$$\beta_i = \frac{\text{Cov}(R^{(i)}, R^{(M)})}{\text{Var}(R^{(M)})} \quad (2)$$

A standard and popular method to estimate the beta coefficients is to use the Market Model and the ordinary least squares method (OLS). Then, the beta coefficient of an asset arises as the slope parameter of a simple

linear regression of the asset's return against the market portfolio's return:

$$R^{(i)} = \alpha_i + \beta_i R^{(M)} + e^{(i)} \quad (3)$$

with $\alpha^{(i)}$ being the intercept and $e^{(i)}$ the disturbance term¹.

It has to be stressed here that, despite the strong criticism and the controversy surrounding CAPM, the beta coefficient has a significance of its own independently of the CAPM context. After all, the fact that the beta coefficient arises as the slope parameter of the previous simple linear regression (3), shows clearly its practical importance for an investor who tries to get an understanding of the movements of a security relative to those of the market (or to those of a reference portfolio or an index). Furthermore, equation (2) suggests that the beta of an asset represents the relative "risk" of the asset with respect to the market portfolio (the covariance), in comparison to the risk of the market (the variance). Thus, in this sense as well, the beta

¹ Looking at (1) and (3) one notices that the regression in (3) refers to gross returns and not to excess-over the risk free rate-returns. However, the difference in the

estimated betas is in general very small and does not affect the study of the presence and intensity of the intervallling effect.

coefficient has its own significance, apart from its central role in the CAPM equation. Therefore, a “good” estimation of the beta coefficient and an understanding of the problems and limitations of an estimation method seem to be important independently of the various controversies of the CAPM.

It is clear that, from a theoretical point of view, the beta coefficient of a security does not depend on the length of the interval that one uses for the measurement of the rates of return. Empirical studies however, have shown that one may produce a number of significantly different estimates when performing the regression (3), due to different starting point considerations as for example the benchmark used as the market portfolio, the sample period used for observations, the length of the return measurement interval, the thinness in trading of a stock etc.

In particular, the phenomenon of the sensitivity of the beta estimation with regard to the length of the time interval that is used as the basis for the measurement of the rate of returns has been extensively studied and is known under the name of intervallling effect bias in beta estimation or simply as the intervallling effect, see for example (Hawawini, 1983), (Handa, et al., 1989), (Corhay, 1992), (Brailsford & Josev, 1997), (Pogue & Solnik, 1974), (Cohen, et al., 1983a), (Cohen, et al., 1983b), etc. Many efforts have been made to adjust the intervallling effect bias, as in (Scholes & Williams, 1977) (Dimson, 1979), (Cohen, et al., 1983a), (Cohen, et al., 1983b) etc. It should be noted here that (Ho & Tsay, 2001) provide evidence that option listing reduces the intervallling effect, supporting thus the opinion that option trading has some accelerating effect in the price-adjustment process.

Furthermore, the connection of the intervallling effect with the market capitalization of securities has been studied as well and (Hawawini, 1983) suggests that while the betas of small market capitalization tend to increase as the reference return interval is lengthened, the opposite holds for the betas of securities with large market capitalization. Further empirical work in (Handa, et al., 1989) for the NYSE and (Brailsford & Josev, 1997) for the Australian Stock Exchange came in support of Hawawini’s findings. However, empirical work in (Diacogiannis & Makri, 2008) and (Milonas & Rompotis, 2013) showed that beta increases as the length of the reference time interval increases, for both small and large market value securities.

An explanation of the intervallling effect is offered in (Cohen, et al., 1983b), where they attribute this phenomenon to market frictions that result in delays of the price adjustment to the arrival of new information, which in turn induce cross serial correlations in the security returns, leading then to autocorrelation in the market portfolio returns. Moreover, it is argued in (Cohen, et al., 1983b) that these delays are related to the thin trading of various securities. In addition (Scholes & Williams, 1977) showed the existence of a downward bias in the beta estimation of thinly traded stocks while the opposite holds for heavily traded stocks.

In a somehow similar vein one may add that delays of price adjustment may also be due to slow market responses to unexpected shocks or even to overreactions in such shocks or in response to rumours, speculations, or irrational expectations (Lim, et al., 2006), something that may be expected to intensify during a financial crisis. In an efficient market, stock prices are supposed to reflect all available information, while departure from efficiency is usually assumed to be expressed in the form of linear correlations.

In any case, we are wondering whether the intensity of the intervallling effect bias could have the potential to serve as some kind of indicator of the extent of market inefficiencies. Then, one could be tempted to provide a strict definition of this intensity and devise an appropriate function of it as a measure of departure from efficiency, but such a task is beyond the scope of this study. However, the study of the intervallling effect and the provision of some preliminary evidence on its behavior and intensity with regard to different economic conditions may present some particular interest.

Within this context, we would expect a prominent manifestation of the intervallling effect in a period during which the market is in a turbulent state, as for example during a financial crisis and even more during a deep economic crisis. In this work we examine and underscore the intervallling effect bias in the Athens Stock Exchange (ASE) during the period between 3-9-2007 and 2-9-2012. This period is of particular interest since it starts 2 years before the official “announcement” of the Greek crisis (October 2009) and encompasses the whole period of high uncertainty, that is the period extending from the end of 2010, when the restructuring of the Greek debt was first mentioned as a possible route of European policy, until March 2012, when a drastic haircut of the Greek public debt was eventually implemented. A few months later a huge recapitalization and restructuring program of the Greek banking sector was announced. Therefore, our five years sample period consists of a two years period preceding the beginning of the Greek crisis, that is a period where things seemed to be “normal”, followed by a three year period of prolonged and high uncertainty. The reason for this uncertainty concerned mainly the extent and the depth of the forthcoming Greek debt restructuring rather than whether the event of restructuring would take place. We tend to believe that this was an environment favorable to the growth of all kinds of market frictions. Here we will show that during this period of deep economic crisis, the intensity of the intervallling effect was profoundly magnified when compared to the empirical findings of (Diacogiannis & Makri, 2008), who examined the intervallling effect with regard to the same market but for a different sample period (2001-2004) of “just” a financial crisis when stock prices also experienced significant fall and many securities exhibited thin trading conditions. Furthermore, the qualitative aspects of our results are compared to the corresponding results of other studies on the intervallling effect that refer to different markets. Finally, the robustness of our results

will be supported by the employment of two different proxies of the market portfolio, namely the Athens Composite Index and the Eurostoxx 50 Index. With regard to the structure of the rest of the paper, in Section 2, data and methodological issues are specified, while in Section 3 the empirical results are presented together with a relevant discussion of the findings and the last section concludes.

2. Data and Methodology

2.1. The sample period and the market portfolio proxy

The sample period corresponds to the five years period extending from 3-9-2007 to 2-9-2012. Therefore, the data used in this study consists of 1248 historical daily closing prices of securities traded continuously in the ASE during this period, together with the closing prices of the Athens Composite Shares Price Index, which is a market cap weighted index and serves as a proxy for the market portfolio. These closing prices result into 1247 daily returns, 269 weekly returns and 59 monthly returns for each security during this period. In general, the period of five years that was selected is considered to be appropriate, in the sense that the beta coefficients are supposed to remain rather constant within such a period (see (Bradfield, 2003)), while on the other hand a large enough sample is available, something that is a prerequisite for an "efficient" estimation of the beta coefficient.

2.2. Capitalization & intervallling

The results in (Hawawini, 1983) suggest that when measuring betas over return measurement intervals of arbitrary length, then small market cap securities may appear to be less risky than they truly are, while the opposite happens for securities that have a relatively large market cap.

In order to examine the relation between market capitalization and intervallling effect, we chose to work with 70 securities, out of a total of 259 securities that were trading at the time. The selected securities were continuously traded during the considered period and they were chosen to cover all the sectors of the Greek economy and the whole spectrum of large, medium and small market capitalization². In fact, the selected sample consists more or less of the securities that are included in the following indices: FTSE/ATHEX Large Cap, FTSE/ATHEX Med Cap and FTSE/ATHEX Small Cap.

Then, following (Brailsford & Josev, 1997), these securities were sorted according to their market

capitalization and two equally weighted portfolios were formed, each consisting of 35 securities. The first of these portfolios which will be referred to as Largecap, consists of the 35 securities with the highest market capitalization as of 3-9-2012 while the second portfolio, which will be called Smallcap, consists of the remaining securities, i.e. the ones with the lowest market capitalization as of the same date. The average market capitalizations of these two portfolios amounted to 582,4 and 3,72 million euros respectively and the means were found to be significantly different since the null hypothesis regarding equality of the means was rejected at both significance levels of 5% and 1%.

2.3. Beta estimation

Each security's beta is estimated by the OLS method according to the standard market model:

$$R_{[t,t+\Delta t]}^{(i)} = \alpha^{(i)} + \beta^{(i)} R_{[t,t+\Delta t]}^{(M)} + e_{[t,t+\Delta t]}^{(i)}$$

where

$R_{[t,t+\Delta t]}^{(i)}$ and $R_{[t,t+\Delta t]}^{(M)}$ denote the return of the security i and the return of the market portfolio M respectively, during the period $[t, t + \Delta t]$, $\alpha^{(i)}$, $\beta^{(i)}$ are the parameters of the model and $e_{[t,t+\Delta t]}^{(i)}$ is the disturbance term. The disturbance terms are assumed to be normally distributed with zero means, homoscedastic (i.e. with constant variance), autocorrelated (i.e. $Cov(e_{[t-\Delta t,t]}^{(i)}, e_{[t,t+\Delta t]}^{(i)}) = 0$) and uncorrelated with the market returns, i.e. $Cov(R_{[t,t+\Delta t]}^{(M)}, e_{[t,t+\Delta t]}^{(i)}) = 0$.

Depending on the time interval Δt that is used (daily, weekly, monthly), a different estimation of beta is obtained. Furthermore, the beta of each of the portfolios under consideration is calculated as the average of the betas of the constituent securities.

3. Empirical Results

In this section the empirical findings are presented, with regard to the intervallling-effect bias in betas estimates when using the ordinary least squares (OLS) method. Three different intervals are used (daily, weekly and monthly) for calculating returns. The sample refers to the period between 3-9-2007 and 2-9-2012 and the number of daily, weekly and monthly returns amounted to 1247, 269 and 59 respectively. The next Table 1 presents summary statistics with regard to the beta estimation of the two portfolios under consideration for each of the three reference time intervals.

Table 1: Summary Statistics of Beta of the two Portfolios with regard to Composite ASE Index

	Largecap			Smallcap		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
Mean Beta	0,1345	0,7587	0,9540	0,0844	0,5272	0,6831
Stdev	0,0772	0,3116	0,3793	0,1005	0,2312	0,2895

² It is clear that the inclusion of only continuously traded stocks in our study may present a survivorship bias (see for example (Elton, 1996)) with a potential underestimation of the betas of the examined portfolios.

However, since this study focuses on the intensity and the characteristics of the intervallling effect it is unlikely that our results will suffer from any systematic bias due to the survivorship bias.

Max Beta	0,2676	1,4045	1,9102	0,3256	0,9232	1,1527
Min Beta	-0,0418	0,0935	0,1534	-0,0983	0,0047	0,1501
Range	0,3094	1,3110	1,7568	0,4239	0,9186	1,0025
Skewness	-0,8446	0,1325	0,4809	0,3355	-0,1038	-0,1844
Kurtosis	0,0840	-0,2281	0,4969	-0,4300	-0,6139	-1,0867
Std error B	0,0418	0,0982	0,1589	0,0598	0,1186	0,3945
Mean R^2	0,0110	0,2435	0,4474	0,0046	0,0891	0,1789

3.1. Increase of beta estimation with interval length

First of all it can be noticed from Table 1 above, that the lengthening of the returns measurement interval leads to an increase of the estimated beta, both for the Largecap and the Smallcap portfolios. With regard to the Smallcap portfolio this is in accordance to results of previous relevant studies, i.e. that the estimation of the beta of small caps increases as the corresponding returns measurement interval increases. On the other hand though, the fact that the beta of the Largecap portfolio increases as well together with the lengthening of the returns measurement interval, comes in contrast to (Brailsford & Josev, 1997) where it was reported that for the Australian Stock Exchange the betas of the highly capitalized firms were decreasing as the return measurement interval was increasing. However our result is in accordance to (Diacogiannis & Makri, 2008) where a comparable study was performed for the Athens Stock Exchange for a four years period extending between 2001 and 2004. This may indicate either some particularity of the Greek Stock exchange when compared for example to the Australian stock exchange or even a phenomenon that appears when the sample period involves an extended subperiod of falling prices.

3.2. Rate of increase of beta

It is remarkable that the increase in beta as the time interval increases is rather dramatic when we move from the daily to the weekly interval, while this is not as profound (although still very large) when we move from the weekly to the monthly interval. Even more remarkable though, is the rate of this increase when compared to analogous results in (Diacogiannis & Makri, 2008). More precisely, when moving from daily to monthly returns, the Largecap portfolio that we examined exhibits a 609% increase in beta, while the corresponding increase in (Diacogiannis & Makri, 2008)

is only 13%. Similarly, for the Smallcap portfolio the respective numbers amount to 709% vs 23%.

3.3. Range of beta

With regard to the range of beta, i.e. the difference between the minimum and the maximum betas in the portfolios, we notice that the range increases as the reference time interval increases and the maximum range is observed at the Largecap portfolio. This is in contrast to the results of both (Brailsford & Josev, 1997) and (Diacogiannis & Makri, 2008) who observed the largest range at their respective small capitalization portfolios. Again, comparing these results to those of (Diacogiannis & Makri, 2008) we notice that when moving from daily to monthly returns, the range of beta corresponding to the Largecap portfolio shows an increase of 468% while the corresponding increase in (Diacogiannis & Makri, 2008) is just 47%. Similarly, for the Smallcap portfolio the respective numbers amount to 142% vs 55%.

3.4. Standard deviation

Furthermore the standard deviation of beta increases as the reference time interval increases. This seems to be a natural consequence of the fact that the number of observations used at the OLS regression is decreasing as the reference time interval increases (1247 daily observations, 269 weekly observations, 59 monthly observations). A similar remark was also made in (Handa, et al., 1989).

3.5. Testing for equality of mean betas

In Table 2, it is shown that the zero hypothesis of equality of the mean betas is rejected at the significance level 5% for both portfolios and for any pair of reference time intervals. Therefore the intervalling effect is present and it can be said that the estimation of systemic risk, as this is represented by beta, changes significantly as the returns measurement interval changes.

Table 2: t-test for Equality of Mean Betas per Two Series and per Portfolio

	<i>Largecap</i>			<i>Smallcap</i>		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
Daily						
t-test		-11,503	-12,524		-10,394	-11,557
p-value		0,000	0,000		0,000	0,000
Mean difference		-0,6241	-0,8194		-0,4428	-0,5986
Std. error difference		0,0543	0,0654		0,0426	0,0518
Weekly						
t-test	-11,503		-2,354	-10,394		-2,489
p-value	0,000		0,022	0,000		0,015
Mean difference	-0,6241		-0,1953	-0,4428		-0,1558
Std. error difference	0,0543		0,0830	0,0426		0,0626

Monthly					
t-test	-12,524	-2,354		-11,557	-2,489
p-value	0,000	0,022		0,000	0,015
Mean difference	-0,8194	-0,1953		-0,5986	-0,1558
Std. error difference	0,0654	0,0830		0,0518	0,0626

3.6. The coefficient R^2

The R^2 coefficient measures the degree to which the securities returns are explained by the Index returns. In Table 3 one can see the mean values of R^2 for the two portfolios and for the various returns measurement intervals. It can be noticed that R^2 increases as the reference time interval is lengthened and that this coefficient takes clearly larger values for the Largecap portfolio. This comes in accordance to the results of (Dimson, 1979), (Cohen, et al., 1983a), (Brailsford & Josev, 1997) and (Diacogiannis & Makri, 2008). This result indicates that by lengthening the returns measurement interval the explanatory effect of the Index gets stronger. Notice however that for the Largecap portfolio, the Index explains only the 1,1% of the variation of the returns when the daily interval is used while this explanatory power increases

significantly to 23,35% and even further to 44,74% when the weekly or the monthly interval respectively are used. It should be remarked that the majority of the securities that participate in the Largecap portfolio, participate also in the composition of the Index and therefore it is natural to expect a strong correlation between the returns of the Largecap portfolio and the returns of the Index. On the contrary, the returns of the Smallcap portfolio are explained very poorly by the returns of the Index, at any time interval, reaching a maximum R^2 of 17,88% when the monthly interval is used. Table 3 shows a comparison of these findings (period 2007-2012) to those of (Diacogiannis & Makri, 2008) (period 2001-2004). One can notice a remarkable deterioration of the explanatory power of the Index especially on the daily basis.

Table 3: R^2 for two different periods

R^2	Daily	Monthly
Largecap (2001-2004)	0,428	0,526
Largecap (2007-2012)	0,011	0,447
Smallcap (2001-2004)	0,186	0,363
Smallcap (2007-2012)	0,005	0,179

3.7. Testing for equality of R^2 s

Finally, one can see from Table 4 that the zero hypothesis of equality of the mean R^2 s is rejected at the

significance level 5% for both portfolios and for any pair of reference time interval, supporting even further the presence of the intervallling effect.

Table 4: t-test for R^2 Equality per Two Series and per Portfolio

	Largecap			Smallcap		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
Daily						
t-test		-15,548	-21,049		-5,960	-8,272
p-value		0,000	0,000		0,000	0,000
Mean difference		-0,2324	-0,4364		-0,0844	-0,1743
Std. error difference		0,0149	0,0207		0,0141	0,0211
Weekly						
t-test	-15,548		-8,004	-5,960		-3,551
p-value	0,000		0,000	0,000		0,001
Mean difference	-0,2324		-0,2040	-0,0844		-0,0899
Std. error difference	0,0149		0,0255	0,0141		0,0253
Monthly						
t-test	-21,049	-8,004		-8,272	-3,551	
p-value	0,000	0,000		0,000	0,001	
Mean difference	-0,4364	-0,2040		-0,1743	-0,0899	
Std. error difference	0,0207	0,0255		0,0211	0,0253	

3.8. Regressing with regard to another market proxy

Due to Roll's critique (Roll, 1977) one may argue that the previous results come as a mere consequence of the fact that the ASE Composite Index that was chosen as a proxy to represent the market portfolio, is not mean-

variance efficient. In order to temper such an objection and to further support the robustness of our results we have performed the same analysis but using another index as the proxy for the market portfolio, namely the EuroStoxx 50 index. It turned out that the results

obtained, with the role of the market being played by the Eurostoxx 50 Index instead of the ASE Composite Index, are in full accordance to the results presented and discussed in the previous subsections. The next Table 5 presents the relevant results that can be compared to the corresponding ones of Table 1.

Furthermore, equality of mean betas and equality of equality of means and for equality of R^2 s were also tested and rejected at the 5% significance level for both portfolios and for any pair of reference intervals.

Table 5: Summary Statistics of Beta of the two Portfolios with regard to EUROSTOXX 50 index

	Largecap			Smallcap		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
Mean Beta	0,5718	0,8554	1,1427	0,2282	0,6088	0,9068
Stdev	0,3085	0,3422	0,4501	0,1918	0,2447	0,3744
Max Beta	1,1612	1,5686	2,0966	0,6367	1,0373	1,4509
Min Beta	0,0141	0,0596	0,1927	-0,0346	0,0382	0,1026
Range	1,1472	1,5091	1,9039	0,6714	0,9990	1,3483
Skewness	-0,1646	-0,0320	0,2009	0,3960	-0,5229	-0,3761
Kurtosis	-0,9570	-0,2406	-0,2461	-0,9708	-0,1971	-0,7911
Std error B	0,0666	0,1081	0,2137	0,0720	0,1565	0,3010
Mean R^2	0,1088	0,1872	0,3241	0,0165	0,0640	0,1607

3.9. Firms with stock options listings

As it was stated in the introduction, (Ho & Tsay, 2001) have provided evidence that option listing reduces the intervaling effect, supporting thus the opinion that option trading has some accelerating effect in the price-adjustment process. In this subsection we will briefly examine the intervaling effect with regard to an equally weighted "optioned" portfolio, consisting of the six largest companies of the Athens Stock Exchange that have listed stock options. The next two Tables 6 and 7 present the beta statistics of this Optioned portfolio in comparison to the Largecap

portfolio and with regard to both market proxies, the ASE and the EUROSTOXX 50 indices. It can be readily seen in both cases that apart from some small improvement in the explanatory power of the proxies in the weekly and monthly cases, the evolution of the mean beta as we pass from the daily to the weekly to the monthly data has not shown any improvement at all. Therefore, the intervaling effect was still intense even in this case, allowing us to conjecture that whatever improvement one would expect in the price-adjustment process was rather overshadowed by the effect of the evolving economic crisis.

Table 6: Summary Statistics of Beta of the Largecap vs the Optioned Portfolio, with regard to Composite ASE Index

	Largecap			Optioned		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
Mean Beta	0,1345	0,7587	0,9540	0,1572	0,9992	1,2871
Stdev	0,0772	0,3116	0,3793	0,0313	0,2984	0,3606
Max Beta	0,2676	1,4045	1,9102	0,1819	1,3119	1,7472
Min Beta	-0,0418	0,0935	0,1534	0,1093	0,6184	0,8823
Range	0,3094	1,3110	1,7568	0,0726	0,6934	0,8649
Skewness	-0,8446	0,1325	0,4809	-1,0525	-0,0902	0,2006
Kurtosis	0,0840	-0,2281	0,4969	-1,1739	-2,4171	-2,3486
Std error B	0,0418	0,0982	0,1589	0,0507	0,0945	0,1641
Mean R^2	0,0110	0,2435	0,4474	0,0079	0,2927	0,5206

Table 7: Summary Statistics of Beta of the Largecap vs the Optioned Portfolio, with regard to EUROSTOXX 50 Index

	Largecap			Optioned		
	Daily	Weekly	Monthly	Daily	Weekly	Monthly
Mean Beta	0,5718	0,8554	1,1427	0,8124	1,0824	1,4781
Stdev	0,3085	0,3422	0,4501	0,2557	0,3606	0,4455
Max Beta	1,1612	1,5686	2,0966	1,1612	1,5686	1,9957
Min Beta	0,0141	0,0596	0,1927	0,4778	0,5803	0,8363
Range	1,1472	1,5091	1,9039	0,6834	0,9883	1,1594
Skewness	-0,1646	-0,0320	0,2009	0,0783	-0,0832	-0,3380
Kurtosis	-0,9570	-0,2406	-0,2461	-1,3810	-0,9000	-1,4934
Std error B	0,0666	0,1081	0,2137	0,0571	0,1299	0,2732
Mean R^2	0,1088	0,1872	0,3241	0,1383	0,2033	0,3341

4. Conclusion

A deep economic crisis period designates a time of possible future changes of the economy. During this period of change, the market may exhibit an increasing degree of inefficiency as for example the price adjustment delays that have been reported as an explanation of the intervallling effect bias in beta estimation. In this work the intervallling effect bias in OLS beta estimation is empirically examined within the context of a market that is under the impact of the evolution of a deep economic crisis. The market examined is the Athens Stock Exchange during a five years sample period ranging from 3-9-2007 to 2-9-2012. It is found that the intensity of the intervallling effect bias was very pronounced during this sample period with regard to all aspects of the phenomenon that similar studies have reported and to which the results of this paper were compared.

One final speculative remark could be that if the market model is correct then it seems that the intensity of the intervallling effect reflects the depth of the inefficiencies of a market for some period. If this is true, then some function reflecting this intensity may be devised to serve as a measure of market inefficiencies.

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Mandatory and Voluntary Disclosures of Serbian Listed Companies - Achieved Level and Some Recommendation for Improving their Relevance

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Abstract

Purpose – This paper investigates mandatory and voluntary disclosure practices of non-financial listed companies on the Belgrade Stock Exchange. The results help in determining the level of transparency of Serbian s listed companies and in formulating recommendations for improving the quality and relevance of disclosed information.

Design/methodology/approach –We focus on modeling both mandatory and voluntary disclosure indices for financial and non-financial information in order to evaluate the level of disclosure of 63 Serbian companies for reporting period 2012.

Findings – We found the low level of both mandatory and voluntary disclosures. Concerning mandatory disclosure, the information that is least frequently disclosed by the sample companies are those related to the material content of the financial statements (information on changes in accounting estimates and corrections of fundamental errors in the previous period, as well as related companies). Serbian companies usually disclose information that contributes to their greater visibility. Similar to the mandatory disclosure, usually published voluntary information are mostly "neutral" from the point of impact on the values reported in the financial statements, which do not contribute to a better understanding of the financial position, profitability and cash flows of the company.

Research limitations/implications – There is a limitation concerning the sample size (which is generally intrinsic to Serbian capital market size) and the sample structure (research is limited to listed non-financial companies). The study covers the annual reports for 2012 which in Serbia coincides with a crisis period. The same research methodology could be applied on a larger and comprehensive database (non-listed companies) and include period after 2012, which will allow the analysis of evolution of disclosure practices by companies within new accounting framework.

Originality/value – The authors give some recommendations for improving the relevance of financial and non-financial disclosures in order to increase the efficiency of capital markets.

Keywords: Disclosure index, financial and non-financial information, capital market, transparency, recommendation.

JEL Classification: M41

1. Introduction

With the purpose of achieving competitive advantage, it is important that enterprises use their publicity policies for providing existent and potential investors with information that are relevant for making decisions on their capital investment. Reliable and high-quality information is one of the requirements that are placed in relation to the financial statements and other companies by investors and other interested parties. Not only the quality, but also the scope of the disclosed information affects susceptibility to the transparency of a company. Factors affecting the level of corporate disclosure are numerous, such as financial markets, industry affiliation, listing status, economic environment, size of the company, company strategy, and the like. In addition, companies are required to disclose certain information in accordance with the law, the requirements of the capital market and other regulations. All of them collectively called the mandatory disclosures. On the other hand, investors

and other stakeholders require additional information, not just the regular (annual and semi-annual and possibly quarterly) reporting, but more often (ad-hoc), which is why companies resort to voluntary disclosures. In the case of companies whose securities are traded on the capital market, publishing as mandatory, and voluntary information affects not only improve their performance, but also the stability of the capital market (better allocation of capital) and the whole national economy. In addition, at the EU level, the stability of the financial markets is a prerequisite for the stability of the European Monetary Union. Within the process of corporate reporting, matters is not only the quantity of disclosures, but also the quality of disclosed financial and non-financial information.

The paper is organized in five sections. After a brief review of the literature dealing with these issues, in order to build the theoretical foundation of our research (second part), in the third section we present the model, i.e. the disclosure index - both mandatory and

voluntary. This section describes disclosure items and their coding. In the fourth part of the paper, starting from a defined sample and data sources, we present some results of the research, in order to draw attention to the level of transparency of companies listed on the Serbian capital market and the factors that determine it. The final section is dedicated to recommendations for improving the quality and relevance of disclosed information

2. Literature review

Over the last five decades, a number of scholars and practitioners have been dealing with the issues of measuring the quality of disclosed financial and non-financial information, especially by listed companies. It discusses the various factors that affect the level and quality of both mandatory as well as voluntary disclosure of information about the company's business.

It is considered that with his studies on the practice of financial reporting in the United States, Cerf (1961) was a pioneer in this field. His research on disclosure index based on 31 items of published information shows that the level of transparency is positively related to firm size and listing status, but there is no statistical significance to the profitability of the company. Many researchers in the coming period applied Cerf's methodology. These studies have been mainly carried out in developed western countries (see Barrett, 1977; Firth, 1979; Belkaoui and Kahl, 1978; Spero, 1979; Mihailescu, 1999; Wallace et al., 1994; Inchausti, 1997; Galani et al., 2011; Lopes and Rodrigues, 2007). As to European transition economies, it is worth mention the studies done by Patton and Zelenka (1997) and Hellstrom (2009).

Shortly after Cerf research, Singhvi (1968) began to deal with issues of corporate disclosure in developing countries. Based on a disclosure index comprising 38 items, his research indicates that disclosure is associated with size, profitability and managers' country of origin. Singhvi's research is followed by a group of studies that examines the practice of corporate disclosure in developing countries, such as Mahmood (1999), Pradhan (1990), Wallace (1987), Ahmed (1996), Hossain et al. (1994), in Egypt, India, Nigeria, Bangladesh and Malaysia respectively.

There are also studies in which a comparative approach to evaluation of disclosure practice across different countries is applied. Barrett (1977) for example, studies the changes in the average disclosure levels in the period 1963-1972 and comprehensiveness of financial statements across countries. He shows, firstly, that there is a progress in the overall level of

corporate disclosure for analyzed firms, and secondly, that in British and American firms considerably higher level of disclosure is indicated than in other five analyzed countries.

Transparency of financial reporting of Serbian companies can be analyzed in comparison to other countries in transition. Thus, for example, specific issues of disclosing financial positions of Romanian companies on the Internet were, among others, dealt with by Bogdan and Pop (2008), whereas Croatian companies were tackled by Pervan (2005). All of them concluded that within the observed period of time, companies had primarily disclosed mandatory financial information. The same situation could be seen in Serbia. In recent years, the problem of transparency of financial reporting on the Serbian capital market has been overcome by the privatization of state-owned companies. Similar to the Turkish case presented in the study by Selvi and Yilmaz (2010), the privatization process improved the corporate management and financial reporting of Serbian companies. Legal framework of financial reporting of the countries in transition and candidates for membership in the EU, such as Serbia, has become the subject of various studies. Extensive analysis was performed by Pervan, Horak and Vasilj (2010), who focused on the example of six countries in transition, including Serbia, and observed differences in the level of legal regulation of that issue among the countries.

Generally, the result of the most of the above mentioned studies is that company disclosure practice is a function of its size, listing status, ownership structure and other performances.

3. Development of models for measuring the level of mandatory and voluntary disclosures

Bearing in mind the goal of our research, starting from the previous models developed in the literature and in practice, we have developed two indices - the mandatory disclosure index and voluntary disclosure index.

3.1 Measuring the level of mandatory disclosure

3.1.1 Structure of the Serbian mandatory disclosure index (SMDI)

In developing of the SMDI we started from the regulations of the Serbian Securities Commission, legal regulations and requirements arising from IFRS with respect to the disclosure of appropriate information that enable the analysis of financial status, profitability and cash flows and provide the basis for predicting future business trends. We identified 25 items and divided them into five sub-segments of SMDI (Table 1).

Table 1: Mandatory disclosure index items

Disclosure index items	
A.	General information about company
1.	Share price information
2.	Information about subsidiaries and/or parent company
3.	Number of employees
4.	Shares owned by directors
5.	Corporate governance codex

- B. General financial reporting information**
 - 6. Statement of the responsible person
 - 7. Auditors' report disclosed
 - 8. Remuneration of directors
 - 9. Interim financial reports
 - C. Accounting principles and practices**
 - 10. Disclosure of accounting policies
 - 11. Disclosure of accounting estimates
 - 12. Disclosure of income taxes and deferred tax calculation
 - 13. Disclosure of transactions with related parties
 - 14. Disclosure of segment information
 - D. Reporting on significant events that have affected the business performance**
 - 15. Disclosure of changes in accounting estimates and corrections of prior period errors
 - 16. Disclosure of events after the reporting period
 - 17. Disclosure of contingent liabilities and contingent assets
 - 18. Disclosure of the effect of foreign currency translation
 - 19. Disclosure of other revenues and other expenses
 - E. Forecast relevant information**
 - 20. Earnings per share
 - 21. Dividend per share
 - 22. Appropriation of retained earnings
 - 23. R&D activities
 - 24. Risks
 - 25. Expected business development in the future
-

The first two groups of the SMDI items are not direct product of the basic financial statements, but should provide confidence in the financial reporting process of the company. This information should reflect business conditions observed at the company level and at the level of the environment in which the company operates. General information about the preparation and disclosure of financial statements are discussed in the context of the assessment of transparency of the process. This provides confirmation of the credibility of financial statements.

Clear disclosure of accounting policies and accounting estimates (for example, the useful life of fixed assets, the actuarial assumptions used in determining provisions, the classification of financial instruments and the like) belong to the third group of the SMDI items. These disclosures should help users of financial statements to understand the tendency of management towards using the right to choice and (non)conservatism. The tendency towards openness in reporting is complemented with the information on related-party transactions (disclosure of transactions with subsidiaries and/or parent company), as well as segment information because it increases the value relevance of accounting numbers (Chen and Zhang, 2003), it improves monitoring over management decisions (Hope and Thomas, 2008).

Disclosures regarding significant events that have affected the business performances (the fourth group of SMDI items) are, in our opinion, essential for the assessment of management's tendencies towards disclosure of specific accounting policies. While disclosures from the previous (third) group included the most common and basic accounting policies, the fourth group included either more complex issues or more detailed disclosures.

As mandatory disclosures which may be used for the prediction of future net earnings (the fifth group of the SMDI items) we took into consideration those that are primarily required by rules of Serbian SEC and the Belgrade Stock Exchange. Information about earnings per share, dividends per share and appropriation of retained earnings provide historical data on past and expected earning capabilities and distribution policy that can be expected in the future. There are numerous studies that show the proper relationship of these variables, among which are: Aharony and Dotan (1994), McCluskey et al. (2006), Yip et al. (2010). In addition, risk disclosure is also the requirement of International Financial Reporting Standards, particularly IFRS 7, which is why such information can be seen as mandatory.

3.1.2 Coding of the SMDI

Previous studies were not based on a unique coding of items for calculating the disclosure index. The reason for this approach lies in the fact that it is impossible to determine the same weighting factor for all items, primarily because of the complexity of disclosure. Generally speaking, SMDI items in this study are coded with 0 (if the information was not disclosed) or 1 (if the information was disclosed). However, in specific cases, we use weights 0, 1 and 2. This is the case for 8 items. Disclosure of auditors's report we coded with 0 (if the report is not disclosed), 1 (if only auditor's opinion was disclosed) and 2 (if full auditor's report was disclosed). At the same time, some other items (Disclosure of accounting estimates, Disclosure of transactions with subsidiaries and/or parent company, Disclosure of income taxes and deferred tax calculation and Disclosure of contingent liabilities and contingent assets) are assigned weight 0 if there was no disclosure, 1 - if basic information was disclosed with no quantitative or narrative explanations and 2 - if the

disclosure was complete, i.e. if it contained all the necessary explanations. On the other hand, for the item Corporate Governance Codex, weight 0 is assigned if the information whether the codex was applied was not disclosed, 1 – if the codex of some other organization (e.g. OECD or the Serbian Chamber of Commerce) was applied and 2 – if its own codex was developed and applied. With respect to information on the directors' remuneration, weight 1 is assigned if the sum of remuneration of all directors was disclosed, and weight 2 – if remunerations were shown separately for each director. Only narrative risk disclosures are coded with 1, while narratively described and quantified risks were coded with 2.

There is a possibility that some companies did not disclose some information either because it did not want to or because the information did not exist (for example, information on related companies, information on shares held by the director). Even when some item did not exist, we considered that the company should have disclosed such information (e.g. "There are no related companies and transactions with

them", or "directors do not possess shares"), which is why, regardless of the reason for the absence of some information, such non-disclosure was assigned weight 0.

Finally, due to the externally available sources of information (see next section), in determining weights for some disclosure we did not discuss whether the information was accurate or not. Therefore, for the established SMDI we performed correlation analysis with the opinion of the external auditor.

3.2 Measuring the level of voluntary disclosure

3.2.1 Structure of the Serbian voluntary disclosure index (SVDI)

For the purposes of this study, we observed a voluntary disclosure as financial and non-financial information published in annual and interim reports and other ad-hoc reports, which have the character of non-mandatory disclosure in accordance with the regulatory framework for financial reporting in Serbia. We identified 39 disclosure items, which pertain to six categories of information (table 2).

Table 2: Voluntary disclosure index items

Disclosure index items	
A.	General company background information
1.	Corporate goals and mission
2.	Vision of the company
3.	History of the company
4.	Internet disclosures
5.	Location (e.g. on google map or other)
6.	Photo-gallery
B.	General business data
7.	Description of the business
8.	Description of the business environment
9.	Description of the products/services
10.	Description of the market barriers
11.	Awards for products/services
12.	Quality policy and control
13.	Qualification structure of employees
C.	Corporate governance
14.	Description of the organization or organization chart
15.	Reports from meetings of board of directors and oversight board (if any)
16.	Name and function of members of board of dir. and oversight board (if any)
17.	Education (qualific.) of memb. of board of dir. and oversight board (if any)
18.	Shares owned by directors and members of oversight board (if any)
19.	Compensation policies
20.	Corporate Governance Codex available on the web-site of the company
21.	Corporate Governance Codex practice disclosed
22.	The Code of Conduct disclosed
D.	Social and environmental disclosures
23.	Information on contribution to the community
24.	Awards for corporate social responsibility
25.	Environmental protection expenditures
26.	Environmental policy and programmes
E.	Past financial performances
27.	Aggregated financial reports for at least the last three years
28.	Shares price changes during the year
29.	Liquidity ratios disclosed
30.	Profitability ratios disclosed
31.	Other ratios disclosed (any)
32.	Charts, figures and the like used
33.	Comparison of target and actual figures

F. Forecast relevant information

34. Future business trends discussed
 35. Plan to achieve corporate goals
 36. Development of new products/services
 37. Projection of sales, cash flow
 38. Plan of investments
 39. Expected risks and opportunities
-

The first group of the SVDI items covers non-financial data relevant for understanding company profile (history, vision, mission of the company, location, photo gallery). Having in mind the dynamic business environment, traditional paper format of corporate reporting is often not timely and hence is less useful for decision-making (Koreto, 1997). As a better and flexible medium for disclosure of financial and non-financial information (Marston and Polei, 2004; Cormier et al., 2009) we consider company web-presentation as a tool for attracting foreign investors, which is particularly important for Serbian companies.

Similar to previous studies (Botosan, 1997; Alfaraih and Alanezi, 2011; Vanstraelen, et al., 2003; Binh, 2012), we include in the second group of the SVDI items seven disclosures which could primarily derive from business report (management report or MD&A) and other publication (web or print) of a company. All this non-financial information should enable decision-makers to understand the business environment and the company's potential.

Based on the generally accepted view that the purpose of corporate governance is to reduce the agency costs incurred by principals by imposing controls to keep the agent's self-serving behavior in check (Jensen and Meckling, 1976), we identified nine disclosure items, which should reduce the informational asymmetry between principal and agent (the third group of the SVDI items). In previous studies, some authors have focused on certain disclosures relating to board structure, directors' remuneration, buyback of shares (Del Guercio et al., 2003, Tufano and Sevick, 1997), as well as variables that are positively correlated with the level of voluntary disclosure. However, there are studies which found a negative correlation between these variables (Hossain et al., 1994; Oliveira et al., 2006; Saha and Akter, 2013). Regardless, information about the number of shares held by directors have taken as an SVDI item, in order to better understand the possible discrepancies in the level of the index.

Although the practice of reporting on social and environmental aspects of the business is at a very low level in Serbia (Spasić and Stojanović, 2013; Knežević et al., 2009), in this study we include as a determinant of the level of voluntary disclosure the four basic information (information on contribution to the community, awards for corporate social responsibility, environmental protection expenditures and environmental policy and programs).

Disclosures included in the fifth group of the SVDI items are, in our opinion, essential for the assessment of management's tendencies towards discussion and

analysis of financial data including ratios and graphs about performances and explanations of past business.

The relevance of the forward-looking disclosures has been recognized by various researchers and event professional bodies (AICPA, 1994; Vanstraelen, et al., 2003; Beattie and Pratt, 2002). Disclosures which may be used for the prediction of future earnings belong to the sixth group (with six items relating to forecast relevant information) and may be derived from company's business report. Although the content of the business report is, in principle, created voluntarily, Serbian Securities Commission requires listed companies to include several information as mandatory (for example, earnings per share, dividends per share, R&D activities, appropriation of retained earnings, etc.). For this reason, our study concentrates mainly on the narrative description of expected business development from management' perspective.

3.2.2 Coding of the SVDI

SVDI items in this study are coded with 0 (if the information is not disclosed) or 1 (if the information is disclosed). However, in specific cases, we use weights 0, 1 and 2. This is the case for 3 items.

Two items (Description of the business and Plan of future investments) are assigned weight 0 if there is no disclosure, 1 - if basic information is disclosed and 2 - if the disclosure is complete, i.e. if it contains both quantitative and narrative explanations. On the other hand, for the item Web-disclosures, weight 0 is assigned if a company does not have own internet presentation, 1 - if the web site of the company is only in Serbian and 2 - if the internet disclosures are available at least in one foreign language.

4. Testing of the model and some results of research

4.1 Sample determining and data collection

The sample includes 63 companies from the Belgrade Stock Exchange (5 from the Prime market, 2 from the Standard market and 56 from the Open Market). Banks and other financial organizations (e.g. insurance companies) are excluded from the sample, given that they are subject to special rules of the National Bank of Serbia regarding financial reporting and have a different form and content of financial statements. The sample includes only non-financial companies whose ordinary shares with voting rights are listed on a specific market segment.

Prime market does not include financial institutions as issuers, which means that all companies belonging to this market segment were included in the sample. Standard market includes shares of 3 issuers, one of which is a bank, so that the sample includes two non-financial companies.

The open market involves the total of 99 issuers, one of which issues preference shares only, whereas 98 issuers issue ordinary shares with voting rights (5 issuers listed preference shares in addition to ordinary shares). The initial sample of 98 issuers was first reduced by 11 (banks and other financial organizations), and then by 3 additional issuers that are in the process of restructuring within the privatization process. Namely, according to the Law on Privatization (Zakon, 2001), state-owned enterprises with poor performance before privatization undergo restructuring under the supervision by the state. In addition, 4 companies with losses in excess of capital were also excluded from the initial sample since they were regarded as companies that were likely to be introduced in the process of bankruptcy. The remaining sample of 80 companies (98-11-3-4) was further analyzed in accordance with the multiple criteria. We decided to exclude another 24 companies with market capitalization less than 100 million RSD (equivalent - less than 1 million EUR). With respect to these companies, we observed an extremely small number of transactions on the capital market. In addition, the reason for non-inclusion of these companies in the

sample lay in the fact that their total joint market capitalization equaled 0,61% of the total market capitalization of all issuers on the Open market. Thus, the sample from the Open Market numbered 56 companies.

For calculating SVDI we used financial statements, business report and other reports prepared and published exclusively by the company for reporting period 2012. These reports are available on the website of the Belgrade Stock Exchange and on companies' own websites (if they have any). We did not take into consideration the information published by the Belgrade Stock Exchange for each issuer (for example, on the website of the Belgrade Stock Exchange it is possible to find information on the movement of share prices), but only disclosures found in the reports prepared and published by companies themselves.

4.2 Some empirical results

4.2.1 Level of mandatory disclosures

The research result on the previously described sample shows that the average value of the index is 20,17, which leads to the average level of disclosure compliance with national regulation and IFRS requirements in the sample of 61,12% (table 3).

Table 3: The values of the SMDI and the level of compliance with the requirements for mandatory disclosures of companies listed on BSE

	SAMPLE total	Sample by segment of the BSE			Sample by company size		
	\sum	Prime	Stand.	Open	Large	Med.	Small
Number of companies in the sample	63	5	2	56	39	13	11
Subsegments of the SMDI							
<i>General information about company</i>	51,85%	73,33%	58,33%	49,70%	54,70%	50,00%	43,94%
<i>General information about financial reporting</i>	64,81%	83,33%	83,33%	62,50%	66,67%	64,10%	59,09%
<i>Accounting principles and practices</i>	72,42%	92,50%	62,50%	70,98%	78,53%	69,23%	54,55%
<i>Reporting on significant events that have affected the business performance</i>	49,74%	73,33%	25,00%	48,51%	51,28%	58,97%	33,33%
<i>Forecast relevant information</i>	62,81%	76,19%	64,29%	60,20%	69,60%	62,64%	38,96%
SMDI (max. 33)	20,17	27,60	19,50	19,54	21,51	20,31	15,27
Compliance level	61,12%	83,64%	59,09%	59,20%	65,19%	61,54%	46,28%

Source: Authors' estimate

The values of minimum (18,18%) and maximum (93,94%) levels of compliance indicate significant variations in the level of disclosure compliance with IFRS in Serbia. In comparison with the level of disclosure compliance in developed countries (e.g. in 81% Germany (Glaum and Street, 2003), 74% in

Switzerland (Street and Gray, 2001), 86% in Greece (Galani et al., 2011)), accounting disclosure in Serbia is still at a low level. This suggests a need for the improvement in the level of information disclosure of the sample companies.

However, it is noticeable that there is a certain amount of information that some companies avoid to publish in their reports, although such disclosure is required by IFRS or national regulations (Table 4). Predominantly non-disclosure of such information is a major factor previously analyzed low-level of the SMDI.

Table 4: The least frequently disclosed mandatory information

	Disclosed information	Disclosure frequency
1.	Disclosure of changes in accounting estimates and corrections of prior period errors	15,87%
2.	Disclosure of transactions with related parties (parent and/or subsidiaries)	17,46%
3.	Disclosure of segment information	31,75%
4.	Disclosure of the effect of foreign currency translation	31,75%
5.	Share price information	34,92%
6.	Corporate governance codex	38,89%
7.	Remuneration of directors	40,48%

Source: Authors' estimate

It is evident that the information that is least frequently disclosed by the sample companies are those related to the material content of the financial statements. In particular, we refer to information on changes in accounting estimates and corrections of fundamental errors in the previous period, as well as related companies. Also, the lack of transparency is associated with the often non-disclosure of information

on salaries of directors, the effects of operations on a segment and others.

On the other hand, usually because of strict requirements deriving from legislation and the rules of the regulatory bodies of the Serbian Capital market, there is information that is disclosed by almost all companies (Table 5).

Table 5: The most frequently disclosed mandatory information

	Disclosed information	Disclosure frequency
1.	Number of employees	100,00%
2.	Statement of the responsible person	100,00%
3.	Disclosure of accounting policies	100,00%
4.	Detailed disclosure of other revenues and other expenses	96,86%
5.	Interim financial reports	95,24%
6.	Disclosure of accounting estimates	88,89%
7.	Appropriation of retained earning	84,13%

Source: Authors' estimate

If we analyse the information presented by the majority of companies in the sample, it is evident that they are usually "neutral" from the point of impact on the figures reported in the financial statements, which is why they do not contribute to a better understanding of the financial position, profitability and cash flows of the company. In this sense, taking into account the previously analysed information rarest disclosed, it confirms the general conclusion about the low level of disclosure and accordance with the requirements of the legal and professional accounting regulations in terms of transparency of reporting in the Serbian Capital market.

4.2.2 Level of voluntary disclosures

Similarly, to findings concerning mandatory disclosures, the results of our research show that the mean value of the Serbian voluntary disclosure index (SVDI) is 20.33 (maximum 42.00), which corresponds to the average level of compliance with the expected disclosures of 48,41% (Table 6). The observed values of the minimum (14,29%) and maximum (97,62%) for the entire sample, indicate significant differences in the practice of voluntary disclosures of financial and non-financial information by Serbian companies.

Table 6: The values of the SVDI and the level of compliance with the expected disclosures of companies listed on BSE

	SAMPLE total	Sample by segment of the BSE			Sample by company size		
	Σ	Prime	Stand.	Open	Large	Med.	Small
Number of companies in the sample	63	5	2	56	39	13	11
Subsegments of the SVDI							
<i>General company background information</i>	64,85%	88,57%	92,86%	61,73%	73,63%	68,13%	29,87%
<i>General business data</i>	56,75%	87,50%	81,25%	58,13%	66,67%	52,88%	26,14%
<i>Corporate governance</i>	39,86%	75,56%	55,56%	36,11%	44,16%	41,88%	22,22%
<i>Social and environmental disclosures</i>	29,59%	65,00%	37,50%	22,77%	33,97%	25,00%	2,27%
<i>Past financial performances</i>	51,02%	80,00%	78,57%	47,45%	51,65%	58,24%	40,26%
<i>Forecast relevant information</i>	43,31%	80,00%	71,43%	39,03%	48,72%	43,96%	23,38%
SVDI (max. 42)	20,33	33,80	30,00	18,79	22,85	20,92%	10,73
Compliance level	48,41%	80,48%	71,43%	44,73%	54,40%	49,82%	25,54%

Source: Authors' estimate

Regarding the belonging to market segment of the BSE, by nature, since the "Prime" and "Standard"-listing rules of the Serbian Securities Commission require more stringent monitoring system, there is the higher level of compliance with the disclosure requirements. In fact, this conclusion should be taken with caution due to the very small sample of the first two segments of the Serbian Capital market.

The analysis shows that companies usually opt for a policy of discretion (for example information relevant

for assessing the quality of corporate governance and the future development of the business). Worrying is that very low level of these disclosures exists not only in companies from the Open market, but also in companies from Prime Standard segment of the Serbian Capital market.

We also analyzed the information that companies disclose the rarest and most often (Tables 7 and 8).

Table 7: The least frequently disclosed voluntary information

	Disclosed information	Disclosure frequency
1.	Compensation policies	6,35%
2.	Environmental protection expenditures	6,35%
3.	The Code of Conduct disclosed	11,11%
4.	Projection of sales, cash flow	19,05%
5.	Shares owned by directors and members of oversight board (if any)	23,81%
6.	Qualification structure of employees	23,81%
7.	Comparison of target and actual figures	25,40%

Source: Authors' estimate

The reason for the low level of disclosure of certain information could be found primarily in the undeveloped corporate culture among Serbian companies. The relevant empirical studies have pointed to a high ownership concentration in the Serbian companies, while the proportion of independent directors in the board is small if compared with a board structure in the non-financial companies in developed

countries (Stančić et al., 2012). This results in a relatively low level of corporate governance quality (Manic, 2007). In addition, the low educational level of managers in the field of corporate governance and non-existence of effective sanctions for abuses and criminal acts (Denčić-Mihajlov, 2009), reduce the propensity of managers to presentation of not only voluntary, but also mandatory information in the corporate reports.

Table 8: The most frequently disclosed voluntary information

	Disclosed information	Disclosure frequency
1.	History of the company	90,48%
2.	Name and function of members of board of directors and oversight board (if any)	90,48%
3.	Description of the products/services	82,54%
4.	Other financial ratios disclosed (any)	80,95%
5.	Description of the business	80,95%
6.	Photo-gallery	79,37%
7.	Internet disclosures	77,78%

Source: Authors' estimate

Serbian companies usually disclose information that contributes to their greater visibility. This information provides a general picture of company and its business potential. Similar to the mandatory disclosure, usually published voluntary information are mostly "neutral" from the point of impact on the values reported in the financial statements, which do not contribute to a better understanding of the financial position, profitability and cash flows of the company.

5. Instead the conclusion - some recommendation for improving transparency and relevance of disclosed information

Confidence in the financial reporting process is built on the credibility and reliability of disclosed information. After the financial reporting scandals of the early 21st century, the predominant focus of scientific discussion and regulatory action was to establish an effective mechanism for supervising the quality of audit services, as well as the system of internal control over financial reporting. We believe that is made significant progress in the field and returns confidence in financial reporting. Therefore, the risk of erroneous and insufficient information is smaller, which stabilizes the capital market. In contrast, insufficient transparency creates distrust in the markets and its instability.

However, despite the steps forward in recent years has re-started the discussion about the need of disclosure reform (Marsden et al., 2011; ICAEW, 2013; AASB, 2013; Karmel, 2005, etc.). Starting from the above mentioned discussion, we highlight key issues, which in our opinion, should be in the focus of the accounting profession in order to improve the quality and transparency of financial reporting in the EU, especially in Serbia as a candidate country for EU accession. We chose that in this paper to deal only with issues that are directly related to the financial reporting process at the corporate level. Therefore, we will not consider internal control and institutional oversight mechanisms as tools for improving the quality of financial reporting.

In that sense, our following considerations should be interpreted as recommendations for improving the relevance and usefulness of disclosed financial and non-financial information for decision-making on the capital markets.

The application of IFRS or other national or international generally accepted accounting principles

aims to harmonization of financial reporting, which not rarely lead to uniformity of reporting practice. The uniformity of reporting can often lead to the failure of significant disclosures that are not inherent in any company or are specific to a certain period of time. The tendency toward uniformity is particularly noticeable for example regarding to the disclosure of accounting policies. Sometimes, disclosed accounting policies are a mere recitation of accounting literature or manuals prepared by professional organizations. *Therefore, it is necessary the disclosure of accounting policies particularly highlights the specifics of a reporting entity as well as in what period of time they have a special significance to business performance.*

Closely related issues with the accounting policies are assumptions, accounting estimates and possibilities to choose between different accounting methods. As already noted (see Table 4) management sometimes avoids to disclose information on these issues. Even when it is disclosed, mostly there is no an additional, sensitivity analysis for different scenarios. Thereby investors do not have sufficient detailed information to assess the impact of such accounting treatments on the profitability and financial position. *Consequently, it is necessary to disclose the detailed effects of accounting estimates and assumptions used as well as the choices, supplemented with sensitivity analysis.*

Detailed disclosure of previous plans and actual results could help investors to better understand the expected earnings in the future. Such disclosure should be supported by clear and complete disclosure of a company's risk exposures in order to evaluate their impact on future results. Namely, together with plans of profit and cash flows, business (management) reports should contain more detailed comparative data on previous plans and achievements. In this way, investors can evaluate the reasonableness of management's efforts to optimize the return potential whilst considering risk.

Users of financial statements require the information in the financial statements and other reports of the company to be presented using graphs supported by qualitative explanation. Such disclosure should help decision makers to more easily compare some results over time and between companies in the same industry or at any market segment. *Consequently, the visualization of information should be improved.*

According to "A renewed EU strategy 2011-14 for Corporate Social Responsibility" (European

Commission, 2011), having in mind the Europe 2020 strategy (European Commission, 2010), it is necessary to enhance the visibility of CSR and disseminating good practice in this area. In that sense, *the focus of preparers of financial and other reports of a company should be improving company disclosure of social and environmental information.*

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Government size, country size, openness and economic growth in selected MENA countries

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Abstract

Purpose – The purpose of this article is to examine the interconnected relationships between government size, country size, openness and economic growth. In fact, more trade openness increases government size, which plays stabilizer role against external shocks and GDP volatility. More country size leads to lower government share to GDP from one side and less openness from other side, whereas per capita expenditure on public goods is lower, and large markets enjoy more productivity and less incentives for large market to increase openness than the small markets. Finally, economic growth and government have a negative relationship if government size exceeds the optimal size.

Design/methodology/approach - We employ three models, which two of them are using 2SLS technique and the third model is using GMM system analysis to examine these relationships in eight selected MENA countries. Our panel data is for the period from 1977-2013 sourced from the World Development Indicators of the World Bank.

Findings - Results prove literature proposed hypotheses for the selected region and period, and show that government share to GDP exceeds the optimal size. Moreover, more growth can be realized through more integration in the world economy.

Research limitations/implications – Data limitation led to the inclusion of only eight countries of MENA region. We recommend to convert government expenditure to investment and infrastructure instead of social transfer and current expenditure. Furthermore, more studies could be done about the government expenditure structure. In addition, we recommend to minimize government intervention to the market. Finally, growth of government does not improve investment environment or reduce transactions costs, and it crowds out private sector.

Originality/value - This is the first work in MENA region, and using recent econometric techniques in subject according to our knowledge.

Keywords: openness, country size, government size, economic growth and system GMM panel data.

JEL classification: H10, F43, C33

1. Introduction

It widely supposed that more open economies and highly integrated to the world economy have lower government intervention, and this would suggest negative association between openness degree and the government size, (Rodrik, 1998). In fact, many small and highly open countries have high government size such as Austria, Belgium, Norway and others, contrary, USA, Japan, Canada and others have small government spending and trade shares in GDP. The explanation is that government expenditure plays stabilizing role and guarantee government social role against external shocks, (Rodrik, 1998).

In addition, as much as country size is bigger per capita share of public expenditure and publicly provided goods are lower. This indicates a negative relationship between country size and government size. Furthermore, big countries have more resources, bigger markets, higher productivity and less incentives to be open as much as small countries. This suggests a negative relationship between country size from a side and each of government size and trade openness to the world economy from other side.

In fact, the analysis of the government size with respect to the economic growth has recently received a larger attention of empirical analysis. The existence of a relationship between the both variables firstly postulated by the German political economist Adolph Wagner (1911). Low government public expenditure level is important for market functioning, which is the main government role, and hence, government size and economic growth are positively related. On the other hand, high government expenditure rate hinder investment, production and involving in the market due to high tax rates and crowding out the private sector, which reflects a negative relationship between government size and economic growth. Therefore, government size and economic growth are strongly related.

This is first empirical work examines these hypotheses, according our knowledge, in selected MENA countries (Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine, Syria, and Tunisia) using panel data for the period 1977 to 2013. We employ both two stages least squares and recent econometric method in the subject, which is GMM dynamic panel data system. We

proceed as follows: we review literature, present the models, show methodology and data, then we present estimation and finally conclude.

2. Literature review

Wide spread studies suggest that government size, country size and openness are interconnected. In addition, the previous work has suggested that there is a negative relationship between country size and government size from one side, and between country size and openness, from another side. This suggests the existence of a positive relationship between openness and government size.

The literature suggests that government size tends to be bigger as much as country more open, where government plays stabilizing role and guarantee government social role against external shocks, i.e. increasing trade openness leads to increase the external risks, which cause more volatility in income and consumption. This volatility can be reduced by greater share of government in GDP that comes through social welfare system particularly in the developed countries, (Rodrik, 1998). (Rodrik, 1998) indicates that positive relationship between openness and government size is not affected by the inclusion of other control variables, and prevails for both low and high income level countries. In addition, (Cameron,1978) explained that more open economies have a higher industrial concentration, which causes higher collective bargaining such as labor union and federation. This tends to foster the government transfers such as pensions, employment insurance, social security and job training, which reduce the external shocks and risks. Fatás, and Mihov, (2001) finds a strong negative correlation between government size and output volatility both for the OECD countries and across US states, which indicates stabilizer role of government, and positive relationship between openness and government size. It finds that one percentage point increase in government spending relative to GDP reduces output volatility by eight basis points, and from 13 to 40 basis points for OECD and US states, respectively.

Country size and government size negative relationship emerges when we can share the cost of non-rival public goods over larger population, per capita expenditure on these public goods is lower, which means lower government share in GDP, (Alesina and Spolaore 1997). In addition, monetary and financial system, public health, police and juridical system, national parks and other publicly provided goods indicate that per capita costs of these public goods declining as taxpayers increase, and government expenditure share over GDP is decreasing with GDP i.e. smaller countries have larger governments, and vice versa, (Alesina and Wacziarg 1998), Alesina (2003). Furthermore, urbanization may cause higher government spending, which may refer to Wagner's law where "the pressure of social progress" leads to increasing government size. The government increases public expenditure and investments on fields such as

education and infrastructure under the rapid urbanization and industrialization, (Cameron,1978).

On the other hand, country size and openness negative relationship emerges where large markets enjoy more productivity through allowing more division of labor, which creates less incentives for large market to increase openness than the small markets, (Alesina et al. 2000).

In fact, the previous literature suggested the existence of the positive relationship between openness and government size, meanwhile, Alesina and Wacziarg (1998) casts doubt on the direct link between both variables that stated by Rodrik (1998), and they argue that mentioned link between both variables is mediated by country size. Anyway, they agreed the stabilizing role of the government in open economies, Alesina and Wacziarg (1998).

A related work by Ram (2009) indicates that while pooled OLS estimates with cross section data support the positive association between openness and government size. It finds that when cross-country heterogeneity is taken into consideration partially through the fixed-effects format, there is little evidence of a negative association of country size with either government size or openness. Therefore, it does not seem likely that positive association between openness and government size arises due to the mediating role of country size as Alesina and Wacziarg (1998) indicated. Hence, it finds the possibility of a direct link between openness and government size along the lines suggested by Rodrik (1998).

A wide literature discussed the optimal size of government and its impact on economic growth. Increasing government expenditure leads to more economic growth, which supported by Keynesian theory. On the other hand, after a specific limit, which is the optimal government size, more government share to GDP impacts negatively on growth. (Lamartina and Zaghini 2011) provided an empirical evidence for a positive relationship between government spending and GDP per capita using panel of 23 OECD countries, which reflects Wagner's law, as mentioned before. They found higher correlation between both variables in low GDP per capita countries suggesting stronger development impacts of government activities comparing to more developed economies, (high GDP per capita countries). Armey (1995) suggested a relationship between ratio of public expenditure to GDP and GDP variation, he formulated the mentioned relationship as "inverted U" shape curve. This argues that at very low level of government expenditure (government size) wouldn't enable government to take care of the market economy, and therefore can't guarantee a positive GDP growth rate. More government expenditure would enhance economic growth. On the other hand, very big government size discourage investment, production and market activities under high tax burden, which hindering economic growth. Moreover, if the productivity of public expenditure less than market economy productivity, with given input of factors of production, a high public expenditure suppresses the GDP growth,

Magazzino, (2012), (Forte and Magazzino 2011). Therefore, there is an optimal government size maximizes economic growth. If government expenditure exceeds that size, both government size and economic growth would associate negatively. On the other hand, if government doesn't exceed the optimal size, both variables relationship would still positive as Keynesian theory suggests. Friedman emphasized the important and positive role of government in a free open society. A suggested optimal size of public share of national income from 15% to 50%, the marginal contribution of the public sector will be negative. This optimal level is based on the country development level, Friedman (1997).

The mentioned controversial literature in the subject shows the importance of detection the relationship between government size and economic growth and the relationship between variables in MENA area during the mentioned period, especially, we don't find empirical work participate in answering these questions for the subject and region. Therefore, we examine trade openness, government size and country size relationship from one side. On the other hand, we detect the relationship between government size and economic growth. We apply two models of contemporaneous equations using two stages least squares method. In addition, we run a dynamic panel analysis to detect these relationships.

3. The Empirical Models

Trade openness: it's supposed to be associated positively with the government size, and negatively with country size. Openness is namely sum of exports and imports over the GDP, such as used exclusively in the past literature. More openness is potentially causes more external shocks and more income, consumption and GDP volatility.

Country size: it's supposed to be associated negatively with each of openness and government size. Population is the proxy of country size as used in the previous literature widely. Larger size causes larger market, more productivity and more resources from a side, and more taxpayers and less per capita expenditure on public goods from other side that causes less openness and less government share to GDP, respectively.

Government size: in addition to the last mentioned relationships, it's supposed to be associated negatively with economic growth when government size exceeds optimal government size, from a side, and positively when government size still less than the optimal size. For our sample, we predict a negative relationship between both variables whereas government size is relatively high compared to sample development level. In addition, the expenditure structure tends to more current and transfer payments than capital and investment expenditures. Government expenditure share over GDP is the proxy of the government size, such as used in the literature widely.

Economic growth: it's supposed to be associated negatively or positively with government size. GDP per capita growth is the proxy of economic growth such as used in the previous literature, its suitable for sample income level.

Basing on the previous empirical literature in the field, we derive three models for the empirical examination. The first model, shown in equations 1 and 2, detects the relationship between firstly, country size and trade openness from one side and government size from other side. Secondly, it detects the relationship between country size and trade openness. The second model, shown in equations 3, 4 and 5, includes the same relations, in addition to the relationship between government size and economic growth. Both models, first and second, are system equation model and estimated using Two Stage Least Squares (2SLS) method. The third model, shown in equations 6 and 7 detect transversely the relationship between government size and economic growth. In addition, it shows the relationships of each of country size an openness government size and economic growth. It's a dynamic model run dynamic panel data system, which is Arellano Bover Blundell Bond.

4. Two stage least squares estimation

4.1 Model One

Estimation of openness and government size equations individually might endure simultaneous equations bias due to some of the explanatory variables might not be truly exogenous. Consequently, we estimate the equations of openness and government size equations simultaneously. Equations 1 and 2 are used in the simultaneous analysis.

$$\ln \text{GOVsize} = \beta_0 + \beta_1 \ln \text{POP} + \beta_2 \ln \text{OPEN} + \epsilon \quad (1)$$

$$\ln \text{OPEN} = \alpha_0 + \alpha_1 \ln \text{GOVsize} + \alpha_2 \ln \text{POP} + v \quad (2)$$

Where: GOVsize is government size that is ratio of government expenditure to GDP. POP is a population as a proxy of country size. OPEN is the trade openness measured by the sum of exports plus imports as a share of GDP. And ϵ and v are error terms. The parameters β_1 , β_2 and α_1 , α_2 represent the elasticities of GOVsize and OPEN with respect to POP, OPEN and GOVsize, POP, respectively.

We aim to detect the relationship between government size and openness from one side, which

expected to be positive. On the other hand, we detect the relationship between country size and each government size and trade openness, which expected to be negative for each.

4.2 Model Two

Estimation of openness and government size equations individually might endure equations bias due to some of the explanatory variables might not be truly exogenous. Consequently, we estimate the

equations of openness and government size equations simultaneously. Equations 1, 2 and 3 are used in the simultaneous analysis.

$$\ln \text{GOVsize} = \beta_0 + \beta_1 \ln \text{POP} + \beta_2 \ln \text{OPEN} + \epsilon \quad (3)$$

$$\ln \text{OPEN} = \alpha_0 + \alpha_1 \ln \text{GOVsize} + \alpha_2 \ln \text{POP} + v \quad (4)$$

$$\ln \text{GOVsize} = \beta_0 + \beta_1 \ln \text{POP} + \beta_2 \ln \text{OPEN} + \beta_3 \ln \text{Growth} + Y \quad (5)$$

where: in addition to last variables in model 1, growth is economic growth proxied by GDP per capita growth. And ϵ , v and Y are error terms. The parameters β_1 , β_2 , β_3 and α_1 , α_2 represent the elasticities of GOVsize and OPEN with respect to POP, OPEN, Growth and GOVsize, POP, respectively.

5. Dynamic Panel Data System

5.1 Model Three

In addition, we use the dynamic panel data GMM system approach which estimates the parameters from a system of equations. This method is important for the dynamic panel data analysis, and it the first use, according our knowledge, in the empirical studies related to subject and region. It shows the transversely connection between equations 6 and 7 for the areas and time zone mentioned before.

$$\Delta \ln \text{GOVsize} = \beta_0 + \beta_1 \Delta \ln \text{GOVsize}_{t-1} + \beta_2 \Delta \ln \text{POP} + \beta_3 \Delta \ln \text{OPEN} + \beta_4 \Delta \ln \text{Growth} + \mu + \Delta v_t \quad (6)$$

$$\Delta \ln \text{Growth} = \beta_0 + \beta_1 \Delta \ln \text{Growth}_{t-1} + \beta_2 \Delta \ln \text{POP} + \beta_3 \Delta \ln \text{OPEN} + \beta_4 \Delta \ln \text{GOVsize} + \mu + \Delta v_t \quad (7)$$

Where: GOVsize_{t-1} and Growth_{t-1} are the lagged variables of both dependent variables. These lagged independent variables are strong explanatory variables can explain the dependent variables. μ represents the unobserved country specific effects, and v_t is the standard error. DPD system takes into consideration the cross country heterogeneity raise from pooled OLS estimation with cross section data. In addition, DPD system analysis provides more coherent estimation compared to fixed or random effect models, which addresses several biases related to heterogeneity across countries and time, Mitze (2010).

6. Econometric Methodology

The Two-Stage Least Squares (2SLS) is a well-known econometric technique and widely used in the literature. In fact, it used to estimate the parameters of a simultaneous equations when errors across the equations are not correlated and the equations concerned are over-identified or exactly identified, Mishra, (2008). Estimation of government size and openness equations individually might endure simultaneous equations bias due to some of the explanatory variables might not be truly exogenous. Consequently, we estimate the three equations simultaneously

Arellano-Bover, Blundell-Bond is a recent econometric technique, which is dynamic panel data system (DPD system) analysis. This method is based on the generalized method of moment GMM technique that has been widely used in empirical estimation of dynamic panel data models.

Blundell and Bond (1998) proposed system GMM estimators to overcome the inconsistent instrumental variables estimators caused by weak instruments. Firstly, they showed that the level GMM estimators by Arellano and Bover (1995) are free from weak instruments when even the parameters concerning the lagged variables is close to unity, and then combined the moment conditions, which are used in first differencing, and the level GMM estimators to improve the efficiency of the estimators, Hayakawa, (2005)

The dynamic panel data is GMM systems approach that estimates the parameters from a system of equations: the first differenced model using lagged levels of government size as instruments for the lagged difference of government size and growth, and the level model using lagged differences of government size as instruments for the lagged level of government size firstly, (similarly to growth). Secondly, use the difference instrumental variables in the model, Arellano and Bover, (1995); Arellano and Bond (1998); Blundell and Bond, (1998). Therefore, we run dynamic panel data system analysis, which is Arellano Bover Blundell Bond. In fact, we rely on the DPD system estimation to detect the relationship between government size and economic growth.

7. Data

This paper uses panel data of selected MENA countries (Algeria, Egypt, Jordan, Lebanon, Morocco, Palestine, Syria, and Tunisia) for the period 1977 to 2013. We use openness, government size, country size and economic growth variables. Trade openness measured by the sum of exports plus imports as a share of GDP. Government size is ratio of government

expenditure to GDP. Population is a proxy of country size. GDP per capita growth is the proxy of economic growth. The proxies of our variables are widely used in the previous literature. We use each of openness, government size and economic growth as dependant variables as shown in models before. These variables, in addition to country size, are used as independent variables in the simultaneous equations, and transversely (government size and economic growth) in the dynamic model to detect the relationships of the variables. In addition, we have both government size and economic growth, which are the lagged variables of the two dependent variables in the dynamic model. All

raw data of variables were collected from World Development Indicators of the World Bank. All variables are taken in logarithm. We use the variables in algorithm to get the elasticities, guarantee linearity and reducing any potential multicollinearity.

8. Results

The following tables show the estimation results of the previous three models, respectively. In addition, we provide a comparison between the different estimations. This provides more understanding for the relationships between the variables, and ensure or at least indicates more robustness of the estimations.

Table 1: Two Stage Least Squares estimation for equations 1 and 2.

	Pop	Open	Constant	F statistics	RMSE
Gov. Size	-.132*** (-8.13)	.095** (2.08)	.427 (1.65)	78.4***	.204
	Gov	Pop	Constant	F statistics	RMSE
Open	.188** (2.08)	-.199*** (-8.91)	3.34*** (11.3)	87.05***	.286

Figures in parentheses are t statistics. R²: 0.4 and 0.42 for equation one and two, the symbols ***, **, * indicate significance at 1%, 5%, and 10% levels respectively.

Table 1 shows model one estimation. It shows highly and significant F-statistics and low root mean square errors RMSE, which presents model validity. All variables coefficients are significant at 5% at least, and R² is 0.4 and 0.42 for both equations, respectively. Estimation shows a positive relationship between openness and government size in both equations that in line with the literature. Increasing openness 1% increases government size of around 0.1%, meanwhile,

increasing government size of 1% has stronger impact, which increases openness of 0.19%. Government spending share over GDP increase increases imports through government final consumption expenditure, which increases openness.

On the other hand, country size is associated negatively with each government size and openness that agrees the previous literature.

Table 2: Two Stage Least Squares estimation for equations 3, 4 and 5.

	Pop	Open	Growth	Constant	F statistics	RMSE
Gov. Size	-.133*** (-8.09)	.095** (2.06)	----	.45* (1.7)	77.63***	.2
	Gov	Pop	Constant	F statistics	RMSE	
Open	.189** (2.06)	-.2*** (-8.75)	----	3.3*** (11.1)	84.91***	.29
	Pop	Open	Growth	Constant	F statistics	RMSE
Gov. Size	-.13*** (-7.91)	.108** (2.32)	-.014** (-1.94)	.42 (1.58)	53.62***	.2

Figures in parentheses are t statistics. R²: 0.4, 0.42 and 0.41 for equation one, two and three, the symbols ***, **, * indicate significance at 1%, 5%, and 10% levels respectively.

Table 2 shows model 2 estimation. It shows a robust model and it shows a very close parameters with identical relationships to model one. In addition, it shows a negative relationship between government size and economic growth as shown in the third equation. This indicates that the government size in the sample exceeding the optimal government size, which reflects in a negative association with economic growth. All

variables coefficients are statistically significant at 5% at least. 1% increase in openness increases government size by around 0.1%. Meanwhile, 1% increase in country size decreases government size and openness by 0.13 and 0.2 respectively.

This indicates again to the positive relationship between openness and government size. These coefficients amounts are very close to model one results.

Table 3: Dynamic Panel Data System estimation for equations 6 and 7.

	L. Gov. Size	Pop	Open	Growth	Constant	chi2
Gov. Size	.74*** (21.59)	-.07*** (-4.21)	.06** (2.03)	-.011*** (-3.83)	.72*** (2.94)	845.48***
H0: overidentifying restrictions are valid						274.8***
Arellano-Bond test for zero autocorrelation in first-differenced errors					Level 1	-1.9**

H0: no autocorrelation					Level 2	-.003***
	L. Growth	Pop	Open	Gov. Size	Constant	chi2
Growth	.33*** (6.58)	-.32 (-1.33)	1.64*** (3.25)	-1.9*** (3.15)	3.1 (.84)	72.3***
H0: overidentifying restrictions are valid						301.7***
Arellano-Bond test for zero autocorrelation in first-differenced errors					Level 1	-2.6**
H0: no autocorrelation					Level 2	-.023***

Figures in parentheses are z statistics. The symbols ***, **, * indicate significance at 1%, 5%, and 10% levels respectively.

Table 3 shows model 3 estimation. It shows a robust model, all variables coefficients are significant at 5% at least, except country size in the second equation. The lagged variables of government size and economic growth show the influence of past behavior of government and economy in the current government expenditure and current growth. In fact, current government size is strongly influenced by previous size. These coefficients in line with literature and expectation. Openness is associated positively with government size and growth whereas 1% increase in openness increases both variables by 0.06% and 1.6%, respectively. This agrees literature and our previous discussion. This indicates that more open countries have larger governments, besides, more openness and integration to the world economy is strongly enhancing economic growth. An increase of 1% of country size decreases government size of 0.07%, which indicates that larger countries have smaller governments. Furthermore, government size and economic growth are negatively associated, which indicates that governments in the sample exceeded the optimal size. A 1% increase in the ratio of government expenditure to GDP decreases GDP per capita growth of around 2%. Also, we can conclude that an increase in openness of 10% increases government size of 0.6%, which decrease growth of around 1% (0.6 * 1.9), meanwhile, there is a direct increase of growth of 16.4% as a result of openness increase of 10%. This causes a net increase of GDP per capita growth of around 15%. The concept behind that more open economy is more attractive to FDI and penetrate more foreign markets.

Finally, as shown in table 3, the null hypothesis of no autocorrelation can't be rejected for the first and second order as shown in Arellano-Bond test for zero autocorrelation in first-differenced errors. In addition, Sargant test shows that all moment restrictions are satisfied for the dynamic specifications can't be rejected. This means that the instruments are valid, model is robust and correctly specified.

9. Conclusions

Country size associated negatively with openness, which related positively with government size. This shows the negative relationship between country and government size that proved directly also. These propositions have been proved in government size and openness equations in the three model. In addition, the selected countries can realize more growth through more integration in the world economy. There is can be shown through the positive relationship between openness with economic growth.

As shown in results, we found negative relationship between government size and economic growth, which is one of main interest in this work. This negative relationship shows that the selected countries lay on the downward part of Armey curve, which means growth of government does not improve investment environment or reduce transactions costs or it crowds out private sector. Hence, we recommend to minimize government intervention to the market. On the other hand, this evidence suggests that government payments structure of large current and transfer payments impacts negatively on growth. It recommended to shift payments from public spending consumption towards public investment spending on education, transports, health and R & D, which increases income, welfare, reduce cost of doing business, enhance private sector work environment and facilitating market production. In addition, government should build legal and institutional factors such as maintain law effectiveness and enforceable of property rights. These suggestions could be potential for further studies. Finally, these recommendations enhance more openness and integration to world economy, which support growth. This increases government size and convert it into optimal size.

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**The Impact of Unemployment and inflation on Economic Growth in Nigeria
(1981 – 2014)**

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Abstract

Purpose - To investigate and determine the effects of unemployment and inflation on economic performance in Nigeria within the specified period as in the title and to establish the relationship between unemployment and inflation with Real Gross Domestic Product in Nigeria.

Design/methodology/approach - Ordinary Least Square (OLS) technique was adopted with various diagnostic test to determine how fit are the data for the analysis.

Findings - The result of Diagnostic test indicates that data for the analysis are stationary at level and there are 2 cointegrating equation implying that there exist long-run relationship between RGDP, Unemployment and inflation. The results indicated that unemployment and inflation are positively related to economic growth.

Research limitations/implications - The study uses only OLS and Diagnostic to carried out the analysis and it only cover the period from 1981 to 2014.

Originality/value - The originality of this study lies on findings and interpretation of the result of regression analysis. The positive relationship between unemployment, inflation and RGDP indicates that Nigeria RGDP is driven by oil revenue that employs very limited highly skilled labour and the price of output of crude oil is determined externally which may not response as expected to growth of output in the country.

Keywords: Cointegration, economic growth, inflation and unemployment.

JEL Classification: E-011

1. Introduction

Unemployment and inflation has been an issue of concern, most especially in developing country like Nigeria, to policymakers and researchers alike. This is because unemployment and inflation are one of the key macroeconomics indicator and determinant of economic growth and development which is the priority of any economy. The Nigerian economy has remained largely underdeveloped despite the increases in growth rate declare every year. In 2014 budget, Nigeria Economy was projected to grow at 4.5% and in 2015 budget it was projected to grow at 5.5%, a figure which is far higher than the developed country like USA that recorded the growth rate of 2.2% in 2014. The growth in Nigeria economy has been described as exclusive growth which is worrisome and calls for concern. The per capita income is low, unemployment and inflation rates are high. There are many socio-economic challenges. The economy has continued to witness economic recovery which is immediately followed by economic recession and depression.

The situation in Nigeria is disturbing. The various macroeconomic policies by government have been

unable to achieve desired goals of price stability, reduction in unemployment and sustained economic growth. The fluctuations in the economy have confirmed the need to manage the economy effectively. The essence of macroeconomic management underlines the rationale of the government as a vital economic agent. However, it appears that government intervention has not been able to cure the ills in the economy.

For several decades, economic performance has not been impressive. The continued economic crisis, with the associated problems of high inflationary pressure, high exchange rate, debt overhang, adverse balance of payment and high inflation rates is difficult to explain. Against a high rate of unemployment and underemployment, a large public sector, low wages and poor working conditions has been persistent high inflation rate in Nigeria. Also, underemployment and unemployment are prominent feature of the informal labour market as well. Consequently, the full potentials of labour-surplus economy have not been fully exploited (Aminu and Donga 2014).

Unemployment and inflation are two intricately linked economic concepts. Over the years there have been a number of economists trying to interpret the relationship between the concepts of inflation and unemployment. Phillips A.W (1958) observed that there are two possible explanations of this relationship – one in the short term and another in the long term. In the short term there is an inverse correlation between the two. As per this relation, when the unemployment is on the higher side, inflation is on the lower side and the inverse is true as well.

The relationship between unemployment and inflation can be better explained with Phillips curve. In the short term the Phillips curve happens to be a declining curve. The Phillips curve in the long term is separate from the Phillips curve in the short term. It has been observed by the economists that in the long run, the concepts of unemployment and inflation are not related.

As per the classical view of inflation, inflation is caused by the alterations in the supply of money. When money supply goes up the price level of various commodities goes up as well. The increase in the level of prices is known as inflation. According to the classical economists there is a natural rate of unemployment, which may also be called the equilibrium level of unemployment in a particular economy. This is known as the long term Phillips curve. The long term Phillips curve is basically vertical as inflation is not meant to have any relationship with unemployment in the long term.

It is therefore assumed that unemployment would stay at a fixed point irrespective of the status of inflation. Generally speaking, if the rate of unemployment is lower than natural rate, then the rate of inflation exceeds the limits of expectations and in case the unemployment is higher than what is the permissible limit then the rate of inflation would be lower than the expected levels.

The Keynesians have a different point of view compared to the Classics. The Keynesians regard inflation to be an aftermath of money supply that keeps on increasing. They (Keynesians) deal primarily with the institutional crises that are encountered by people when firms increase prices. Firms make huge profit by increasing the prices of the goods and services that are provided by them. Also government increases money supply in order to meet up with this demand, so that the economy may keep on functioning.

Unemployment and Inflation are issues that are central to the social and economic life of every country. The existing literature refers to inflation and unemployment as constituting twin problems that explains the endemic nature of poverty in developing countries. It has been argued that continuous improvement in productivity is the surest way to reduce inflation. Growth in productivity provides a significant basis for adequate supply of goods and services thereby improving the welfare of the people and enhancing social progress.

From the foregoing, the study intends to empirically examine the effect of unemployment and inflation on

economic growth to determine what type of relationship exists between unemployment, inflation and economic growth. Although many scholars work indicates positive relationship between unemployment, inflation and economic growth but the effect of inflation and adverse effect of unemployed labour force on inclusive economic growth is very diver stating which prompt this study. To facilitate this task, the study was divided into four sections. The next section presents conceptual and empirical framework followed by methodology and data analysis. The last section concludes the study.

2. Literature review

2.1. Conceptual Literature

2.1.1 The concept of unemployment

Unemployment is often defined by the classical economists as the excess supply of labour over the demand for labour which is cause by adjustment in real wage. The Classical or real-wage unemployment occurs when real wages for job are set above the market-clearing level, causing number of job-seekers to exceed the number of vacancies.

Unemployment as defined by International Labour Organization (2009) is a state of joblessness which occurs when people are without jobs and they have actively sought work within the past four weeks. The unemployment is a measure of the prevalence of unemployment and it is calculated as a percentage by dividing the number of unemployed individuals by individuals currently in the labour force. In a 2011 news story, Business Week Reported, "More than two hundred million people globally are out of work, a high record, as almost two-third of advanced economies and half of developing economies are experiencing a slowdown in employment growth.

According to Jhingan (2003), unemployment can be conceived as the number of people who are unemployed in an economy, often given as a percentage of the labour force. Unemployment is also defined as numbers of people who are willing and able to work as well make themselves available for work at the prevailing wage but no work for them.

2.1.2 The concept of inflation

According to Balami (2006), inflation is a situation of a rising general price level of broad spectrum of goods and services over a long period of time. It is measured as the rate of increase in the general price level over a specific period of time. To the neo-classical and their followers at the University of Chicago, inflation is fundamentally a monetary phenomenon. In the words of Friedman M. (1996), "inflation is always and everywhere a monetary phenomenon and can be produced only by a more rapid increase in the quantity of money than output." To Hicks, "inflation is a continuous rise in general price level." Johnson, "inflation is a sustained rise in prices of goods and services."

Brooman in his own view sees inflation as continuous increase in the general price level." Dernberg and McDougall are more explicit when they write that "the term inflation usually refers to a

continuing rise in prices as measured by an index such as the consumer price index (CPI) or by implicit price deflator for gross national product.” Keynes and his followers emphasized the increase in aggregate demand as the source of demand-pull inflation.

2.1.3 The Concept of Economic Growth

Economic growth according to M. L Jhingan (2003), is the process whereby the real per capital income of a country increases over a long period of time, and is measured by the increase in the amount of goods and services produced in a country. A growing economy produces more goods and services in each successive time period. Thus in a wider perspective, it implies raising the standard of living of the people and reducing inequality of income distribution.

In the words of Zhattau (2013) economic growth is the basis of increase prosperity and it comes from accumulation of more capital and innovations which lead to technical progress, the idea similar to Solow (2002) growth model who sees economic growth in terms of growth in total GDP due to increase in population, technical progress and investment.

Growth according to Classical Economist signifies increase in the rate of investment. In other words, growth is a function of share of profit in the national income. There exists a positive relationship between higher rate of profit and higher rate of growth in the long run.

2.2 Empirical Literature

This section of the study presents the empirical literature on the relationship between economic growth, unemployment and inflation. As mentioned above many scholars have researched on the relationship between unemployment and economic growth and between unemployment and inflation using Phillips Curve model. For example, Stock and Watson (1999) used the conventional Phillips curve (unemployment rate) to investigate forecasts of U.S. inflation at the 12-month horizon. These authors focused on three questions. First, has the U.S. Phillips curve been stable? If not, what are the implications of the instability for forecasting future inflation? Second, would an alternative Phillips curve provide better forecasts of inflation than unemployment rate Phillips curve? Third, how do inflation forecasts differ from Phillips curve stack up against time series forecasts made using interest rate, money, and other series? They found that inflation forecasts produced by Phillips curve generally had been more accurate than forecasts based on other macroeconomic variables, including interest rates, money and commodity prices but relying on it to the exclusion of other forecasts was a mistake. Forecasting relations based on other measures of aggregate activity could perform as well or better than those based on unemployment, and combining these forecasts would produce optimal forecasts. Williams and Adedeji (2004) examined price dynamics in the Dominican Republic by exploring the joint effects of distortions in the money and traded-goods markets on inflation, holding other potential influences constant. They captured the remarkable macroeconomic stability and growth for period 1991 to 2002. Using a

parsimonious and empirically stable error-correction model, they found that the major determinants of inflation were changes in monetary aggregates, real output, foreign inflation, and the exchange rate. However, there was an incomplete pass-through of depreciation from the exchange rate to inflation. They also established a long-run relationship in the money and traded-goods markets, observing that inflation was influenced only by disequilibrium in the money market. Popovic (2009) conducted a research on inflation and unemployment in the EU: comparative analysis of Phillips regularity through correlation analysis of unemployment and inflation in EU for the 1998-2007 periods and was found that the simple linear correlation coefficient between them is negative. They concluded that the relation between unemployment and inflation is moderate and inverse (negative). Fakhri (2011) conducted research on the relationship between inflation and economic growth in Azerbaijan, he used Threshold model and found that there is a nonlinear relationship between inflation and economic growth with the threshold level of 13%. Chang-Shuai Li and ZI-Juan Liu (2012) conducted a study on the relationship among Chinese unemployment rate, economic growth and inflation; they employed Granger causality test, unit root, cointegration, VAR and VEC model. The study revealed that unemployment impacted negatively on growth while inflation impacted positively on growth in China. The study also revealed no causation between unemployment and inflation, but there is causation between unemployment and growth, while two-way causation existed between inflation and growth. Umar and Zubairu (2012), conducted a research on the effect of inflation on the growth and development of Nigerian economy and conclude that inflation affect economic growth negatively. Omoke and Ugwuanyi (2010) tested the relationship between money, inflation and output by employing cointegration and Granger-causality test analysis. The findings revealed no existence of a cointegrating vector in the series used. Money supply was seen to Granger cause both output and inflation. The results suggest that monetary policy can contribute towards price stability in Nigerian economy since the variation in price level is mainly caused by money supply. This shows that inflation in Nigeria is to much extent a monetary phenomenon. They find empirical support in context of the money-price-output hypothesis for Nigerian economy. M2 appears to have a strong causal effect on the real output as well as prices. Aminu and Anono (2012) conducted a study on the relationship between unemployment and inflation. They used OLS, ADF for unit root, Granger causality, Johansen cointegration, ARCH and GARCH techniques. The study revealed negative relationship between unemployment and inflation and no causation between unemployment and inflation; though they found that there is long-run relationship between the two phenomena in Nigeria. Aminu and Anono (2012) also investigated the effect of inflation on economic growth and development in Nigeria. They employed OLS, ADF and Granger causality and found that there is a positive correlation

between inflation and economic growth in Nigeria, though the results revealed that the coefficient of inflation is not statistically significant, but is consistent with the theoretical expectation, causation runs from GDP to inflation implying that inflation does not Granger cause GDP but GDP does. Bakere (2012) conducted a study on stabilization policy, unemployment crises and economic growth in Nigeria. He used OLS and found that the nexus between inflation, unemployment and economic growth in Nigeria were negative. Rafindadi (2012) conducted a study on the relationship between output and unemployment dynamics in Nigeria; he used OLS and Threshold model and found a negative nonlinear relationship between output and unemployment.

Aminu and Manu (2014) carried out research on analysis of unemployed resources and inflation in Nigeria from 1986 to 2010 using OLS technique and found that both unemployed human resources, rate of natural resource production (i.e rate of tapped resources), total inflation have positive impact on rate economic growth in Nigeria. Muhammad Shahid (2014), study the effect of inflation and unemployment on economic growth in Pakistan and find that there is inverse relationship between economic growth and unemployment. From the reviewed literature above, the relationship and impact of unemployment and inflation on economic growth is still ambiguous which calls for further research, hence the manifestation of this study.

3. Materials and methods

3.1 Data sources and Description

The sources of data for this study were mainly from National Bureau of Statistics, Central Bank of Nigeria statistical Bulletin and World Bank Data Base. This study captured economic growth as increase in output i.e real GDP, unemployment as the rate of unemployed labour force in relation total labour force in the country, while inflation is captured as percentage change in consumer price index The dominant manifestation of unemployment in Nigeria is structural/technological, advancement in technology tends to increase output, therefore, is expected that increase in

structural/technological unemployment would increase output. The dominant manifestation of inflation in Nigeria is demand-pull, when there is increases in demand, prices would also increase and producers will be encouraged to increase production, hence output will increase; therefore, is expected that, rise in inflation rate would raise output level, and therefore reduction or decrease in unemployment hence economic growth other factors remain constant.

3.2 Model Specification

This paper adopted the Okun’s (1962) type model and modified it to incorporate unemployment and inflation as the independent variables while economic growth proxy by the real GDP growth. The Okun’s law is the reduced version of the Phillips postulate. Assuming a linear relationship between the rate of growth of GDP, unemployment rate and inflation rate.

The model is specified as:

$$Rgdp = f(Unempl, Infl \dots \dots \dots) \tag{1}$$

therefore;

$$Rgdp = \beta_1 + \beta_2 Unempl + \beta_3 Infl + \mu \tag{2}$$

where;

Rgdp is the rate of GDP growth,

Unempl is unemployment rate and

Infl is inflation rate.

β_1, β_2 and β_3 - Parameters and

μ - Error term (white noise)

The apriori expectations are as follows:

$\beta_1 > 0, \beta_2 > 0$ and $\beta_3 > 0$ (i.e $\beta_1 \beta_2 \beta_3$ are non-negative values)

3.3 Estimation Procedure

To estimate equation 1, the stability properties of the variables employed were first investigated. Two-unit root tests were used in the study, i.e. the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP). The choice of two unit roots was informed by the imperatives of comparison and consistency. According to Hamilton (1994), the PP unit root test is generally considered to have a greater reliability than the ADF because it is robust in the midst of serial correlation and heteroscedasticity, though it has its own shortcomings. Johansen cointegration test were also employed to test the long run relationship between the variables used in the model.

Table 1: (Trend and intercept)

Variable	ADF		PP	
	Level	First difference	Level	First difference
<i>Rgdp</i>	-1.638591	-4.452431*	-1.709677	-4.355635*
<i>Unempl</i>	-1.579550	-4.724909*	-1.646040	-4.728238*
<i>Infl</i>	-2.566859	-5.477275*	-2.960676	-9.803352*

Note: *, ** and *** denote rejection of the null hypothesis at 1%, 5% and 10% level of significance respectively.

Tables 1 above shows the results of unit root test using both Augmented Dickey-Fuller (ADF) and Phillips-Perron (P-P) at level and first difference. The unit root test indicates that all the variables are I(1) and

they are stationary at first difference. To find out whether the variables has long run relationship, cointegration test was carried out and presented on Table 2.

Table2: Cointegration Test Results
 Dependent Variable: RGDP
 Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.734137	60.29533	29.79707	0.0000
At most 1 *	0.483008	21.87691	15.49471	0.0048
At most 2	0.090308	2.744829	3.841466	0.0976

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.734137	38.41842	21.13162	0.0001
At most 1 *	0.483008	19.13208	14.26460	0.0079
At most 2	0.090308	2.744829	3.841466	0.0976

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

The cointegration test results in Table 2 indicate the existence of long run relationship between Real Gross Domestic Product, unemployment and inflation in Nigeria as indicated by the Trace-statistics. The results show that there are 2 cointegrating equations at the 5

percent level. Both the maximal eigenvalues and Trace test statistics indicate that the hypothesis of no cointegration among the variables is rejected at the 5% significance level.

Table 3: Long-run estimates
 Dependent variable: LRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.981160	0.304170	16.37623	0.0000
LInfl	0.069480	0.074502	0.932590	0.3590
LUnempl	0.437368	0.069805	6.265532	0.0000

Diagnostics

R-squared	0.623949
Adjusted R-squared	0.597088
F-statistic	23.22898
Prob(F-statistic)	0.000001
Durbin-Watson stat	0.307901

Table 3 presents regression results for the growth model. The results indicate that the coefficient of unemployment are statistically significant at 1% as indicated by their P-values (0.0000) while the coefficient of inflation is found to be not statistically significant. The coefficient of unemployment is rightly signed (positive). The justification of positive relationship between economic growth and unemployment rate in Nigeria context is that economic growth is significantly driven by oil sector which required very high technical skills and few numbers workers (capital intensive mode of production). Inflation is also rightly signed positive, which means that inflation is rising as economic grows.

The justification of these is that the price of products that significantly drives the Nigeria’s economy is not internally determine but rather from outside, which does not tend to have effect on the general price level in the country as output increases. The F-statistic value of (23.228%), which measures the joint significance of the explanatory variables, is found to be statistically significant at 1% level as indicated by the corresponding probability value of 0.00001 in Table 3. This implies that the two variables taking jointly are significantly responsible for change in RGDP.

The R² value of 0.597088 (59.71%) implies that 59.71 percent variation in the rate of GDP growth is explained

by unemployment and inflation rates. The Durbin-Watson statistic 0.307901 in Table 4 is observed to be lower than R^2 (0.59708) indicating that the model is non-

spurious (meaningful), but there are elements of positive autocorrelation which are taken care of in the short run estimation.

Table 4 Short run estimates

Dependent Variable: D(LRGDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LRGDP(-2))	0.341931	0.124315	2.750521	0.0114
D(LRGDP(-3))	0.642753	0.131793	4.876978	0.0001
D(LINF)	-0.031089	0.007497	-4.146809	0.0004
D(LUNEMP(-2))	0.038508	0.017129	2.248141	0.0345
ECM(-1)	-0.066690	0.023010	-2.898264	0.0081

Diagnostics

R-squared	0.332763	Mean dependent var	0.047255
Adjusted R-squared	0.216721	S.D. dependent var	0.028510
S.E. of regression	0.025233	Akaike info criterion	-4.360926
Sum squared resid	0.014644	Schwarz criterion	-4.123032
Log likelihood	66.05296	Hannan-Quinn criter.	-4.288199
Durbin-Watson stat	1.924192		
JB - 1.66016(0.43601)			
ARCH - 0.1242(0.1450)			
RESET- 1.0398(0.3097)			
HETEROSK(WHITE) - 2.069680(0.3553)			

The above Table represents short run estimation of the variables; where general to specific method were used to sequentially eliminating variables that are not statically significant. From the Table 4 above, in short run unemployment are positively related while inflation was negatively related and they are all statically significant. As a result of various problems associated with long run estimation, various post diagnostics tests were conducted, such as normality test, heteroscedasticity test specification bias test and stability test. The results of the test indicate that the normality test (JB) statistic of 1.660168 with P-value of 0.436013 that is 43.60% probability which implies that the null hypothesis of normally distributed error term cannot be rejected. In addition, the estimated model satisfies the Breusch-Godfrey (BG) serial correlation and heteroscedasticity test as indicated on the Table 4 above.

Stability Tests

To determine the stability of the estimated coefficients of the real domestics' equation for Nigeria, the cumulative sum of recursive (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) tests, developed by Brown et al. (1975), were adopted. The CUSUM and CUSUMSQ tests are shown in Figures 1 and 2.

Figure 1: Stability test for unemployment and inflation in Nigeria

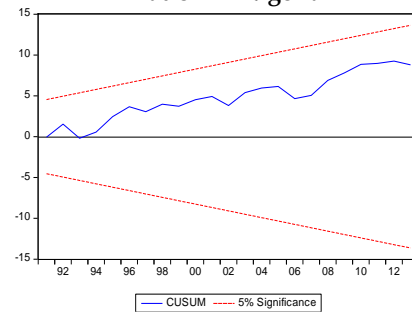
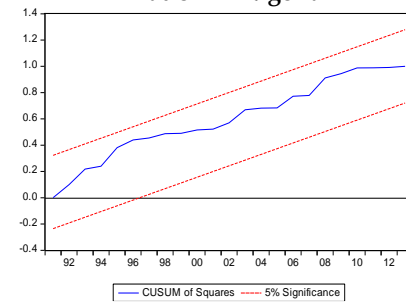


Figure 2: Stability test for unemployment and inflation in Nigeria



From figure 1 and 2, both the CUSUM and CUSUMSQ plots do not cross the 5% critical lines, implying that over the entire sample period of investigation, the stability of the estimated coefficients exist, so that the regression coefficients are reliable and suitable for policy making

5. Conclusions and Recommendations

This paper investigates the effect of unemployment and inflation on economic growth in Nigeria with the application of ordinary least square (OLS) and various diagnostic test techniques. The results of unit root test suggest that all the variables in the model are stationary at first difference and that of Johansen cointegration indicates that there existed 2 cointegrating equation, implying the existence of long run relationship between economic growth, unemployment and inflation. The results also revealed that unemployment and inflation are positively related with economic growth, which means unemployment and inflation does not hinder economic growth. These type of growth in economic is technically termed as 'Exclusive Growth' that is, growth that does not reflects in the standard of living of average citizen of the country. A major policy implication of this result is that concerted effort should be made by policy makers to increase the level of output in the other sectors of the economy in Nigeria by improving on productivity, in order to reduce unemployment and the prices of goods and services (inflation) so that Nigeria economy can have inclusive economygrowth. It is also recommended that non-oil sector should be expanded to boost the growth of output. Another policy implication of this study is that government should embark on production that requires labour intensive technique of production as against capital intensive since Nigeria is blessed with abundant labour force. Finally, the government should embark on policy that will reduce the number of imported goods drastically and encourage local production and consumption to encourage domestic industries; these will reduce unemployment and Inflation in Nigeria and increase output hence economic growth.

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**APPENDIX I
(RGDP, INFLATION AND UNEMPLOYMENT AT LEVEL)**

YEAR	RGDP		UNEMPL	INFL
1981	251.0523	N	N/A	20.81282
1982	246.7266		N/A	7.697747
1983	230.3808		3.9	23.21233
1984	227.2547		5.8	17.82053
1985	253.0133		6.1	7.435345
1986	257.7844		5.3	5.717151
1987	255.997		7	11.29032
1988	275.4096		5.3	54.51122
1989	295.0908		4	50.46669
1990	328.6061		3.5	7.3644
1991	328.6445		3.1	13.00697
1992	337.2886		3.4	44.58884
1993	342.5405		2.7	57.16525
1994	345.2285		2	57.03171
1995	352.6462		1.8	72.8355
1996	367.2181		3.8	29.26829
1997	377.8308		3.2	8.529874
1998	388.4681		3.2	9.996378
1999	393.1072		8.2	6.618373
2000	412.332		13.1	6.933292
2001	431.7832		13.6	18.87365
2002	451.7857		12.6	12.87658
2003	495.0072		14.8	14.03178
2004	527.576		13.4	14.99803
2005	561.9314		11.9	17.86349
2006	595.8216		12.3	8.239527
2007	634.2511		12.7	5.382224
2008	672.2026		14.9	11.57798
2009	718.9773		19.7	11.53767
2010	776.3322		21.4	13.7202
2011	834.0008		23.9	10.84079
2012	888.893		27.4	12.21701
2013	950.114		24.7	8.475827

Source; Central Bank of Nigeria statistical Bulletin, 2014

**APPENDIX II
(LOG OF RGDP, INFLATION AND UNEMPLOYMENT)**

YEAR	LRGDP	LINF	LUNEMP
1981	5.525661	3.035569	N/A
1982	5.508281	2.040928	N/A
1983	5.439734	3.144684	1.360977
1984	5.426072	2.880351	1.757858

1985	5.533442	2.006245	1.808289
1986	5.552124	1.743471	1.667707
1987	5.545166	2.423946	1.94591
1988	5.618259	3.998407	1.667707
1989	5.687283	3.921313	1.386294
1990	5.79486	1.996658	1.252763
1991	5.794977	2.565486	1.131402
1992	5.820939	3.797484	1.223775
1993	5.83639	4.045946	0.993252
1994	5.844206	4.043607	0.693147
1995	5.865465	4.288204	0.587787
1996	5.905956	3.376505	1.335001
1997	5.934446	2.143575	1.163151
1998	5.962211	2.302223	1.163151
1999	5.974082	1.88985	2.104134
2000	6.021829	1.936335	2.572612
2001	6.067924	2.937767	2.61007
2002	6.113208	2.55541	2.533697
2003	6.204572	2.641325	2.694627
2004	6.268293	2.707919	2.595255
2005	6.33138	2.882759	2.476538
2006	6.389941	2.108943	2.509599
2007	6.452445	1.683102	2.541602
2008	6.51056	2.449105	2.701361
2009	6.57783	2.445618	2.980619
2010	6.654581	2.618869	3.063391
2011	6.726234	2.383316	3.173878
2012	6.789977	2.502829	3.310543
2013	6.856582	2.137218	3.206803

Source;

APPENDIX III
Table 1: Unit Root Test Results
Test result with intercept and trend

Variable	ADF		PP	
	Level	1 st Difference	Level	1 st Difference
LRGDP	-1.638591 (0.7546)	-4.452431 (0.0067)	-1.709677 (0.7235)	-4.355635 (0.0085)
LUNMP	-1.577550 (0.7772)	-4.72409 (0.0038)	-1.646040 (0.7499)	-4.728238 (0.0037)
LINFL	-3.972637 (0.0205)	-3.785649 (0.0327)	-2.960676 (0.1583)	-5.798351 (0.0002)

Note; t-statistics in line value, while probability value in parenthesis

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The Nonlinear Analysis of External Dynamics on Economic Growth: The Case of Turkey

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Abstract:

Purpose - This paper attempts to analyse the empirical link between economic growth and the external shocks in a small open developing economy, Turkey, focusing on the nonlinearity between the dynamics for the 1992-2011 period.

Design/methodology/approach - This paper examines the effects of trade and financial openness and oil price, the most important trading partners' GDP growth as well as for external dynamics of economic growth. To this end, this paper employs a Structural VAR (SVAR) and a nonlinear Markov-Switching VAR model. We examine the nonlinearity to let the effects of the external dynamics vary with the level of economic growth.

Findings - The results suggest the external dynamics considered in this paper- namely trade and financial openness, oil prices and growth rate of Germany-initially explain 29 % of economic growth in Turkey, according to the linear estimation method. In the long run, this percentage climbs to 51 %. The nonlinear analysis shows that the magnitude of the effect of the external dynamics in recession periods is almost twice as high as in expansion.

Research limitations/Implications- This paper provides first attempt of the nonlinear analysis of the growth- external dynamics for Turkey, future research effort is required to substantiate our findings.

Originality/value - The originality of this paper lies in the finding that the effects of external dynamics on economic growth differs according to the growth stage as the economy is in the expansion period or recession period.

Keywords: Economic Growth, External Dynamics, Nonlinear Estimation, Turkey

JEL Classification: O40, C34, F14

1. Introduction

The economic performance of countries has increasingly been exposed to external dynamics for a few decades due to the ever increasing globalization process. Traditionally, the theories of economic growth focus on the internal dynamics of a closed economy such as physical and human capital accumulation and technological change. However, in such an economic design of the world economy, external dynamics may play a significant role in the income level of countries. Thus, the cross-border flow of commodities, financial capital, and investment, as well as economic shocks transmitted through these channels, are now in the scope of economic analysis in addition to internal determinants of economic performance. One can add the price of oil to this list as it also acts as an external dynamic for non-oil economies in which oil is the primary input for production.

It is not surprising that being exposed to external dynamics brings opportunities and threats simultaneously for economies; especially for developing ones. The effects diversify for countries with different levels of development. For example, financial capital flows are expected to improve the current account balance and boost investments in an

economy in which such outcomes are greatly needed in many developing economies. However, these flows also increase the dependency of an economy on external funds, making it vulnerable to any external dynamics, and in such a dependent economy may expedite economic turmoil.

Therefore, a growing empirical literature is addressing the links between openness and growth. Not surprisingly, there is no common view about the effect of these mentioned dynamics on the growth performance of a country in the literature. Some authors report that openness positively affects growth (eg. Dollar, 1992; Edwards, 1993, 1998; Barro and Sala-i Martin, 1995). On the other hand, Levine and Renelt (1992), and Rodriguez and Rodrik (1999) found that there is no positive relation between openness and growth. The direction of cause between these dynamics and growth, i.e. from the external dynamics to growth, or vice versa, is also discussed and inferences in both directions made. For example, Jung and Marshall (1985), found unidirectional causality from exports to growth. Chow (1987), found bi-directional causality for growth and trade openness. Yücel (2009), examined the causality between financial openness, trade openness

and growth and showed the bi-causal relationship between these dynamics.

The existing literature provides a partial analysis of the relationship between external dynamics and economic growth, i.e., the effect of foreign investment on economic growth. Furthermore, a linear relationship between the variables was assumed. However, the relationship under consideration may well be of a nonlinear character rather than a linear one, and thus exhibit diverse effects in recession and expansion periods. So, this paper was motivated by the need for a full account of nonlinear analysis of external dynamics on economic growth both in recession and expansion in a developing country, i.e. Turkey. The objective of this paper is to set out how external dynamics are effective on the growth performance of Turkey and to draw attention to the threats these dynamics involve as well as the opportunities. The data used in the study covers 1992-2011 and was retrieved from International financial statistics and the Central Bank of Turkey.

The plan of this paper is as follows: The next section provides a brief review of the relevant theoretical and empirical literature about the relationship between growth and external dynamics. The third section - the empirical contribution of the paper - presents the methodology, the data set, and the results of the empirical analysis. Both linear and nonlinear econometric results are presented to clarify the need for a nonlinear analysis. The last section discusses extensions and concludes.

2. Theoretical Background

The effects of external dynamics on an economy will be directly dependent on the degree of openness of the economy. Traditionally, openness used to be defined only in terms of the trade regime followed by a country, i.e., inward or outward oriented. Following the late 1980's, economies liberalized their capital accounts and removed the barriers in front of financial capital movements across borders. The openness of an economy thereby gained another meaning. Thus, a new definition covering both meanings of the term can be suggested for developing economies in particular: The openness of an economy means the degree of its integration with other economies, and the extent to which it is addressing shortage or surplus in its domestic supply or demand of goods, services and funds by employing external resources. Openness is potentially expected to contribute to economic growth since it removes shortages by providing a higher level of integration in capital and goods markets. Given the definition of the concept above, this may resolve disequilibrium in a market and thus improve the functioning of markets.

The classical and neoclassical theories emphasize the importance of trade in terms of output growth. To the proponents of these theories, foreign trade not only increases the level of output and welfare, but also

results in optimal distribution of resources. Endogenous growth theories have also elaborated that openness to trade may increase economic growth through the diffusion of technology. It is argued that countries that are more open to the rest of the world have a greater ability to absorb technological advances generated in leading nations (Edwards, 1998)¹. Specifically, trade openness is associated with the *Export-Led Growth Model* and it was considered to be the most important source of economic growth through several channels: the first, trading firms and trade sectors provide positive externalities to non-exporting sectors through production techniques and management styles (Feder, 1982); the second, as trade enhances, output and productivity increases due to the economies of scale (Helpman and Krugman, 1985). Free trade will also facilitate the import of intermediate goods (Esfahani, 1991). The effects of these channels on economic growth are also supported by endogenous growth theories (Lucas, 1988; Romer, 1986; Grossman and Helpman, 1991; Edwards, 1992). Third, trade openness will also create positive externality by providing knowledge spill-overs between countries and this will then increase efficiency in production (Miller and Upadhyay, 2000).

Given these remarks, international institutions like the IMF, OECD, UN and the World Bank had a consensus in their strategy and policies relying on openness contributing to the economic growth process. According to the IMF (1997, p.84), 'policies toward free trade are among the more important factors promoting economic growth and convergence in developing countries'. According to the OECD (1998), more open and outward-oriented economies have displayed better performance than countries with restrictive trade and foreign investment regimes. Similarly, while the World Bank (2000), argues that international trade provides unique opportunities for growth and development, the United Nations (UN 2002), emphasizes that foreign direct investment contributes toward financing sustained economic growth in the long term (Cieslik and Tarsalewska, 2011).

Although trade openness is regarded as a beneficial regime for economies, the detrimental effects it may create are also discussed in the literature. For example, free trade may also restrain the development of infant industries (List, 1841). The competitiveness of multinational enterprises is incomparable with those of incumbent and entrant domestic firms in a host economy. So, entrant domestic firms can be pulled out of the market before they reach the cost advantages provided by economies of scale. Incumbent firms can also go out of business as the acquired cost advantages may not be sufficient to compete with the imported products of multinational firms. So, these arguments point out a condition for free trade to be beneficial. There must be internationally competent industries or

¹ On the other hand, protective policies such as infant industry arguments, anti-dumping, balance of payments, and protection against unemployment were also defended

on the grounds that they will improve economic growth in developing countries (List, 1841; Balassa, 1971; Bhagwati, 1988).

firms for positive effects on growth to be created by free trade. Also, entrant firms must equally be competitive.

Despite the strong positions taken by international institutions, the relationship between openness and economic growth has continuously been one of the most controversial empirical issues in international economics and growth literature over the years. Preceding studies in this issue, both theoretical and empirical, diverge significantly in terms of their results. Not surprisingly, the differences in the results of these empirical studies can be attributed to the use of different openness definitions and econometric methods. Many studies provide evidence that openness positively affects economic growth (Dollar, 1992; Edwards, 1993; Sachs and Warner, 1995; Frankel and Romer, 1999; Levine and Loayza, 2000; Wacziarg, 2001; Yanikkaya, 2003; Singh, 2003; Utkulu and Özdemir, 2004). Michaely (1977), by investigating the relation between openness and growth for forty-one countries, and Balassa (1978) - for eleven countries - reported a positive relationship between trade openness and output growth. Later, Feder (1982), showed that trade affects growth through externalities and productivity for thirty-one countries. With the trade liberalization wave in the 1980s, trade openness and economic growth attracted much more attention in the literature. Dollar (1992), Edwards (1998), Greenaway, et al. (1998), Sachs and Warner (1995), and Vamvakidis (1998), have shown that trade barriers and protections reduce growth rates in cross-country comparisons (Arora and Vamvakidis, 2004). On the other hand, Levine and Renelt (1992), and Rodriguez and Rodrik (1999), provide no evidence for the positive effect of openness on economic growth. Rodriguez and Rodrik (1999), also criticized the robustness of the positive results reported by some of the studies, arguing that some important determinants of growth were not controlled and the openness measure used was not proper.

The other dimension, the financial openness, consists of policies which aim at removing the barriers in front of the inflow and outflow of funds across economies. Financial openness is regarded as the complementary step to free trade to fully liberalize an economy as it also contributes to trade by increasing the opportunities for financing trade activities. Financial liberalization decreases the cost of capital for domestic firms and develops the domestic financial sector. Financial liberalization allows world sources to be distributed more effectively by directing capital from developed countries to developing ones (Mathieson & Rojas-Suarez, 1994). In addition to this, financial liberalization and openness decrease the cost of borrowing because they ease access to the international financial markets.

Although it has charming benefits, both the risks and the costs brought by financial openness have become the focus of empirical studies due to the recent global crisis and to the idiosyncratic crises in some developing economies. The liberalization period of capital markets has seen a sharp increase in the varieties of capital investments and borrowing. While commercial bank loans had the highest share in capital

markets in the 1970s, portfolio investments represented the highest share in the 1990's. With this increase in the share of portfolio investments in international capital markets, the character of economic crises has changed. Financial flows, which facilitate financing opportunities, have encouraged developing economies to run ever-increasing deficits in their accounts. The financial flows, which were expected to support growth, thus put a limitation on the sustainability of the growth process in these economies as the deficit could not be financed by the Ponzi game. The dependency of developing economies on foreign funds increases and in any case of insecure environment for financial capital arising from internal developments leads to a sudden outflow of funds triggering financial turbulence. So, Rodriguez and Rodrik (1999), argued that openness is not appropriate for economies without proper regulation mechanisms, and it can actually be detrimental in economies with macroeconomic instability.

Empirical evidence on the links between financial openness and growth is also inconclusive. The empirical literature on financial openness reflects both of the arguments outlined above. Liberalising capital account and international capital flows promotes economic growth in some countries but it also causes financial crisis in some countries by increasing the vulnerability of economies. Edwards (2001), proposed that the relationship between growth and liberalization differs according to the income rate of countries. While there is no effect of liberalization on growth in low-income countries, there are significant positive effects in high-income countries. Similarly, Klein and Olivei (1999), found that financial openness has a tendency to reduce growth in countries that are not industrialized. Tornell et al. (2004), document the empirical relationship between financial liberalization and the increased incidence of financial crises. Hoeven and Lübker (2006), showed that foreign capital flows cause economic volatility and this volatility causes both financial and economic crises in developing countries. Aizenman (2002), on the other hand, inferred weak evidence that financial openness increases the risk of financial crisis and that it has positive contributions on long-term growth performance.

External Shocks and Economic Growth

External shocks, to which an open economy may be exposed, can be collapsed into two groups: demand-side and supply-side shocks. The former consists of shocks which affect the growth of both domestic and foreign demand. Exchange rate movements, changes in the terms of trade, and economic downturn in trading partners are examples of demand-side shocks. For example, a sudden change in exchange rates will affect export demand, and thus labor demand, output level, and other sectors through backward and forward linkages. Changes in growth rates of trading partners will also affect trade within both goods and service sectors. Government policies affecting demand, i.e., monetary or finance policy, can compensate the effects of shocks. Supply-side shocks, on the other hand, originate from other countries, not necessarily trading

partners, and affect domestic costs. The oil crisis in 1974 is most commonly referred to supply side shock.

External shocks can be positive or negative depending on their effects on growth performance and macroeconomic stability. While discovery of a new technology decreasing the cost of production has a positive effect on growth, an increase in oil prices has a negative effect. Interestingly, the effects of these types of shocks on domestic growth are not always symmetric. The effects of negative shocks may outweigh those of positive shocks. Collier and Dehn (2001) report a sharper finding: although negative shocks reduce the growth rate, positive shocks have no significant effect.

The relevant literature focusing on developing countries deals also with terms of trade, GDP of industrialized countries, real interest rates in international capital markets, natural disasters in other countries, growth rates of trading partners and changes in oil prices. Easterly, et al. (1993) showed that a large proportion of the growth rate is explained by external shocks². Calvo, et al. (1993) showed that in Latin American countries real exchange rates are significantly affected by external shocks.

The external shock is approximated by sudden changes in four variables in the literature thereafter:

GDP shocks in trading partners; affects the growth rate of open economies. Financial and monetary crisis, recession, increase in foreign debt and unemployment in the trading partners can cause the domestic demand to shrink. In a similar way, positive economic developments in trading partners will contribute to domestic growth positively by increasing the demand in trading goods. Arora and Vamvakidis (2004) showed that a 1% increase in economic growth of a trading partner is correlated with an increase in domestic growth of 0.8 %, at most.

World interest rate; is also an effective factor on domestic growth. Köse (2002) found that shocks in the world interest rate explain 1% of changes in the output in the developing countries, while Blankenau, et al. (2001) suggest that one-third of output volatility is explained by the world interest rate in small open economies.

Terms of trade; is another important external variable, changes in which can be classed as an external shock. Broda (2004) argued that shocks arising from terms of trade have a greater effect on actual output in countries with a fixed exchange rate policy. Mendoza (1995) and Kose (2002) suggest that terms of trade shocks explain half of aggregate output fluctuations in developing countries. In spite of this, Deaton and Miller (1996) and Hoffmaister et al. (1998) found that a small proportion of output fluctuations stem from changes in terms of trade.

Oil shock; casts its effects on economies through two channels: First, oil prices affect the cost of production for oil importers. Second, it may decrease real GDP through a structural change. Higher oil prices result in

a withdrawal of resources from industries which use oil heavily as an input and in a reallocation to those with less dependence on oil (Brown and Yucel 1999). This is called production cost effect. Many empirical studies support the negative relationship between oil shocks and growth (Gisser and Goodwin 1986; Rotemberg and Woodford 1996).

External shocks significantly (and generally negatively) affect growth performance, stability and the sustainability of debts in economies. Low-income countries especially have a structure which is more vulnerable to external shocks (IMF 2003; World Bank 2004a, 2004b; UNCTAD 2002). To Balassa (1978), even though external shocks negatively affect developing countries following an outward-oriented development policy more than those following an inward-oriented development policy, the development performance shown by open economies balances the negative effects. Developing economies are in a more disadvantageous position than developed ones in the face of external shocks due to their product specialization, non-diversified sources of income, incomplete financial markets, unstable policies, and weak institutions (Calderon et al. 2004,). Besides, the protection of developing industry has become more difficult in open countries. Small-scaled enterprises in developing countries are forced out of business because they cannot resist the strong competitive environment. In brief, vulnerability may be a much more important factor than removing shortages, especially for developing countries.

3. Empirical Analysis

This paper primarily employs a nonlinear structural VAR (SVAR) analysis of the external dynamics of economic growth in Turkey, as a case of an upper middle income country. However, for benchmarking purposes, the results of a linear analysis are also presented. The analysis uses quarterly time series data retrieved from International Financial Statistics and the Central Bank of the Republic of Turkey (TCMB) databases which cover the 1992-2011 period. The data set includes the following series: the industrial production index (*IPI*) as a proxy for GDP, the trade openness (*TAO*), the financial openness (*FAO*), and - adopted as external shock variables - the GDP of Germany as the largest trading partner of Turkey (*GGDP*) and World real oil prices (*ROP*). We use the natural logarithm of the relevant variables³, thus their first differences reflect the rate of change of each variable. A detailed description of these series can be found in Appendix 1.

A Linear Model

The time series properties of the variables should be examined before setting up the SVAR model. ADF, DF-GLS and PP tests were used to test the presence of unit root in the series. According to results of these tests, financial openness is stationary while the other variables are not. *IPI*, *TAO*, *ROP*, *GGDP* are integrated

² The changes caused by war and debt crises were also considered as external shocks.

³ Except for the financial openness as this variable has negative values.

of order 1 ($I(1)$) and FAO is order 0 ($I(0)$)(see also Appendix 2). So, we need to eliminate unit roots by taking first differences of the non-stationary series.

An SVAR model is constructed initially by running a reduced form of VAR model. To this end, optimum lag lengths for the estimated VAR model should be determined. The optimal lag length for the VAR model was determined as 2 by using various model selection criteria, such as LR, FPE, HQ and AIC. An autocorrelation problem was not detected in the model with two lag by using Lagrange Multiplier (LM) test. Also, the stationary property of the model is assured as the inverse of the roots lie outside the complex unit circle.

Industrial Production Index (IPI) was considered as purely endogenous, trade openness (TAO) and financial openness (FAO) were considered as endogenous, and oil prices (ROP) and GDP of Germany ($GGDP$) were considered as exogenous variables in the estimated model. ROP variable is in the first row of the long-run matrix. Thus, while oil prices are not affected by other variables in the model, this variable affects all the other variables. In a similar way, the economic growth rate of Germany is also in the second row of the matrix. $GGDP$ will be affected only by its shock and shocks of oil prices but not affected by the shocks in the other variables, and so on. This taxonomy of the variables can be explained on the basis of the following rationale: Small economies do not have the power to affect the macroeconomic variables that are determined in the world markets. So, the growth rate of Turkey, trade and financial openness lack the power to affect the oil prices in the world and the growth rate of Germany. The VAR model in terms of structural shocks is illustrated in (1).

$$\begin{bmatrix} \Delta ROP \\ \Delta GGDP \\ FAO \\ \Delta TAO \\ \Delta IPI \end{bmatrix} = C(L) \begin{bmatrix} \varepsilon_{ROP} \\ \varepsilon_{GGDP} \\ \varepsilon_{FAO} \\ \varepsilon_{TAO} \\ \varepsilon_{IPI} \end{bmatrix} \quad (1)$$

Equality (1) can also be written as

$$\begin{bmatrix} \Delta ROP \\ \Delta GGDP \\ FAO \\ \Delta TAO \\ \Delta IPI \end{bmatrix} = \begin{bmatrix} C(1) & 0 & 0 & 0 & 0 \\ C(2) & C(6) & 0 & 0 & 0 \\ C(3) & C(7) & C(10) & 0 & 0 \\ C(4) & C(8) & C(11) & C(13) & 0 \\ C(5) & C(9) & C(12) & C(14) & C(15) \end{bmatrix} * \begin{bmatrix} \varepsilon_{ROP} \\ \varepsilon_{GGDP} \\ \varepsilon_{FAO} \\ \varepsilon_{TAO} \\ \varepsilon_{IPI} \end{bmatrix} \quad (2)$$

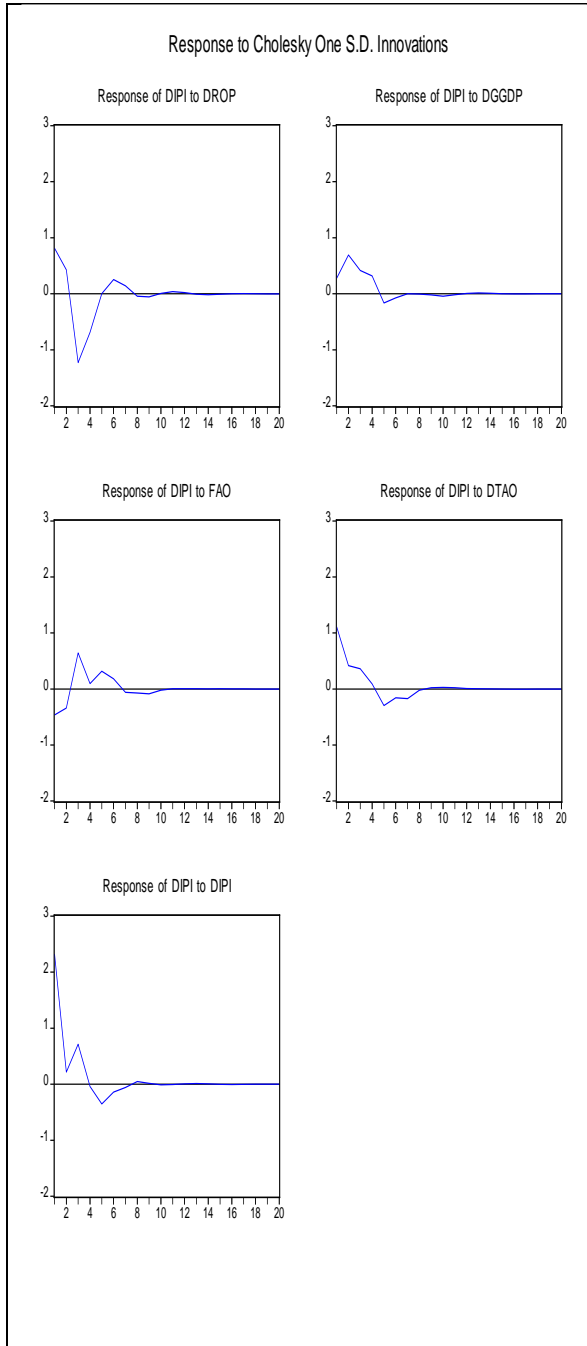
Impulse-Response Analysis and Variance Decomposition

In order to illustrate the short term responses of models, we estimated the Impulse-Response Functions (IRF) for structural shocks. The sizes of shocks applied to VAR systems are traditionally measured in two ways: either as a unit or a standard deviation shock to the error. In this paper, we adopted the one standard deviation shock. As oil prices and the growth rate of Germany will not be affected by the shocks observed in the remaining variables, the responses of these variables to the shocks appearing in TAO , FAO , IPI were accepted as 0 in the long term matrix.

The effects of world oil price shock on the growth rate of Turkey are shown in Figure 1. The oil price shock affects Turkey's growth rate very rapidly. This expected effect can be explained by the supply-side shock argument increasing costs in the Turkish economy, which is heavily dependent on oil. However, after some time, as 3 quarters elapse, the effect disappears. The growth rate increases again after price adjustments. However, it is remarkable here that a one-unit shock in oil prices decreases the growth in Turkey more than the one unit. On the other hand, a shock in economic growth in Germany positively affects economic growth in Turkey for nearly 5 quarters. The figure below shows that this effect starts to decrease in 2 quarters. The long-run growth rate in Turkey is attained in almost 8 quarters. As a result of a shock in the FAO , the growth rate of Turkey follows a fluctuating pattern. Although the growth rate responds negatively to the shock in the first two quarters, the response is positive thereafter. The effect of FAO shock totally disappears in the long-run. This can be explained by short-term financial capital movements. In a sudden outflow of financial capital, the growth rate sharply decreases and recovers in 2 quarters. A shock in the TAO has a positive but declining effect on growth in the short-term (4 quarters). Afterwards, the effect turns into a negative one. The long-run rate is assured in 9 quarters. The magnitude of the negative effect is much smaller than the positive effect even though both effects have equal durations.

The effects of all shocks on the growth rate of Turkey disappear in the long-run and growth approaches its balanced level in 2.5 years (on average). The variance decomposition of forecast errors is illustrated on Table 1. Table 1 clearly indicates that the effects of all shocks will disappear in around 12 quarters at most. Therefore, the results of variance decomposition are presented for 12 periods.

Figure 1 - The Impulse - Response Functions



7	23.40	6.95	7.14	13.56	48.94
8	23.40	6.95	7.17	13.56	48.92
9	23.40	6.95	7.23	13.55	48.87
10	23.40	6.96	7.23	13.55	48.86
11	23.40	6.96	7.23	13.55	48.85
12	23.41	6.96	7.23	13.55	48.85

71 % of the forecast variance in the growth rate can be attributed to its own variances in the first quarter. This means that the source of the changes is the dynamics of the growth itself. Following the first quarter, this effect decreases gradually and it recedes to 49 %. After the fourth quarter, the growth reaches the long term balanced path. Thus, approximately, 48 % of the change in the growth performance of Turkey is attributed to its own dynamics. The most important second source defining the growth is the trade openness of Turkey. *TAO* explains 13.5 % of the change in the growth. Shocks in the *ROP* and *GGDP*, as external shocks, explain the growth performance significantly: around 30 % of the changes in the growth rate in the long-run.

A Nonlinear Model

The nonlinear analysis employs a *MS* (Markov Switching)-*VAR* model. All *MS-VAR* specifications were tested in order to determine the appropriate specification and tested versus the linear model. The optimal lag length was determined as 2 by using the *Hannan-Quinn (HQ)* and *Schwarz Criterion (SC)*. *MSIH(2) - VARX(2)* models were preferred in the analysis since the intercept and the variance had changed in *MSIH-VARX* models for every regime and so it provides more reliable results than the other specifications in the post-estimation statistics tests. The *MSIH (2)-VARX (2)* model represents 2 regimes in which the intercept and variance with two lags change. *GGDP* and *ROP* have been added to the model as external variables. In addition, *LR* linearity test and *Davies* test which are testing the linear model versus the nonlinear model was calculated. While *LR* statistics test the model with 2 regimes versus the linear model, it does not test the model with 2 regimes versus the model with 3 regimes. Thus, *Davies* test was developed and used for this purpose. This test suggests that the *MSIH(2)-VAR(2)* model is the most appropriate model. The *MSIH(2)-VARX(2)* model provided more appropriate estimation results for the explanation of the regimes in the Turkish economy and the responses shown to the shocks in different regimes. In other words, the nonlinear model is valid⁴.

Appendix 3 shows smoothed and filtered regime probabilities. Smoothed probability is the optimal inference of the turning points on the regime at time *t* using the whole sample information. On the other hand, filtered probability is the optimal inference on the state variables at time *t* by using the information at the current period only. The periods for which smoothed probabilities of the economic variables are below 0.5

Table 1 Variance decomposition analysis

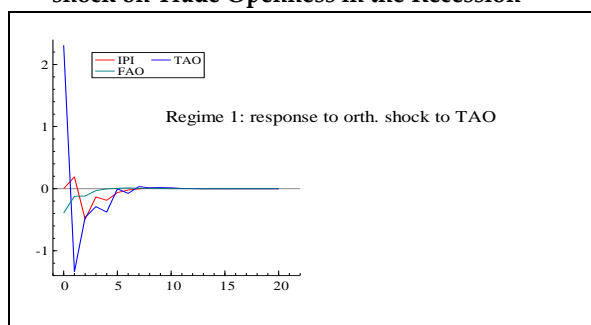
Time	ROP	GGDP	FAO	TAO	IPI
1	8.77	1.01	2.823	16.28	71.12
2	9.89	6.49	3.83	16.42	63.37
3	20.83	6.46	6.56	13.61	52.54
4	23.76	7.00	6.31	13.00	49.93
5	23.10	7.03	6.96	13.35	49.56
6	23.35	6.99	7.14	13.39	49.13

⁴ Normal distribution of standard errors of the model and autocorrelation were also tested. The results and the tables can be supplied, if required.

signal a recession regime, whilst the periods for which the probabilities are above 0.5 identify an expansion regime (Hamilton, 1989). The growth rate of Turkey is illustrated in the top panel of Figure 2. The panel implies that the first regime represents “recession” and the second regime represents “expansion” in the whole sample period⁵. The probability of growth rate fell below 0.5 in regime 1 (recession) which was experienced caught in 1998, 2001 and 2008 (the first two are economic crises experienced in Turkey and the latter refers to the global crisis). The output decreased around the rates of 6 to 9.5 % in the 1994, 1998 and 2001 crises. While constant parameters belonging to both regimes take negative values in the recession; they take positive values in the expansion. This, having opposite signs in the two regimes, shows that the model has asymmetric structure and implies that it also has a nonlinear structure. The *MSIH(2)-VARX(2)* specification captures the asymmetry and the periods of crisis in the Turkish economy.

The estimated *MSIH(2)-VARX(2)* model examines the effects of the dynamics of each regime separately. The impulse response functions were employed to analyse the effects of shocks⁶ on the growth rate of Turkey. The effects of *TAO* shock in Regime 1 are shown in the Figure 2. In the recession regime, the growth responds slightly positively to the shock in first two periods, but negatively after a while with a rapid decrease. In approximately seven quarters, the growth rate returns to the long-run equilibrium. This can be explained by the fact that the structure of the Turkish economy is highly imported input intensive. An increase in the foreign demand for domestic goods slightly induces domestic production and increases the growth in the first period. But increased production requires more imported input which leads to negative effects on the growth in the next periods. Because when the import increases for the aim of to sustain production, current account deficit occurs. The deficit begins with cyclical but in the long run it takes a structural form because it exists even at the high point of business cycle. This leads to country more fragile.

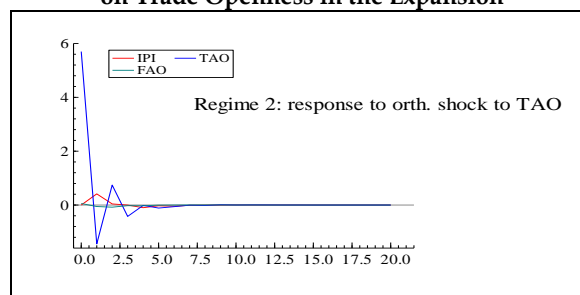
Figure 2 - Impulse Response Function to a shock on Trade Openness in the Recession



The effects of trade openness shock in Regime 2 (expansion) are shown in Figure 3. The response of the growth rate to a shock in trade openness is different

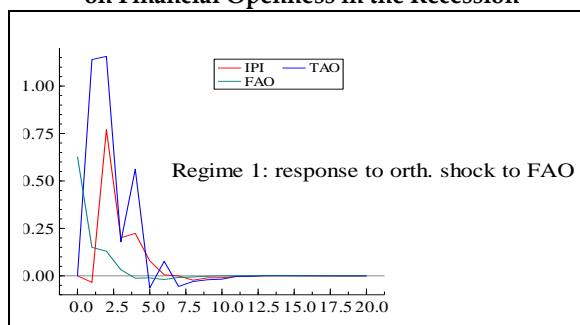
than that of the same shock in the recession regime. While the growth responds negatively to the shock in trade openness in the recession regime and decreases rapidly, in an expansion regime it does not always respond negatively and the effect of the shock is not very deep. Although it responds by decreasing for a while (only 1 quarter) in the expansion period, it does not drive the growth rate into negative values. The economy appears to be more resistant in the face of shocks in expansion periods compared to the recession periods. On the other hand, the effects of the shocks in recession periods take a much longer time than in expansion periods. The effect of the shock on the growth dies out in almost two quarters in the expansion period.

Figure 3 - Impulse Response Function to a shock on Trade Openness in the Expansion



The effects of *FAO* shock in Regime 1 are shown in Figure 4. The growth rate responds to the shock positively in first three quarters with a rapid increase. Then, it reacts negatively by following a fluctuating path. In the recession regimes, financial capital inflows affect the growth positively, though for a short period of time. The short-run financial flows help the economy to recover to a certain extent in the crisis period. The growth will exhibit the dynamics of recession periods as financial investment leaves the country at the end of 3 quarters. The financial openness shock is more effective than the trade openness shock in the recession regime of the economy.

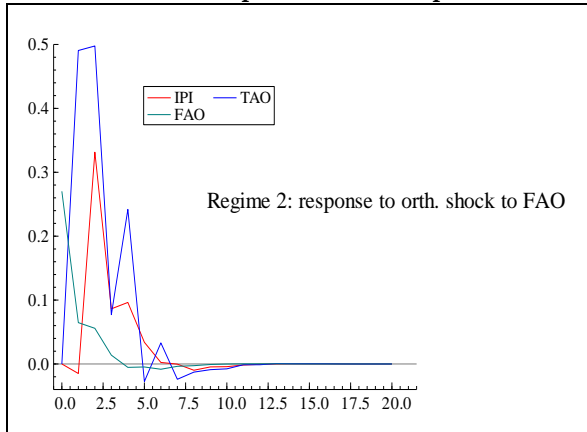
Figure 4 - Impulse Response Function to a shock on Financial Openness in the Recession



⁵ Statistical properties of the smoothed and predicted errors can be supplied, if required.

⁶ The nonlinear model does not provide the effects of shocks of exogenous variables, therefore we only present the effects of trade and financial openness on the growth.

Figure 5 - Impulse Response Function to a shock on Financial Openness in the Expansion



The effects of the shock in financial openness on the growth rate of Turkey are displayed in Figure 5 in the expansion period. The response of Turkey's growth rate to the shock is very similar to the response in the recession period. The effect of the shock dies out after eight quarters in the expansion period. The growth follows a fluctuating path against the shock in the financial openness. While financial capital inflow provides a relieving effect initially in the economy (the period when growth responds positively to the shock), growth shows negative effects in the following periods. When the length of fluctuating cycle can be explained by capital inflow, it is seen that one period lasts 3 months. This can be explained by the duration of capital inflow in the country.

4. Conclusion and Discussion

The external dynamics considered in this paper - namely trade and financial openness, oil prices, and growth rate of Germany - initially explain 29 % of economic growth in Turkey, according to the results of the linear estimation method. This percentage climbs to 51 % in the long-run. The highest effect was observed in the trade openness: 16 % in the first period, decreasing to around 13 % in the long run. Oil prices explain around 9 % of the growth of industrial production in the first period, but in the long-run this percentage increases to 23 %. The effects of financial openness and growth of the most important trade partner remain relatively limited. In the long-run, both of these dynamics explain around 7 % of industrial production growth. These findings imply that in the long-run one third of Turkey's growth performance is dependent on oil prices and imports and exports.

However, the results of the nonlinear model turned out to reflect the dynamics of growth in Turkey better than the linear model. The effects of trade openness on growth are different in terms of duration in the recession and the expansion periods. The effect of foreign trade share on the growth of industrial production suddenly turns into a negative effect and remains in the negative region until it disappears in around 7 periods. However, the positive effect in the expansion period only lasts around 2.5 periods. We observed no effect on the financial openness in the

expansion period, but in the recession period there is a negative effect which lasts 3 periods. Interestingly, the direction of the effects of financial openness and trade openness on growth does not differ very much between the expansion and recession periods, but the amplitude of it differs. The magnitude of the effect in the recession period is almost twice as high as in expansion, as the need for financial resources in recession periods is severe.

Developing countries are almost equally as prone to external dynamics that are not under the control of domestic economy policymakers as they are to internal dynamics. As a matter of fact, open developing economies are simultaneously experiencing advantages and disadvantages of open economy policies. Trade openness explains a significant part of economic growth in Turkey but this is only a part of the reality. Trade openness, i.e. foreign trade share in GDP, includes both exports and imports. A positive effect of trade openness arises not only from the contribution of exports, but also from imports of intermediate inputs and raw materials that are used in the domestic production process. In fact, the latter seem to play a greater role in the recent increasing growth performance of Turkey. In other words, the growth in Turkey is dependent on imported input and this has some ramifications in terms of both deficits and the poor quality of domestic value added creation.

The current account balance deterioration accompanied the recent growth performance of Turkey. This, in turn, caused the deterioration of financial deficit, which is covered by financial capital inflows into the country. Financial capital movements facilitated imports of intermediate inputs not only by providing such a mechanism, but also by causing the revaluation of local currency and thereby a decrease in the real prices of imported inputs. In this global environment, new investment decisions are also easier to make due to free capital movements across borders. Thus, it is not surprising to obtain a positive effect of financial openness on growth.

It is very well known fact that such a growth policy - i.e. relying on a high amount of imported inputs and financial inflow - creates a fragile macroeconomic structure given the poor quality domestic value added creation. Any minor development that makes financial capital insecure results in a sudden outflow and a crash of the economy. The observed declines of GDP in 1998, 2001, and 2008 in Turkey can be explained on the grounds of this fragility. Therefore, the growth performance of an economy dependent not only on imported inputs but also on financial inflows, like Turkey, seems to be fragile, and in the long-run the sustainability of the expansion of the economy is insecure. These results show that openness is both an opportunity and a threat at the same time for a developing country like Turkey. Therefore, managing the threats created by a global economic environment seems to be equally as important as managing the opportunities.

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Appendices

Appendix 1

A1: Variables used in the study

Variables	Symbols
Industrial Production Index*	IPI
Trade openness (1995=100)**	TAO
Financial openness (2005=100)***	FAO
Growth rate of Germany	GGDP
World oil price index	ROP

*Quarterly Industrial Production Index has been used to reflect the growth rate. The correlation between growth rate of Industrial Production Index and growth rate of GDP was calculated as 0,8. The serial has reflected the growth rate because logarithmic value of Industrial Production Index was used and the first difference was calculated.

**There have been many methods for calculating trade openness rate in literature; however, the most commonly used method is 'trade density' in terms of serving the aim. Trade density rate has been calculated as dividing the sum of import and export by GDP ((import+export)*100/GDP)). In this study, trade openness rate was calculated as trade density by referring the Aizenman (2004b:1)'s paper.

***Financial openness rate was obtained by dividing total of gross private capital inflow and gross private capital outflow by GDP by referring Aizenman (2004b:1)'s paper ((Gross Private Capital Inflow + Gross Private Capital Outflow)*100/GDP).

Seasonally adjusted series were used in the series of oil prices and growth rate of Germany. The series were purified from seasonality by using TRAMO-SEATS seasonal adjustment method for other series without seasonal adjustments.

Appendix 2

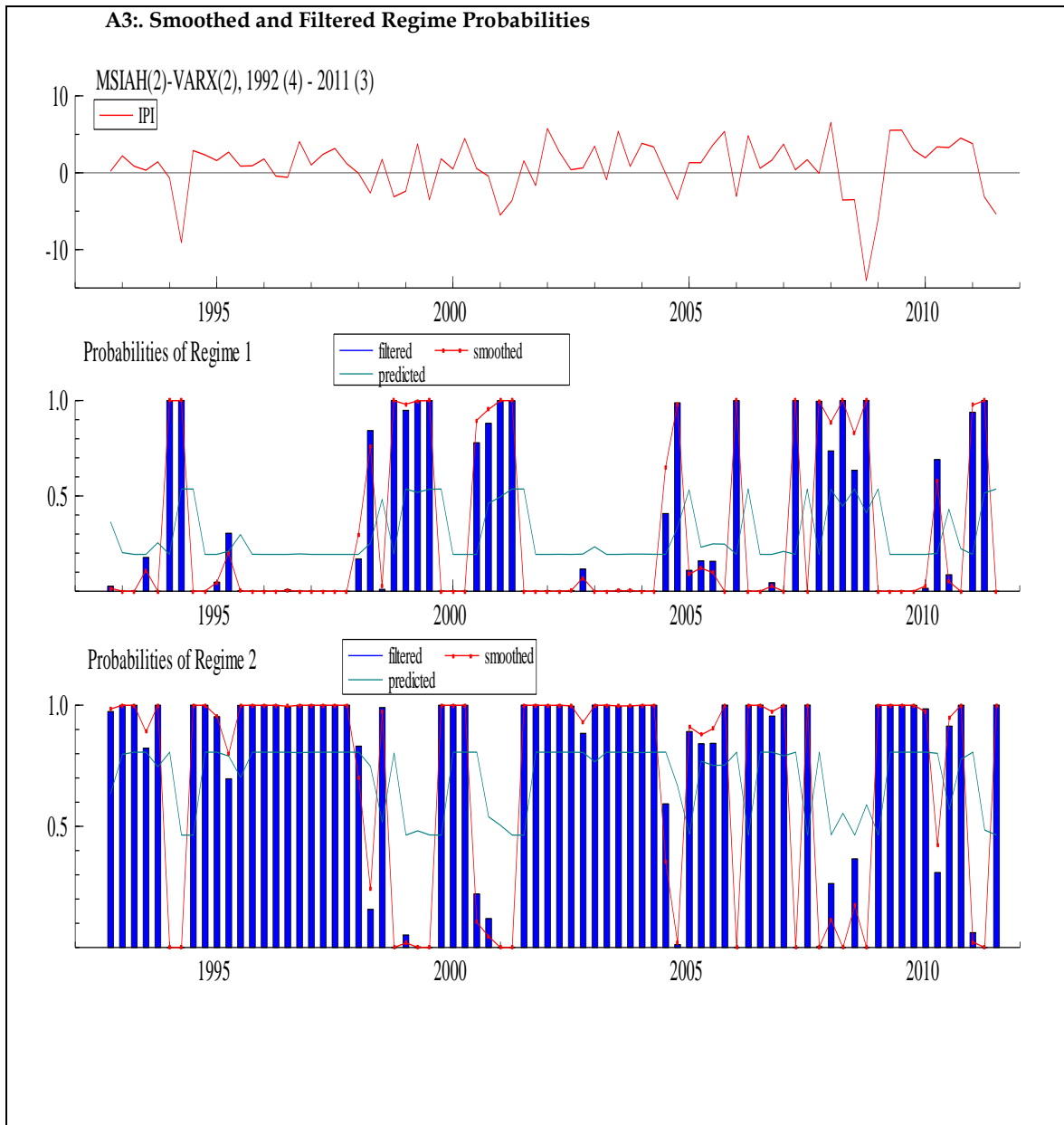
A2:Unit Root Tests

		ADF	DF-GLS	PP
<i>Level</i>	Variables			
Intercept Only	IPI	-0.968 (1)	-0.091 (1)	-0.635 (3)
	TAO	-0.7339(1)	0.713 (2)	-0.675 (2)
	FAO	-6.26949 (0)*	-6.30425 (0)*	-6.2694 (0)*
	ROP	-0.289 (2)	0.057 (2)	0.11 (11)
	GGDP	-0.642555(1)	0.722 (1)	-0.380 (4)
Intercept and Trend	IPI	-3.191(1)	-3.029 (1)	-2.628 (0)
	TAO	-2.092 (2)	-2.106 (2)	-2.244 (2)
	FAO	-6.272422 (0)*	-6.3128 (0)*	-6.2724 (1)*
	ROP	-2.540 (2)	-2.164 (2)	-2.365 (8)
	GGDP	-3.100 (1)	-3.069 (1)	-2.827 (4)
<i>Difference</i>				
Intercept only	Δ IPI	-6.998 (0)*	-5.360 (0)*	-6.826 (5)*
	Δ TAO	-11.362 (0)*	-4.775 (1)*	-11.293 (1)*
	Δ FAO	-12.55444 (0)*	-11.969(0)*	-20.531 (13)*
	Δ ROP	-8.316 (1)*	-8.364 (1)*	-6.957 (26)*
	Δ GGDP	-5.934 (0)*	-4.696 (0)*	-5.928 (2)*
Intercept and Trend	Δ IPI	-6.930 (0)*	-6.520 (0)*	-6.743 (5)*
	Δ TAO	-11.306 (0)*	-5.261 (1)*	-11.24 (1)*
	Δ FAO	-12.47321 (7)*	-12.366 (0)*	-20.348 (13)*
	Δ ROP	-8.383 (1)*	-8.247 (1)*	-9.346 (31)*
	Δ GGDP	-5.893 (0)*	-5.514 (0)*	-5.887 (2)*

Notes (1) ***, **, * denotes significance at the 1%, 5% and 10% levels, respectively.

(2) Figures in paranthesis are the number of lags used.

Appendix 3



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Culture as a Determinant of Competitive Advantage in Trade

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Abstract

Purpose: Culture plays a role in international trade much as it does in any other human activity. Attitudes and ways of life do matter even when a lucrative business opportunity exists, especially across national borders. This paper examines which aspects of culture give countries competitive edge in terms of bilateral trade performances. Specifically, do relatively higher scores in certain cultural dimensions have a deterministic effect on bilateral trade performance (terms of trade or bilateral trade balance)?

Methodology: We adopt empirical econometric estimation methods on trade data covering 59 countries and 29 years combined with the nine "Global Leadership and Organizational Behavior Effectiveness (GLOBE)" culture dimensions. Our estimations were based on Robust Regression Analysis and Ordinary Least Squares methods.

Findings: We find that indeed, certain aspects of culture enhance bilateral trade performance/competitiveness. Performance Orientation, Future Orientation, Institutional Collectivism, Gender Egalitarianism, Power Distance and Uncertainty Avoidance improve bilateral trade performance while Assertiveness, Humane Orientation and In-Group Collectivism impair it.

Research limitations: Direct measures of international competitiveness are not readily available. So we had to adopt proxies for measuring international competitiveness.

Implications: Many countries want to boost international competitiveness. However, in the current world order with multilateral trade agreements under the WTO and increased transferability of technology, governments are clipped in terms of available trade policy options. By understanding which aspects of culture promote bilateral competitiveness and performance, governments could take steps to maximize their competitiveness. For instance, when negotiating trade treaties, policy makers may benefit from the knowledge of culture's impact on competitive advantage when selecting partners.

Originality/value: To the best of our knowledge, this is the first paper to empirically examine how differences in national culture using the GLOBE dimensions affect bilateral and national competitiveness in international business.

Key words: culture, bilateral, trade, competition, management.

JEL Classification: F13, M12.

1. Introduction

The role of culture in international business is undisputed. As noted by Mesoudi (2011), "Any explanation of human behavior that ignores culture or treats it in an unsatisfactory manner will almost certainly be incomplete."¹ Attitudes and ways of life definitely do matter even when a lucrative business opportunity exists. Robert House (2004) observes that the importance of economic and political barriers in international trade is declining and this trend leads to new challenges and opportunities in business.

In addition, explanations of international competitiveness or comparative advantage based on factor endowments and factor productivity is diminishing due to the increasing mobility of factors internationally thus leading to "fleeting advantages." For instance, technology, which is often the main source of comparative advantage, is now more easily

leveraged or transferred internationally due in part to globalization, liberalization and the increased enforceability of the protection of intellectual property rights emanating from the WTO's Trade-Related Aspects of Intellectual Property Rights (TRIPS). Firms are actively seeking to commercially exploit their technological assets in international markets either by selling the use of the technology or outsourcing some of their production processes to countries with sustainably conducive environments and complementary factors. Given the economic, political and technological barriers to international business are in decline, the relative importance of culture as a factor in determining competitive advantage is likely on the rise.

In an analysis of how national culture is fundamental to determining competitive advantage, van den Bosch & van Prooijen (1992) reiterated the

¹Mesoudi (2011), p. 1.

importance of national culture in international competitiveness and underscored the need for empirical research in the area. Specifically, the authors noted:

‘But we want to stress the importance of national culture in explaining the differences in national competitive advantage. ... There has not yet been thorough empirical research as to the impact of national culture on international competitive advantage. ... To strengthen the understanding of national culture’s consequences on the competitive advantage of nations, more research is needed.’ P.

It should be noted that culture has been used to explain a variety of socio-economic outcomes. For instance, Cyrus (2012), Tadesse and White (2010) and Coyne and Williamson (2012) use the World Values Survey (WVS) to examine how culture affects Trade. Linders et al (2005) use Hofstede’s four dimensions of culture to examine the same question. Other researchers investigate the effects of culture on other socio-economic outcomes. Tabellini (2010) investigates the relationship between culture and economic development; Tihanyi, Griffith and Russell (2005) investigates the relationship between cultural distance the choice of entry mode for firms in international business while Benito and Gripsrud (1992) examines the relationship between cultural distance and foreign direct investment. But none of these papers explicitly looked at how differences in national culture affect international competitiveness. It is somewhat surprising that a call put forth in 1992 to examine the effects of national culture on international competitiveness has yet to be answered. This study is an attempt to contribute to this void in the literature and hopefully kick-start further research into the area.

Specifically, this study utilizes new innovations in measuring culture to determine which aspects of culture affect bilateral trade performance or competitiveness. We examine whether certain aspects of culture as identified by the GLOBE team can be a source of competitive advantage as measured by bilateral trade performance (bilateral terms of trade or bilateral trade balances). Our results indicate that indeed, some aspects of culture do have significant effects on bilateral competitiveness. Of the nine GLOBE dimensions, we find that higher relative scores in Performance Orientation, Future Orientation, Institutional Collectivism, Gender Egalitarianism, Power Distance and Uncertainty Avoidance improve bilateral competitiveness/performance while Assertiveness, Humane Orientation and In-Group Collectivism hamper it.

Competitive advantage is defined as that which distinguishes you, your firm, or your country, from the competition. That is, why do they buy from you rather than your competitors? The appropriate follow up question is, what about you, your firm or your country makes you (it) more or less likely to be better at doing a given thing when compared to the competition?

Among other possible explanations, it can be argued that culture is central in determining country competitiveness. Technology can now be more easily transferred and economic or political barriers knocked down, while culture, defined as “the act of developing the intellectual and moral faculties especially by education expert care and training,” is less amenable to change and transferability.² It is easy for an American to learn Chinese or use Chinese technology but it will be more difficult for the American to imbibe the values and beliefs that inform the choices the average Chinese make. For instance, Chinese societies are characterized as much more structured where the individual knows their place on the system and respects the rules that govern that system. In the U.S. on the other hand, there are less formal structures and it is commonplace to see people of different social statuses socializing and interacting quite informally.

Michael Porter, in his seminal book *The Competitive Advantage of Nations*, asks the question: “Why do firms based in particular nations achieve international success in distinct segments and industries?”³ This question serves as the framework to analyze the role of the national environment (which includes national culture) on the competitiveness of firms in international markets. Porter theorizes four determinants of national advantage:

- Factor conditions such as human resources, physical resources, knowledge resources, capital resources, and infrastructure.
- Demand conditions, which shape the rate and character of improvement and innovation.
- The presence or absence of related and supporting industries.
- Firm strategy, structure and rivalry such as
 - management practices,
 - modes of organization,
 - attitudes toward authority,
 - norms of interpersonal interaction,
 - attitudes of workers toward management and vice versa,
 - social norms of individualistic or group behavior, and
 - professional standards.

While there are many suggestions to culture throughout these determinants, it is explicit in strategy/structure. In spite of the importance of culture in determining competitive advantage of countries, there has been little empirical work as to the effect of culture on competitive advantage. This is likely due to the apparent lack of empirical data on culture. The common approach to measuring culture has been to use a proxy such as common language or religion to demonstrate cultural similarity / difference. Apart from the limitation of these measures as crude approximations, in the context of determining competitive advantage, interpreting them will be controversial. Just imagine telling the French that America has competitive advantage over France

² Def. 2. Merriam Webster Online, Merriam Webster, n.d. Web. 16 Sept. 2015.

³Porter (1992), p. 18.

because Americans speak English and the French speak French. Fortunately, this is not necessary, as ample work has been done to generate empirical data on culture that is comparable across nations.

In the next section, we present the empirical model and estimation methods adopted in our analysis. Section 3 presents the data and results. Section 4 is for robustness checks and section 5 concludes with policy implications.

2. Empirical Model and Estimation

We adopt gravity model estimation techniques to determine how different aspects of culture affect bilateral trade performance. We adapt Anderson and van Wincoop (2003) and specify the following gravity model

$$\begin{aligned} \ln X_{ijt} = & a_0 + a_1 \ln Y_{it} + a_2 \ln Y_{jt} + a_3 \ln t_{ijt} \\ & + a_4 \ln P_i + a_5 \ln P_j + a_6 \ln Pop_{it} \\ & + a_7 \ln Pop_{jt} + a_8 D_{year} + e_{it} \end{aligned} \quad (1)$$

where X_{ijt} is a measure of bilateral trade performance. Y_{it} and Y_{jt} are the exporter and importer specific fixed effects for countries i and j that determine the export supply and import demand functions (approximated by GDPs). P_i and P_j are measures of Multilateral Trade Resistance (MTR) terms.⁴ These approximate the relative cost of trade between trading partners and the rest of the world. We add population (origin and destination countries – Pop_{jt} , Pop_{it}) to mitigate against the “so-called” endowment effects which can either be technology endowment or resource endowments⁵, and year fixed effects, D_{year} to control for common shocks.

The term t_{ijt} , which is the inverse of bilateral trade costs, deserves further attention because it is in this term that our measures of culture are captured. Cultural factors could either increase or decrease bilateral trade costs among others such as membership of a common regional trade area, distance between the trading partners. We augment the bilateral trade-costs specification of Anderson & van Wincoop (2004) to include all the nine relative measures of culture constructed from the GLOBE dimensions such that

$$\begin{aligned} t_{ijt} = & dist_{ij}^{d_1} \cdot \exp(culdist_{ij} + d_3 gatt_{it} + d_4 gatt_{jt} \\ & + d_5 comcol_{ij} + d_6 contig_{ij} + d_7 rta_{ijt} \\ & + d_8 comlan_{ij} + d_9 comrel_{ij}) \end{aligned} \quad (2)$$

$Culdist$ is a matrix of measures of relative cultural dimensions; $gatt$, is a dummy that indicates whether country i is a member of the General Agreement on

Tariffs and Trade (GATT) at time t ; $comcol$ takes the value of 1 if countries i and j share a common colonial master and zero otherwise. The same dichotomous coding applies if the countries are contiguous ($contig$) or share a common regional trade area (rta) at time t or share a common language ($comlan$). All these variables have been found in previous studies to be significant determinants of bilateral economic relations. The inclusion of variables previously used to proxy for culture (such as common language, common religion) allow us to determine whether the direct measures of culture used in this study will maintain their relevance or have an independent effect on bilateral competitiveness. This is an additional layer of robustness as to the relevance of these cultural dimensions on bilateral trade performance.

To estimate our model, we employ panel estimation methods. This helps mitigate against heterogeneity biases across countries. The problem with estimating the above model is that the MTR terms are not directly observable. We approximate for these by calculating “remoteness” variables for the trading partners.⁶ In terms of estimation methods, fixed effects estimation is popular in the literature in estimating gravity equations. However, the use of fixed effects is not appropriate in our model because the bilateral variable of interest – culture, is time-invariant. “... if the interest of the research focuses on estimating the co-efficient of a bilateral time invariant co-efficient, the fixed effects estimation is not a viable option.”⁷ We adopt robust regression methods to deal with potential problems of heteroscedasticity and outliers.

3. Data and results

We will briefly discuss the construction of the dependent variables and the independent culture variables in this section. The rest of the variables are presented in Table 1 (see Appendix) alongside their sources.

Data

Dependent Variable: Bilateral Trade Performance or Competitiveness:

Our measure of relative competitiveness is the bilateral Terms of Trade (ToT) – the relative price of bilateral exports expressed in terms of bilateral imports. The bilateral ToT basically tells us how much import goods can be purchased from a trading partner per unit of exports sent to that trading partner. It is an aggregate measure of bilateral competitiveness. It does not distinguish between competitiveness across industries. This obviously is a crude measure of competitiveness. However, after controlling for technology and resource endowments alongside other factors that potentially determine bilateral economic interactions, we will be able to determine how culture

approximate measure of labor productivity or technology endowment.

⁶ We calculate remoteness based on the formula: $Remoteness_i = \sum_j \frac{dist_{ij}}{GDP_j / GDP_w}$.

⁷ WTO (2012), p. 108.

⁴ Anderson and van Wincoop (2003), show that to have theoretically consistent gravity model estimates, one should take into account the “multilateral trade-resistance terms (MTR).

⁵Note that by including GDP and population in natural logs, it is equivalent to including GDP per capita which is an

can independently influence bilateral trade performance.

Culture Variables: GLOBE nine dimensions

We adopt the GLOBE dimensions of culture in our analysis. The GLOBE research program led by Robert House seeks to “increase available knowledge that is relevant to cross-cultural interactions.”⁸ The current iteration of the data come from some 17,000 questionnaires administered on managers from 951 organizations across three industries - telecommunications, food processing and finance for 62 cultures between 1994 and 1997. The nine GLOBE cultural dimensions are Performance Orientation, Future Orientation, Gender Egalitarianism, Assertiveness, In-Group Collectivism, Institutional Collectivism, Power Distance, Humane Orientation, and Uncertainty Avoidance. We construct bilateral measures of each of the nine dimensions by defining a relative score between countries *i* and *j* for each dimension as:

$$\text{Relative Score: Dimension}_{i,j} = \frac{\text{Reporting_Dimension}_i \text{ Score}}{\text{Partner_Dimension}_j \text{ Score}}$$

When the relative dimension score approaches 1, it suggests that the countries are culturally similar. Higher values (greater than 1) imply that the source country's score is higher than the partner country's score for that dimension and vice versa. Now consider the relative score of each of these dimensions. We provide definitions and further details of these dimensions during the presentation of the results. For instance, in terms of Performance Orientation, Slovenia and Sweden have a relative score of about 1, which means that in terms of performance orientation, these two countries are not very different. Greece and Switzerland on the other hand have a relative score of 0.65, which suggests that Greece has a lower performance orientation relative to that of Switzerland. This would indicate that innovation and performance receive more attention and are more likely to be rewarded in Switzerland than in Greece.

Results

Table 2 reports the results of regressions with different model specifications. The first two columns are the results from the Bilateral ToT models. The dependent variable in this case is expressed in natural logs. The last two columns are results from the Bilateral Trade Balance models. Because bilateral trade has both negative and positive values, we run the model on the levels of bilateral trade balance without any transformation into natural logs. Generally, irrespective of model specification, all of the cultural dimension scores are significant at least at the 10 percent significance level. We presented results of the bilateral trade balance models as a robustness checks. However, in our discussions, we will concentrate on results from the bilateral ToT measures of bilateral trade performance.

Performance Orientation is found to be positive significant across all models. Performance orientation is defined as “the extent to which a community encourages and rewards innovation, high standards and performance improvement.”⁹ High performance orientation encourages competition, innovation and productivity. This means that for high performance oriented countries, international competitiveness will increase both due to the sheer volume of output and due to the value of the goods produced given their inclination to innovation. As a result, it makes sense that performance orientation has a positive impact on bilateral performance.

Future Orientation is found to have a positive influence on bilateral trade performance across all models though the results are weaker in the Trade Balance models. This dimension represents the degree to which behaviors such as planning and delayed gratification are rewarded. One might imagine that these attributes are the cornerstone of competitive advantage and it is consistent for it to rise with relatively higher Future Orientation scores.

Gender Egalitarianism also has a positive and significant influence on bilateral trade performance though the results are insignificant in the Bilateral Trade Balance models. This dimension “reflects societies’ beliefs about whether members’ biological sex should determine the roles that they play in their homes, business organizations, and communities.”¹⁰ Because egalitarian societies are more likely to judge individuals for their talents and potential contribution rather than their gender, they would better utilize their human resources. This will translate into innovation and higher productivity, which would bolster their competitive advantage against countries that are less egalitarian.

Assertiveness “reflects beliefs as to whether people are or should be encouraged to be assertive, aggressive and tough, or nonassertive, nonaggressive, and tender in social relationships.”¹¹ Because higher Assertiveness societies tend to value competition, success, and progress and reward performance we might expect this to increase bilateral competitiveness or performance. However, the empirical results unequivocally reject this hypothesis in favor of the opposite. What alternative explanation could we hazard to explain this result? According to House (2004), assertiveness measures the toughness, aggressiveness and dominance exhibited by individuals in their social relationships. Individuals who value cooperation and equality characterize less assertive societies. This suggests that high assertive countries will be relatively less cooperative. However, it will appear that the very nature of international business requires a good amount of cooperation, understanding and compromise. It therefore appears that societies characterized by people who are assertive, that is they lack cooperation, will not be able to make the compromises necessary to succeed internationally. Even in the domestic environment, lack of cooperation

⁸ House, et al. (2004), p. 3.

⁹House, et al. (2004), p. 239.

¹⁰House, et al. (2004), p.347.

¹¹House, et al. (2004), p. 395.

or compromise could have negative effects on productivity, initiative and innovation – ingredients necessary to compete in the international environment.

In-Group Collectivism assesses “the degree to which individuals express pride, loyalty, and cohesiveness in their organization.”¹² This is found to have a negative effect on bilateral trade performance. This is consistent with results provided by the GLOBE team on the relationship between In-Group Collectivism and competitiveness.¹³ Institutional Collectivism assesses “the degree to which institutions encourage and reward collective action and the collective distribution of resources.”¹⁴ This is found to have a positive influence on bilateral trade performance and again is consistent with the GLOBE study

Power Distance is the “degree to which members of an organization or society expect and agree that power should be shared unequally.”¹⁵ In low-Power Distance countries, the decision pyramid is relatively flat allowing for more collaboration and innovation. This, in turn, will bolster the nation’s competitive advantage. In high-Power Distance countries, the pyramid is steep and the hierarchy clearly defined. This will likely discourage innovation, which will undermine the competitive advantage of a nation. However, our empirical results suggest that increasing Power Distance relative to that of a trading partner improves trade performance and competitiveness. Perhaps the clearly defined decision-making structure associated with high-Power Distance encourages innovation, order and efficiency, which tend to increase competitiveness.

Table 2: Robust Regression Results: Bilateral Terms of Trade and Bilateral Trade Balance

	Bilateral Terms of Trade		Bilateral Trade Balance	
Performance Orientation	1.1703***	1.1285***	16.5220*	14.5103***
	(0.0667)	(0.0667)	(3.2559)	(3.2677)
Future Orientation	0.6784***	0.5901***	9.7557***	12.3756***
	(0.0572)	(0.0575)	(2.8601)	(2.8776)
Gender Egalitarian	0.1798***	0.1322***	2.5000	-0.9885
	(0.0427)	(0.0429)	(2.1182)	(2.1381)
Assertive	-1.1315***	-1.1621***	-14.874***	-17.822**
	(0.0619)	(0.0617)	(3.0069)	(3.0098)
In-Group Collectivism	-0.7224***	-0.747***	-44.531***	-46.348**

	(0.0464)	(0.0464)	(2.3163)	(2.3224)
Institutional Collectivism	0.9897***	0.9318***	32.7251*	31.2738***
	(0.0553)	(0.0554)	(2.7814)	(2.7904)
Power Distance	1.6167***	1.6718***	57.1950*	60.5849***
	(0.0739)	(0.0739)	(3.6532)	(3.665)
Humane Orientation	-0.0655	-0.0593	-21.786***	-21.978**
	(0.0503)	(0.0502)	(2.5203)	(2.5227)
Uncertainty Avoidance	0.5628***	0.5767***	15.9867*	19.1224***
	(0.0531)	(0.0531)	(2.679)	(2.6914)
GDP: Origin	0.1252***	0.1397***	-2.2396***	-1.8485**
	(0.0056)	(0.0058)	(0.2698)	(0.2799)
GDP: Destination	-0.0756***	-0.0785***	-2.9138***	-3.2528**
	(0.0056)	(0.0058)	(0.2752)	(0.2842)
Population: Origin	-0.0692***	-0.0813***	-1.0682***	-1.2216**
	(0.0057)	(0.0058)	(0.2788)	(0.2838)
Population: Destination	0.0264***	0.0310***	-0.1741	-0.0654
	(0.0057)	(0.0058)	(0.2833)	(0.2879)
ln(distance)	-0.0755***	-0.0831***	1.8142***	1.8561**
	(0.0088)	(0.0104)	(0.4508)	(0.5307)
Contiguous	0.0253	0.0060	8.0378***	8.2428**
	(0.0342)	(0.0342)	(1.7962)	(1.8022)
Remoteness: Origin	-0.0000**	-0.0000***	0.0000	-0.0001
	(0.0000)	(0.0000)	(0.0002)	(0.0002)
Remoteness: Destination	0.0000**	0.0000	-0.0007***	-0.0008**
	(0.0000)	(0.0000)	(0.0002)	(0.0002)
Regional Trade Area		-0.0552**		-1.7421
		(0.0220)		(1.1352)
GATT: Origin		-0.1758***		-6.7597**
		(0.0199)		(0.9181)
GATT: Destination		0.1482***		7.7589**

¹²House, et al. (2004), p. 465.

¹³Beyond the extensive work of collecting data on these cultural dimensions, the GLOBE team offers some analysis on the correlation of culture with a variety of social questions. In this case, the correlation between In-Group Collectivism and

the World Economic Forum Global Competitiveness Index was found to be -0.45. For Institutional Collectivism, the correlation was +0.40.

¹⁴House, et al. (2004), p. 465.

¹⁵House, et al. (2004), p. 517.

		(0.0194)		(0.9226)
Common Colony		0.1080***		-2.9138
		(0.0395)		(1.8960)
Common Language		0.0802***		2.0435**
		(0.0186)		(0.9562)
Constant	-1.7762***	-	-	-
	(0.1767)	1.6782***	51.988***	49.186**
		(0.1797)	(8.6606)	(8.8465)
Year FE	Yes	Yes	Yes	Yes
N	67460	67460	75173	75173
Adjusted R ²	0.0922	0.0939	0.0430	0.0454
F	153.3229	140.8378	75.9921	72.4878

Humane Oriented countries are characterized by “concern, sensitivity, friendship, tolerance, and support” while “low humane orientation involves promoting self-interest and lack of consideration.”¹⁶ Given this, we would expect the competitive advantage to rest with the low humane oriented country. Weak evidence of this is found in Table 2 where rising relative Humane Orientation scores decrease trade performance/competitiveness.

The final dimension is Uncertainty Avoidance. A society that scores high on uncertainty avoidance avoids ambiguity as much as possible. One would expect innovation to be a key component to competitive advantage. However, “[i]nnovation tends to introduce unanticipated changes for the employees and cause uncertainty that may lead to resistance to innovation.”¹⁷ Thus, as relative Uncertainty Avoidance rises, we would expect competitive advantage to diminish. This view is also held by van den Bosch & van Prooijen (1992) who say strong uncertainty avoidance does not promote the internationalization of home firm demand and thus reduces competitiveness. Our results suggest the opposite to be true. To explore possible explanations for this contradictory result, consider Robert House’s characterization of Uncertainty Avoidance:¹⁸ “the extent to which members of collectives seek orderliness, consistency, structure, formalized procedures, and laws to cover situations in their daily lives.”¹⁹ This suggests that in high Uncertainty Avoidance societies, business interactions are more formalized in an effort to minimize risks or uncertainty. MacDermott and Mornah (2015) argue that societies with relatively higher scores than their trading partners are better served by seeking foreign markets through the trade route rather than through the FDI route because there is less risk in trade than in FDI. If these countries trade

more in lieu of FDI as predicted by MacDermott & Mornah, then it stands to reason that high Uncertainty Avoidance scores could actually lead to improved trade performance (competitiveness)

4. Robustness

Our first robustness check was in using bilateral trade balance as our measure of bilateral trade performance and the results have been found to be qualitatively similar. As further robustness checks, we estimate the bilateral terms of trade models using OLS with robust standard errors and random effects estimation procedures in Table 3. By and large, the results are largely consistent with those presented above.

Table 3: Regression results: OLS Random Effect Estimators: Bilateral Terms of Trade (ToT)

Independent variables	Pooled OLS (Robust Standard Errors)		Random Effects	
Performance Orientation	1.8482***	1.8007***	2.3483***	2.0793***
	(0.0861)	(0.0863)	(0.3723)	(0.3725)
Future Orientation	0.7418***	0.6862***	0.1882	0.3269*
	(0.0739)	(0.0744)	(0.3226)	(0.3227)
Gender Egalitarianism	1.0681***	1.0271***	1.3906***	1.2365***
	(0.0552)	(0.0555)	(0.2326)	(0.2327)
Assertiveness	-1.323***	-1.331***	-2.356***	-2.317***
	(0.0799)	(0.0799)	(0.3404)	(0.3404)
In-Group Collectivism	-1.245***	-1.267***	-2.707***	-2.799***
	(0.0599)	(0.0600)	(0.2378)	(0.2379)
Institutional Collectivism	0.8841***	0.8486***	0.9521***	0.8190***
	(0.0715)	(0.0718)	(0.3005)	(0.3006)
Power Distance	2.3385***	2.3826***	3.7062***	3.6512***
	(0.0954)	(0.0956)	(0.4052)	(0.4052)
Humane Orientation	-0.201***	-0.191***	-1.400***	-1.408***
	(0.0650)	(0.0650)	(0.2718)	(0.2718)
Uncertainty Avoidance	0.3715***	0.4061***	-0.4276	-0.2069
	(0.0686)	(0.0687)	(0.3017)	(0.302)
GDP: Origin	0.1677***	0.1774***	-0.0109	-0.0028
	(0.0072)	(0.0075)	(0.0165)	(0.0166)

¹⁶House, et al. (2004), p. 595.

¹⁷House, et al. (2004), p. 607

¹⁸ Note – uncertainty avoidance is not synonymous with risk avoidance. (Hofstede draws this distinction while GLOBE only makes reference to his work).

¹⁹ House, et al. (2004), p. 603.

GDP: Destination	-0.108***	-0.111***	-0.081***	-0.077***
	(0.0073)	(0.0075)	(0.0164)	(0.0165)
Population: Origin	-0.067***	-0.074***	-0.0415*	-0.059**
	(0.0073)	(0.0075)	(0.0235)	(0.0235)
Population: Destination	0.0365***	0.0405***	-0.087***	-0.107***
	(0.0074)	(0.0075)	(0.0235)	(0.0235)
ln(distance)	-0.072***	-0.069***	-0.100**	-0.091*
	(0.0114)	(0.0135)	(0.0509)	(0.0525)
Contiguous	0.0539	0.0453	0.0200	0.0098
	(0.0442)	(0.0443)	(0.1986)	(0.1991)
Remoteness: Origin	0.0000	0.0000	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Remoteness: Destination	-0.000**	-0.000***	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
Regional Trade Area		-0.0180		0.0010
		(0.0284)		(0.0287)
GATT: Origin		-0.130***		-0.404***
		(0.0257)		(0.0261)
GATT: Destination		0.1089***		0.3354***
		(0.0251)		(0.0253)
Common Colony		0.0910*		0.1099
		(0.0511)		(0.2234)
Common Language		0.0611**		0.0635
		(0.0241)		(0.1128)
Constant	-2.812***	-2.817***	-1.5291*	-1.2363
Year FE	Yes	Yes	Yes	Yes
	(0.2283)	(0.2326)	(0.9113)	(0.9135)
N	67460	67460	67460	67460
Adjusted R ²	0.0984	0.0991		
F	164.5174	149.341		

5. Conclusion and policy implications

Our main research interest in this paper was to find out whether various aspects of culture have significant deterministic effect on bilateral trade performance or competitiveness. We find that Performance Orientation, Future Orientation, Gender Egalitarianism, Institutional Collectivism, Power Distance and Uncertainty Avoidance have positive significant effect on bilateral trade performance while Assertiveness, In-Group Collectivism and Humane Orientation tend to

decrease bilateral trade performance and competitiveness.

The findings of this study have relevant policy implications for trade and competitiveness. Many countries want to boost exports and reduce imports. However, in the current world order with multilateral trade agreements under the WTO and increased transferability of technology, governments are clipped in terms of available trade policy options. However, by understanding which aspects of culture promote bilateral competitiveness and performance, governments could take steps to maximize their competitiveness. For instance, when negotiating trade treaties, policy makers may benefit from the knowledge of culture's impact on competitive advantage when selecting partners. Secondly, policy makers can choose aspects of culture that promote competitiveness and actively seek to imbibe such "good culture" in its citizenry through education or concerted efforts to promote cultural interaction with such "good cultures." In so doing, countries will be able to recapture competitive advantage in trade without violating international trade rules.

It should be noted that Porter's study was of the competitiveness of nations at the industry level. While this current study is an interesting first step into empirical analysis, there is potential for further study as to the impact of culture on competitiveness at the industry level.

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Appendix

Table 1. Variables definitions and sources			
Variable		Mean	Source
Terms of Trade (bilateral)		52029 70	Constructed from IFS trade stats
Trade Balance (Bilateral)		- 4.425 261	Constructed from IFS trade stats
Performance Orientation		1.010 372	House (2004)
Assertiveness		1.007 805	House (2004)
Future Orientation		1.014 482	House (2004)
Humane Orientation		1.012 909	House (2004)
Institutional Collectivism		1.010 394	House (2004)
Gender Egalitarianism		1.013 219	House (2004)
Power Distance		1.008 646	House (2004)
Individual Collectivism		1.026 968	House (2004)
Uncertainty Avoidance		4.125 254	House (2004)
Bilateral Distance		8155. 706	Cepii Gravity Data:

			http://www.cepii.fr/CEPII/
GDP (billions)		201.4 589	World Development Indicators (WDI) (2014)
Population (Billions)		0.031 7026	World Development Indicators(WDI) (2014)
Common Language (Ethnic)		0.150 7064	Cepii Gravity Data: http://www.cepii.fr/CEPII/
Common Language (Official)		0.162 0617	Cepii Gravity Data: http://www.cepii.fr/CEPII/
Common Colony		0.110 675	Cepii Gravity Data: http://www.cepii.fr/CEPII/
Regional Trade Area		0.039 4267	Cepii Gravity Data: http://www.cepii.fr/CEPII/
GATT		0.610 6859	Cepii Gravity Data: http://www.cepii.fr/CEPII/
Contiguous		0.014 5474	Cepii Gravity Data: http://www.cepii.fr/CEPII/
Remoteness (origin)		7064. 988	Constructed from WDI (2014)
Remoteness (Partner)		7037. 758	Constructed from WDI (2014)

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