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THE VALUE RELEVANCE OF MANDATORY CORPORATE DISCLOSURES: EVIDENCE FROM KUWAIT

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ABSTRACT

This study is the first to explore the association between the level of compliance with International Financial Reporting Standards (IFRS) mandatory disclosures and the value relevance of accounting information to market participants. This association is examined in the context of listed companies in the emerging economy of Kuwait – a jurisdiction with a history of applying international accounting standards but with lax enforcement. The research design of the study consists of two parts. First, the level of compliance with mandatory IFRS disclosures of Kuwait Stock Exchange (KSE) listed firms in 2010 is examined using a disclosure index. Second, the value relevance of financial statement information, specifically, earnings and book values, is examined empirically using Ohlson's (1995) valuation model that captures the level of compliance with IFRS among KSE listed firms. The results show a significant association between the level of compliance with IFRS and the value relevance of earnings and book values to KSE investors, highlighting the importance of establishing and maintaining adequate monitoring and enforcement mechanisms to ensure compliance with accounting standards. The outcomes of this study serve to inform regulators and companies on whether moving toward stricter compliance with IFRS will necessarily improve the value relevance of financial statement information.

INTRODUCTION

The growing acceptance and use of International Financial Reporting Standards (IFRS) and its predecessor, International Accounting Standards (IAS), in major capital markets throughout the world over the past several years is remarkable. Currently, there are nearly 130 countries that have adopted or that make a commitment to adopt IFRS (IASB, 2014). The International Accounting Standards Board (IASB) claims that its principle objective is to develop a single set of high-quality financial reporting standards (IASB, 2014). However, as IFRS adoption expands globally, concerns and questions remain about the usefulness of these standards in producing high-quality information. In addressing these concerns and as part of its continuous efforts to improve the quality of existing IFRS, the IASB hosted in January 2013 a public forum to foster dialogue about how to improve the quality and usefulness of its standards (IFRS, 2013). It can be argued that usefulness is likely impacted by differences in IFRS adoption, interpretation, and compliance across jurisdictions. In jurisdictions with lax enforcement regimes, compliance is likely to be the major impediment to the usefulness and the value relevance for the IFRS-based accounting information to investors. However, a review of value relevance literature shows that a prominent characteristic in most of the previous studies on value relevance of accounting information is a failure to distinguish between accounting standards that are *used* and those that are *actually* implemented.

Interestingly, despite the obvious link between compliance and value relevance, most value relevance research ignores compliance in assessing the value relevance of accounting information (Hellstrom, 2006).

While extant research generally supports the value relevance of IFRS adoption (e.g., Larsson and Bogstrand, 2012; Kargin, 2013), no known research has examined how the extent of compliance with IFRS affects financial statements' value relevance to users. A possible explanation for ignoring the compliance issue in value relevance research could be that most value relevance research has been mainly conducted in developed countries where there are high levels of compliance with accounting standards and strong enforcement regimes. However, prior research on developing countries has documented lax enforcement and limited compliance with IFRS, which undermines the effectiveness of IFRS in producing high-quality information.

In this study, we consider the extent of IFRS compliance in the emerging economy of Kuwait, which has required the application of international standards since 1991, but lacks a reputation for strong enforcement of compliance with IFRS, as evident in a recent study by Alfraih and Alanezi (2012). Consequently, the Kuwaiti stock market provides an ideal setting for investigating the association between the level of compliance with IFRS and the value relevance of accounting information to market participants, as the variation observed in compliance level among Kuwait Stock Exchange (KSE)–listed firms provides an ideal opportunity to explore this issue.

To examine the extent of IFRS compliance by Kuwaiti firms, we developed a self-constructed compliance index that comprehensively captures the level of compliance with the all applicable and relevant IFRS among all KSE-listed nonfinancial firms in 2010. To test the value relevance of the accounting information produced by KSE-listed companies in 2010, the *price* model developed by Ohlson (1995) is applied. The value relevance of accounting information is expected to vary cross-sectionally according to variation in the quality of the underlying accounting information, as proxied by the extent of IFRS compliance. Hence, prior to estimating the model, the IFRS compliance score that is derived from the compliance index is incorporated into the price model as a separate explanatory variable.

Consistent with our expectations, a significant association is observed between the level of compliance with IFRS and the value relevance of earnings and book values to KSE investors. The finding highlights the importance of establishing and maintaining adequate monitoring and enforcement mechanisms to ensure compliance with accounting standards. In addition, the finding that stricter compliance with IFRS improves the value relevance of accounting information highlights the importance of full compliance with IFRS and not just mere adoption.

As regulations and enforcement are costly for regulators and companies, a potential benefit of this study is that corporate regulators and company managers may be able to better recognize the effect of compliance with IFRS on the value relevance of financial statement information. Thus, the outcome of this study will inform regulators and companies on whether moving toward stricter compliance with IFRS will necessarily improve the value relevance of financial statement information.

The remainder of this paper is organized as follows. Section 2 provides a brief overview of the Kuwaiti accounting regulatory framework and its impact on firms listed on the KSE. Section 3 provides an overview of prior research on compliance with IFRS and the value relevance of accounting information. Section 4 outlines this study's theory development and research hypotheses, while Section 5 discusses the research design used to test these hypotheses. Section 6 presents an analysis of the data and the results of the hypotheses tests. The paper concludes in Section 7 with a summary of findings and an outline of this study's major contributions and implications.

REGULATORY FRAMEWORK OF ACCOUNTING IN KUWAIT

Background on the KSE

Share trading in Kuwait started with the establishment of the National Bank of Kuwait in 1952 as the first Kuwaiti shareholding company. In the following decades, the Kuwait government issued a number of laws and rules to regulate share-trading activities, culminating in August 1983 with the issuance of an Amiri Decree establishing the KSE. Since that time, the KSE has witnessed significant expansion, which has brought it to the attention of both domestic and international investors, particularly in recent years. The exchange was mandated to organize trading activities and to regulate them, which it continued to do until its regulatory responsibilities were transferred to the Capital Markets Authority (CMA), which was established by a new law, which, after being signed by the Amir, came into force on February 28, 2010 (KSE, 2014).

In 2010, the KSE administration divided listed companies into seven sectors: banking, insurance, investment, real estate, industry, services, and food. Table 1 shows that KSE-listed companies are broadly distributed across these sectors in 2010, with investment and services being the dominant sectors.

Table 1: KSE Investment Sectors and Number of Listed Companies, 2010

Sector	Number of Firms	Percentage
Banks	9	4.4
Investment	52	25.5
Insurance	7	3.4
Real Estate	40	19.6
Industrial (Industry and Food)	35	17.2
Services	61	29.9
Total	**204**	**100**

This table shows KSE investment sectors and number of listed companies in 2010.

Accounting Regulations in Kuwait

In Kuwait, the evolution of corporate financial reporting began in the early 1960s with growth of the business sector and the establishment of public corporations. The Kuwaiti government takes sole responsibility for formulating business regulations as well as for managing and running enforcement agencies to ensure adherence to these regulations (Alfraih and Alanezi, 2012). One of the most significant laws governing accounting in Kuwait is the Law of Commercial Companies No. 15/1960, which was issued by the Ministry of Commerce and Industry (MCI) on October 19, 1960, to organize the formation of new companies and to regulate the administration of existing companies. The MCI Law requires companies to provide an audited annual balance sheet and a profit and loss statement to the MCI and all shareholders. However, the law has not provided guidelines for preparing these statements other than that they be prepared in accordance with "generally accepted accounting standards" to reflect a "true and fair view" of the company position and to maintain a proper book of accounts. Furthermore, the law does not define "generally accepted accounting standards" or "true and fair view" (Shuaib, 1987).

Because of the ambiguity caused by not specifying a set of accounting standards, as well as the lack of definition of a "true and fair view," significant differences have emerged among the disclosures provided in the financial statements of Kuwaiti companies (Shuaib, 1987). In response to these discrepancies and in an attempt to standardize accounting practices in Kuwait, the Ministry of Commerce and Industry (MCI) issued Resolution No. 18 on April 17, 1990, which effectively mandated adoption of International Accounting Standards (IAS) for all companies operating in Kuwait including listed KSE firms for financial periods beginning January 1, 1991 (MCI, 2000).

LITERATURE REVIEW

Since the 1960s, and the seminal work of Ball and Brown (1968), the value relevance of accounting information has been an important topic in accounting research. The research aims to provide evidence as to whether accounting numbers relate to corporate value in a predictable manner (Beaver, 2002). The broad literature that has developed in this area comprehensively documents the value relevance of accounting information in numerous contexts (e.g., Alfraih and Alanezi, 2011; Larsson and Bogstrand, 2012; Kargin, 2013). Such research is not only important for investors but also provides useful insights into accounting reporting effectiveness for standard setters and other users. Prior studies show that a fundamental prerequisite for the value relevance of accounting information is the quality of prescribed accounting regulations. Accounting standards of high quality are also necessary to ensure well-functioning capital markets and the economy as a whole; thus such standards are important for investors, firms, standard setters, and regulators (e.g., Hellstrom, 2006; Aljifri *et al.*, 2014). For example, Arthur Levitt, the former chairman of the U.S. Securities and Exchange Commission (SEC), proclaimed,

> I firmly believe that the success of capital markets is directly dependent on the quality of the accounting and disclosure system. Disclosure systems that are founded on high quality standards give investors confidence in the credibility of financial reporting – and without investor confidence, markets cannot thrive. (Levitt, 1998, p. 80)

Kothari (2000) observes that market participants seek high-quality accounting information because it mitigates information asymmetry between firms' managers and outside investors. Accounting quality is further articulated in Francis *et al.* (2004) who identify seven attributes of accounting quality that are posited to be desirable: accrual quality, persistence, value relevance, timeliness, predictability, smoothness, and conservatism. They find that value relevance is one of the most important attributes of accounting quality. The findings of Francis *et al.* are supported by Barth *et al.* (2008), who claim that higher-quality accounting information exhibits less earnings management, more timely loss recognition, and a higher value relevance of the earnings and equity book values.

Although the objective of the International Accounting Standards Board (IASB), is to develop an internationally acceptable set of high-quality financial reporting standards (IASB, 2014), reported accounting information based on these high quality standards might be of low quality in the absence of full compliance with accounting regulations, or if the discretion provided in accounting standards is exploited opportunistically. Aljifri *et al.* (2014) argue that deficiencies in the application of accounting standards cause inconsistency, incomparability, reduced transparency, and a lack of trust in the information provided, which lead to higher costs of capital and increased risks for different user-groups. In other words, mere adoption of high-quality domestic or international accounting standards may be insufficient to improve the usefulness of accounting information to investors, unless effective domestic regulatory and enforcement mechanisms exist to ensure that companies adhere to the prescribed standards (Hellstrom, 2006).

Similar claims have been made by other researchers. For example, Barth *et al.* (2008) argue that adoption of higher-quality accounting standards, such as International Financial Reporting Standards (IFRS), is associated with predictable improvement in the quality of financial reporting and value relevance. They also note that lax enforcement of these high-quality standards may result in limited compliance, thus undermining the effectiveness of these standards in producing high-quality information. Similarly, Kothari (2000) argues that the quality of accounting information is not only influenced by the quality of accounting standards but also by the nature of corporate governance, the legal system, and the existence and enforcement of effective laws that govern accounting standards. Kothari defines the quality of financial information as a function of both the quality of accounting standards and the enforcement of those

standards. Thus, if enforcement of accounting standards is weak, then the quality of accounting information is likely to be poor, regardless of the quality of the accounting standards.

Over recent years, IFRS have increasingly become the global accounting standards. According to the International Accounting Standard Board (IASB), there are nearly 130 countries that have adopted or that have made a commitment to adopt IFRS (IASB, 2014). However, questions have been raised about whether companies that claim to be compliant with IFRS are, in fact, complying with all IFRS requirements (Glaum and Street, 2003). The U.S. Securities and Exchange Commission (SEC) conducted a study in 2011 regarding the application of IFRS in practice, based on an analysis of the annual financial statements of 183 companies across 22 counties. The study observes that

(…) many companies did not appear to provide sufficient detail or clarity in their accounting policy disclosures to support an investor's understanding of the financial statements, including in areas they determined as having the most significant impact on the amounts recognized in the financial statements. (…) In some cases, the disclosures (or lack thereof) also raised questions as to whether the company's accounting complied with IFRS. (SEC, 2011, p. 2)

Similarly, a study by Al-Shammari *et al.* (2008) examines the extent of compliance with IAS by companies in the Gulf Co-Operation Council (GCC) countries – namely, Bahrain, Oman, Kuwait, Qatar, Saudi Arabia, and United Arab Emirates – over the period 1996 to 2002. Importantly, their study reveals there is significant variation in compliance levels among GCC countries and between companies. The average level of compliance for all GCC companies during the study period was 75%. A recent study by Alfraih and Alanezi (2012) that examines the effectiveness of requiring two external auditors in Kuwait and the associated cost-benefit of this requirement on the level of corporate disclosure shows that the average level of IFRS mandatory disclosure was 75% in 1994 and 78% in 2006, an increase of 4% over a 12 year period.

In summary, a prominent characteristic in most of the previous literature on the value relevance of accounting information is a lack of distinction between accounting standards that are *used* and the *actual* implementation of those standards. Accounting regulations might be of high quality; however, the value relevance of reported accounting information might be of low quality if accounting regulations are not fully complied with, or the discretion provided in the accounting standards is opportunistically exploited. The review of the literature on compliance with IFRS provides substantial evidence of noncompliance by companies that claim to comply with the standards. Whether noncompliance improves or impairs information quality remains an empirical question that we seek to address in this study.

Theory Development and Research Hypotheses

Using a large sample of firms from 21 countries, Barth et al. (2008) compared accounting information characteristics for firms that adopt IAS to a matched sample of firms that do not adopt IAS in order to investigate whether reporting under IAS is associated with predictable differences in accounting quality. Their overall results suggest that IAS improves accounting quality, consistent with the objective of the IASB. In addition, the study finds that the financial statement information produced by IAS-adopting firms provides more value relevant earnings and book values, based on both price and returns models, than firms that do not adopt IAS. Similarly, Vann (2012) investigates whether the use of IFRS is associated with the value relevance of accounting information across 16 countries using both price and returns valuation models. The study results show that there are incremental changes in the value relevance of accounting information when firms transition to IFRS.

Although it might seem that IFRS adoption is associated with a predictable improvement in accounting quality and value relevance, Barth *et al.* (2008) argue that a lax enforcement of these high-quality standards

may result in limited compliance, thereby undermining the effectiveness of these standards in producing high-quality information. Similarly, Armstrong *et al.* (2012) believe that variation in the implementation and enforcement of IFRS could lead to an increase in opportunistic managerial discretion, thus undermining the effectiveness of IFRS in producing high-quality information. Consequently, it cannot be assumed that the adoption of IFRS will necessarily lead to greater value relevance of financial statement information in all jurisdictions. Kothari (2000) similarly argues that the quality of accounting information is influenced not only by the quality of accounting standards but also by the existence and enforcement of effective laws governing accounting standards. Thus, if enforcement of accounting standards is weak, the quality of accounting information is likely to be poor, regardless of the quality of accounting standards (Kothari, 2000). Interestingly, the literature on compliance with the IFRS provides substantial evidence of noncompliance among firms that claim to fully comply with IFRS (e.g., Glaum and Street, 2003; Al-Shammari *et al.*, 2008; Alfraih and Alanezi, 2012).

Despite the extensive literature on value relevance, the research fails to distinguish between accounting regulations and the actual implementation of accounting standards. Although the literature on value relevance theoretically links the quality of accounting information to the enforcement of effective implementation of accounting standards (e.g., Kothari, 2000; Barth *et al.*, 2008; Armstrong *et al.* 2012), no known empirical research explores the association between the extent of compliance with accounting standards and the value relevance of accounting information.

Based on the potential improvement in value relevance associated from *complying* with IFRS standards and based on the assumption that lax enforcement of IFRS standards may result in limited compliance, which would undermine the effectiveness of IFRS in giving market participants high-quality information, this study predicts that the greater the level of IFRS compliance, the greater the value relevance of earnings and book values to investors. Therefore, it is hypothesized that

H1: *The higher the level of compliance with IFRS requirements, the greater the value relevance of reported earnings.*

H2: *The higher the level of compliance with IFRS requirements, the greater the value relevance of reported book values.*

DATA AND METHODOLOGY

Sample Selection and Data Sources

The 2010 Annual Report for the Kuwait Stock Exchange (KSE) shows that, by the end of 2010, there were 204 Kuwaiti companies listed on the KSE. The most recent annual consolidated financial statements available at the time of the analysis were the fiscal 2010 financial statements. In light of the time needed to assess the compliance level and the number of firms to be analyzed and since mandatory disclosure policies are relatively constant and rarely change overtime (Botosan, 1997), the study sample was limited to the year 2010. Due to their financial characteristics, 68 financial firms were excluded from the sample. Additionally, 17 firms were also excluded due to data unavailability. The final sample for measuring the value relevance of IFRS mandatory disclosures is comprised of the remaining 119 nonfinancial firms. The primary data sources for investigating the extent to which KSE-listed firms comply with mandatory IFRS disclosures and assessing the value relevance of accounting information are the companies' consolidated financial statements and share prices. All the required consolidated financial statements for the KSE companies and share price data were obtained from the KSE Auto Documentation and Archival Department at the KSE.

Measurement of the Extent of Compliance with IFRS

To explore the association between the level of compliance with IFRS and the value relevance of accounting information, a measure of the extent of compliance with IFRS must first be established. Consistent with prior compliance research (e.g., Glaum and Street, 2003; Al-Shammari *et al*., 2008; Alfraih and Alanezi, 2012), the extent of compliance with IFRS among KSE-listed firms is measured using a comprehensive self-constructed compliance checklist (*CINDEX*). The self-constructed compliance index was developed based on the applicable and relevant IAS and IFRS for the Kuwaiti financial reporting environment in the year 2010. This index is recognized to be a reliable and valid instrument for measuring the IFRS-mandatory disclosure (Cooke and Wallace, 1989).

There were 37 IAS/IFRS applicable and effective at the end of 2010. However, not all of these standards were applicable or relevant to this study and the Kuwait financial reporting environment. The assessment of the applicability of IFRS reveals that there are 13 IAS/IFRS considered not to be relevant to the study period or not to be applicable to the reporting environments of the KSE-listed firms sample used in the study. Consequently, of the 37 effective standards by the end of 2010, only 24 standards are deemed applicable to the investigation of the extent of compliance by the sample KSE-listed firms. The justifications for considering these standards as not relevant to this study and not applicable to the Kuwaiti financial reporting environments are as follows:

IFRS 1 (*First-time Adoption of International Financial Reporting Standards*) technically does not apply to KSE-listed firms, because any firm requesting listing on the KSE must provide audited financial statements in full compliance with IFRS related to the three years prior to the listing request. IFRS 6 (*Exploration for and Evaluation of Mineral Resources*), IAS 20 (*Accounting for Government Grants and Disclosure of Government Assistance*), and IAS 41 (*Agriculture*) are deemed not applicable because none of the 119 firms examined performed any activities related to these standards. Although IAS 39 (*Financial Instruments: Recognition and Measurement*) and IAS 32 (*Financial Instruments: presentations*) are qualifying standards and all KSE-listed firms are obligated to comply with them, there are no substantive disclosure requirements associated with these standards. IAS 12 *(Income Tax*) is not applicable to the Kuwaiti financial environment because income taxes are not levied on the income of KSE-listed companies. IAS 19 *(Employee Benefits*) and IAS 26 (*Accounting and Reporting by Retirement Benefit Plans*) are not applicable to the Kuwaiti financial environment because KSE-listed firms are obligated to follow the local labor and social security laws. IAS 29 (*Financial Reporting in Hyperinflationary Economies*) is not applicable to the Kuwaiti economy because the inflation rate ranged from 2% to 11% during the 2007 to 2010 period (CBK, 2014). Since the focus of this study is on annual reports of nonfinancial firms, IAS 34 (*Interim Financial Reporting*), IFRS 4 (*Insurance Contracts*), and IFRS 7 (*Financial Instruments: Disclosures*) are deemed not relevant to this study and thus are excluded. Although IAS 39 (*Financial Instruments: Recognition and Measurement*) and IAS 32 (*Financial Instruments: presentations*) are qualifying standards, there are no substantive disclosure requirements associated with these standards.

In constructing and developing the compliance checklist (*CINDEX*), the official International Accounting Standard Board (IASB) volume for 2010 is used to obtain details about each IAS/IFRS disclosure requirement. Based on the requirements of each standard, a comprehensive checklist is developed to address each disclosure requirement of the 24 standards applicable to the study period and Kuwaiti financial environment. The checklist focuses on mandatory disclosures that are required in financial statements and footnotes. Disclosures that are explicitly voluntary or merely encouraged and suggested by IFRS are not considered relevant to this study, and, thus, they are not included in the checklist. For the 24 applicable IAS/IFRS, 397 mandatory disclosure requirements are obtained. To ensure completeness and comprehensiveness, the checklist is validated by having it reviewed by academic experts and practicing professionals. Table 2 shows the number of disclosure requirements for each of the 24 IFRS included in the compliance checklist (*CINDEX*).

Table 2: Number of Disclosure Requirements for Each IFRS Included in CINDEX

Standard	Title	Number of Disclosure Requirements
IFRS 2	Share-Based Payment	17
IFRS 3	Business Combinations	22
IFRS 5	Non-Current Assets Held for Sale and Discontinued Operations	15
IFRS 8	Operating Segments	30
IAS 1	Presentation of Financial Statements	69
IAS 2	Inventories	9
IAS 7	Cash-Flow Statements	10
IAS 8	Accounting Policies, Changes in Accounting Estimates and Errors	20
IAS 10	Events after the Reporting Period	4
IAS 11	Construction Contracts	8
IAS 16	Property, Plant, and Equipment	15
IAS 17	Leases	21
IAS 18	Revenue	3
IAS 21	Effects of Changes in Foreign Exchange Rates	8
IAS 23	Borrowing Costs	2
IAS 24	Related Party Disclosures	21
IAS 27	Consolidated and Separate Financial Statements	12
IAS 28	Investments in Associates	14
IAS 31	Interests in Joint Ventures	10
IAS 33	Earnings Per Share	7
IAS 36	Impairment of Assets	31
IAS 37	Provisions, Contingent Liabilities, and Contingent Assets	15
IAS 38	Intangible Assets	13
IAS 40	Investment Property	21
Total	24 Standards	397

This table shows the number of disclosure requirements for each of the 24 IFRS included in the compliance checklist (CINDEX).

Consistent with Cooke (1989), Street and Bryant (2000), Street and Gray (2001), Glaum and Street (2003), and Al-Shammari *et al.* (2008), an equal weighting is assigned to each of the items on the *CINDEX*. Accordingly, each of the disclosure requirements mentioned in the *CINDEX* is coded one (1) if the required disclosure has been made and zero (0) if it has not. When the required disclosure is not applicable to the firm, the item is dropped from the scoring system for that firm. This scoring procedure is based on a careful review of the complete company annual report. Following Cooke (1989), the total disclosure (TD) score for a company is additive, as follows:

$$TD = \sum_{i=1}^{m} d_i$$

where $d = 1$ if item d_i is disclosed, $d = 0$ if item d_i is not disclosed, and $m \leq n$

After the total disclosure score (TD) is obtained for a company, an index can be constructed to measure the relative level of corporate disclosure. The index is the ratio of a company's actual disclosure score (TD) to the maximum score (M) that the company is expected to achieve if the company fully complies with the mandatory disclosure requirements of IFRS. As a result, a company is not penalized for omitting a disclosure item that is not relevant or applicable to its business. Consequently, the maximum score (M) a company can earn may vary from company to company and is computed as follows:

$$M = \sum_{i=1}^{n} d_i$$

where d is the expected item of disclosure, and n is the number of items that the company is required to disclose.

Accordingly, the disclosure compliance checklist (*CINDEX*) for each firm is calculated by dividing the total number of mandatory disclosures (TD) that are provided by a company by the total number of applicable mandatory disclosures (M):

$$CINDEX = \frac{TD}{M}$$

This results in a *CINDEX* score with a range between zero to one.

Empirical Valuation Model Assessing Value Relevance

Ohlson (1995) develops a model that links a firm's market value to earnings and book values. In this model, current earnings are considered as a proxy for abnormal earnings, while book value is considered as a proxy for the present value of expected future normal earnings. The Ohlson's model (1995) expresses a firm's market value (proxied by the firm's stock price) as a linear function of earnings, book values, and other value relevant information. The model has many appealing properties, and it provides a useful benchmark for conceptualizing how market value relates to accounting data and other price-relevant information (Ohlson, 1995). The model is based on three analytically straightforward assumptions. First, the present value of expected dividends determines the market value. Second, accounting data and dividends satisfy the clean surplus relation, and the dividends reduce book value without affecting current earnings. The clean surplus is considered satisfied when the ending book value equals the beginning book value plus income minus dividends (Lundholm, 1995). Third, a linear model frames the stochastic time-series behavior of abnormal earnings. The variable of abnormal earnings is defined as current earnings minus the risk-free rate times the beginning of the period book value – that is, earnings minus a charge for the use of capital.

The three assumptions lead to a linear, closed-form, valuation model in which value equals book value plus a linear function of current abnormal earnings and the scalar variable representing other information (Ohlson, 1995). Ohlson's theoretical model (1995) has been extensively used by researchers to empirically examine the value relevance of accounting earnings and book values (e.g., Hellstrom, 2006; Barth *et al.,* 2008; Alfraih and Alanezi, 2011; Vann, 2012). The model is specified as follows:

$$P_{it} = \beta_0 + \beta_1 EPS_{it} + \beta_2 BVS_{it} + \varepsilon_{it} \tag{1}$$

where

P_{it}	=	stock price per share for firm i at time t, three months after the fiscal year end of time t
EPS_{it}	=	the earnings per share of firm i at time t
BVS_{it}	=	the book value per share of firm i at time t
t	=	2010, corresponding to the fiscal year 2010
ε_{it}	=	other value relevant information

The statistical association between stock price and both earnings and book values is used as the primary metric to measure the value relevance of accounting numbers. If accounting variables – earnings and book values – are value relevant to investors, then there will be an association between stock price, earnings and book values, and the coefficients of earnings and book values will be statistically significant. This association is measured by the explanatory power (R^2) of the regression model.

Several studies have documented that the value relevance of earnings and book values can be influenced by several factors. These factors include the earnings sign (positive or negative) (Barth *et al.*, 2008), industry categories (Hellstrom, 2006), and firm size (Alfraih and Alanezi, 2011). Consequently, the price

model developed by Ohlson (1995) incorporates proxies for profitability, industry categories, and firm size as control variables.

Assessing the Association between Value Relevance and the Level of Compliance with IFRS

The goal of this study is to explore whether the extent of compliance with IFRS is associated with the value relevance of accounting numbers. Assuming greater compliance with IFRS is valued by investors, then compliance represents additional information that investors incorporate into their valuation models. To test the study hypotheses (H1 and H2), a level-of-compliance dummy variable (DCINDEX) that is equal to one (1) if the firm achieves a level of compliance higher than the sample median and zero (0) otherwise is included in the price model to capture the influence of the level of compliance on the value relevance of accounting earnings and book values. In addition to the level of compliance with IFRS, profitability, industry categories, and firm size are included in the price model as control variables to capture their influence.

To further examine the impact of level of compliance on the value relevance of accounting earnings and book values, the compliance level is collapsed from the high/low category to high/medium/low category. The percentile rank approach is used to classify the compliance level into high/medium/low. A level of compliance variable (*TCINDEX*), which is equal to (2) if the firm achieves a level of compliance above 75 percentile, (1) if the firm achieves a level of compliance between 75 and 25 percentile, and (0) otherwise is included in the price model to capture the influence of the level of compliance on the value relevance of accounting earnings and book values.

Based on the potential improvement in value relevance of accounting information to market participants from complying with the IFRS standards it is predicted that the higher the level of compliance, the greater is the value relevance of earnings (H1) and book values (H2). Accordingly, a significant positive *DCINDEX* or TCINDEX coefficient in the valuation models (as depicted in equation 2) will indicate that greater compliance is considered value relevant to investors.

Extended Price Model

The extended price model that incorporates the level of compliance with IFRS, profitability, industry categories, and firm size is as follows:

$$P_{it} = \beta_0 + \beta_1 |EPS_{it}| + \beta_2 BVS_{it} + \beta_3 DCINDEX \text{ or } TCINDEX_{it} + \beta_4 LOSS_{it} + \beta_5 IND\_INDUS_{it} + \beta_6 IND\_SERV_{it} + \beta_7 LSIZE_{it} + \varepsilon_{it} \qquad (2)$$

where

P_{it}	=	stock price per share for firm i at time t, three months after the fiscal year end of time t
$|EPS_{it}|$	=	the absolute value of earnings per share of firm i at time t
BVS_{it}	=	the book value per share of firm i at time t
DCINDEX	=	dummy variable that equals 1 if the firm achieves a level of compliance higher than the median level of compliance for all sample firms and zero otherwise
TCINDEX	=	dummy variable coded 1 if the firm achieves a level of compliance higher than the median level of compliance for all sample firms and zero otherwise
LOSS	=	dummy variable that equals 1 if the firm achieves negative earnings and 0 otherwise
IND_INDUS	=	dummy variable that equals 1 for firms in the industrial category, and 0 otherwise
IND_SERV	=	dummy variable that equals 1 for firms in the services category, and 0 otherwise (the omitted industry category when all categories are zero is the real estate category)

LSIZE   = the natural logarithm of total assets of firm *i* at time *t*

t   = 2010 fiscal year

As mentioned, if greater IFRS compliance is valued by investors, then compliance represents additional information that investors can incorporate into their valuation models. A significant, positive *DCINDEX* (or *TCINDEX*) coefficient indicates that investors consider greater compliance to be value relevant, which provides support for H1 and H2. However, firm size and industry category are expected to have influence on the extent of compliance with IFRS and the value relevance of earnings and book values.

In this situation, it could be argued that the extended price model that incorporates the *DCINDEX* (or *TCINDEX*) might capture only the influence of firm size and industry category that correlate with compliance level. Consequently, observing a significant *DCINDEX* (or *TCINDEX*) coefficient in the extended price model might not be considered as having independent explanatory power in the valuation models. To resolve this situation (See, for instance, Gordon *et al.,* 2006), a two-stage, least-squares regression method is used in which the compliance level (*DCINDEX* or *TCINDEX*) is first regressed on the common explanatory variables (firm size and industry category) to estimate the portion of *DCINDEX* (or *TCINDEX*) that is associated with the common explanatory variables.

The specification of the model is as follows:

$$DCINDEX \text{ or } TCINDEX = \beta_0 + \beta_1 SIZE + \beta_2 IND\_INDUS + \beta_3 IND\_SERV + RESIDUAL \tag{3}$$

Alternatively, the *RESIDUAL* variable obtained from the above model (model 3) is used as a proxy for the independent effect of *DCINDEX* (or *TCINDEX*) in the sensitivity analysis. Consequently, the *RESIDUAL* variable replaces the *DCINDEX* (or *TCINDEX*) in the extended price model in the sensitivity analysis. A significant, positive *RESIDUAL* coefficient in the valuation model indicates that greater compliance is considered value relevant to investors, and indicates support for H1 and H2.

RESULTS

Descriptive Statistics for the Extent of Compliance with IFRS-Required Disclosures

Table 3 presents descriptive statistics for CINDEX. Panel A indicates that the mean (median) CINDEX score for all KSE-listed nonfinancial firms in 2010 was 71.2% (72%), with a minimum score of 41% and a maximum of 94%. The results show that no KSE-listed nonfinancial firm complied fully with all the IFRS-required disclosures. Table 3, Panel B presents the frequency distribution of *CINDEX* scores for the firms in 2010. The statistics show that 14% of the firms achieved an IFRS-compliance score between 41 and 59%. Thirty-two% achieved scores between 60 and 69%, and 34% achieved scores between 70 and 79%. Only 20% achieved scores above 79%. Thus the frequency distribution of *CINDEX* scores among the 119 listed nonfinancial firms in 2010 reveals a noticeable variation in IFRS-compliance levels across KSE-listed firms.

Table 4 extends the descriptive statistics to compliance with each of the 24 IFRS/IAS-relevant standards. The results further show a noticeable variation in the level of compliance among standards. The mean compliance ranged from 49% for the IFRS 2 (Share-Based Payment) to 90% for IAS 18 (Revenue). Taken together, the Tables 3 and 4 results suggest that compliance may be a material factor impacting the value relevance of accounting information for these firms.

Table 3: Descriptive Statistics for the IFRS Compliance Index (CINDEX) in Financial Statements for 2010

Panel A: Descriptive Statistics for *CINDEX*						
Dependent Variable	N	Mean	Median	Standard Deviation	Minimum	Maximum
CINDEX	119	0.712	0.720	0.103	0.41	0.94

Panel B: Frequency Distribution of *CINDEX* Scores			
CINDEX Range	Number of Firms	Percentage	Cumulative Percentage
0.41–0.49	2	2	2
0.50–0.59	14	12	14
0.60–0.69	38	32	46
0.70–0.79	41	34	80
0.80–0.89	17	14	94
0.90–0.94	7	6	100
Total	119	100	

This table shows descriptive statistics for the IFRS compliance index (CINDEX) in financial statements for 2010. Panel A shows the descriptive statistics for CINDEX. Panel B shows frequency distribution of CINDEX scores.

Table 4: Descriptive Statistics for Compliance Index Scores (CINDEX) by Standards

Standard	Title	Mean	Min.	Max.	Number of Disclosures Requirements
High-Level Compliance Group					
IAS 1	Presentation of Financial Statements	0.84	0.69	1.00	69
IAS 7	Cash-Flow Statements	0.80	0.00	1.00	16
IAS 16	Property, Plant, and Equipment	0.86	0.20	1.00	15
IAS 18	Revenue	0.90	0.33	1.00	3
IAS 27	Consolidated and Separate Financial Statements	0.89	0.17	1.00	12
IAS 33	Earnings Per Share	0.85	0.28	1.00	7
Medium-Level Compliance Group					
IAS 2	Inventories	0.75	0.11	1.00	9
IAS 8	Accounting Policies, Changes in Accounting Estimates, and Errors	0.68	0.00	1.00	20
IAS 10	Events after the Reporting Period	0.72	0.00	1.00	4
IAS 23	Borrowing Costs	0.65	0.00	1.00	2
IAS 24	Related Party Disclosures	0.68	0.00	1.00	21
IAS 28	Investments in Associates	0.67	0.00	1.00	12
IAS 31	Interests in Joint Ventures	0.69	0.00	1.00	10
IAS 38	Intangible Assets	0.71	0.00	1.00	13
IAS 40	Investment Property	0.65	0.10	1.00	21
IFRS 3	Business Combinations	0.65	0.00	1.00	22
Low-Level Compliance Group					
IAS 11	Construction Contracts	0.52	0.00	1.00	8
IAS 17	Leases	0.40	0.00	1.00	21
IAS 21	Effects of Changes in Foreign Exchange Rates	0.47	0.00	1.00	8
IAS 36	Impairment of Assets	0.55	0.00	1.00	31
IAS 37	Provisions, Contingent Liabilities, and Contingent Assets	0.50	0.00	1.00	15
IFRS 2	Share-Based Payment	0.49	0.00	1.00	17
IFRS 5	Noncurrent Assets Held for Sale and Discontinued Operations	0.53	0.25	1.00	15
IFRS 8	Operating Segments	0.51	0.00	1.00	30

This table shows descriptive statistics for compliance index scores (CINDEX) with each of the 24 IFRS/IAS-relevant standards.

Descriptive Statistics for Dependent and Independent Variables Used in the Valuation Model

Table 5 presents the descriptive statistics for dependent and independent variables used in the price model. The results show that all variables used in the valuation model have a reasonable degree of variations with the greatest variation evident for the firms' stock price (P) and firm size (SIZE). Firm size (total assets)

varied significantly, ranging from KD 3.48 million to KD 3490.93 million, with a mean of KD 135.08 million. Due to the variation from normality, the stock price and size variables were transformed using natural log transformations. Further analysis of profitability of nonfinancial firms in 2010 (not shown in tables) revealed that approximately 81% of KSE-listed firms were profit firms while only 19% were loss firms.

Table 5: Descriptive Statistics Based on Price Model Variables

Variable	N	Mean	Std. Dev.	Min.	Max.
P_{it}	119	0.31	0.51	0.02	2.00
BVS_{it}	119	0.23	0.21	0.03	1.13
EPS_{it}	119	0.01	0.05	–0.14	0.28
$SIZE_{it}$	119	135.08	376.46	3.48	3490.93
$LSIZE_{it}$	119	11.26	1.48	8.16	15.31

This table shows descriptive statistics based on price model variables.All numbers are in Kuwaiti dinar (KD). Variables are defined as follows: N is the number of observations; P_{it} is the stock price per share for firm i at time t, three months after the fiscal year's end of time t; EPS_{it} is the earnings per share of firm i at time t; BVS_{it} is the book value per share of firm i at time t; SIZE is the total assets of firm i at time t (KD million); LSIZE is the natural log of the total assets of firm i at time t (KD million); and t = 2010, corresponding to the year 2010.

Bivariate Correlation Results

Pearson's correlation and Spearman's rank correlation among the variables are presented in Table 6. An examination of the correlation matrix reveals significant pair-wise correlation coefficients for nearly all of the independent variables with the dependent variable (*P*). In particular, the compliance variable *CINDEX* has positive and significant correlations with the dependent variable. Among the independent variables none exhibit excessively high pair-wise correlation coefficients. Thus, multicollinearity is unlikely to be a serious threat to the interpretation of results from estimating the value relevance regression model. Variance inflation factors (VIF) were also examined and were found to be well within acceptable limits.

Table 6: Bivariate Correlations among Dependent and Independent Variables

Variable	P_{it}	BVS_{it}	EPS_{it}	LSIZE	CINDEX
		0.75***	0.71***	0.12**	0.25**
P_{it}	**1.00**				
	0.78***	**1.00**	0.63***	0.27***	0.26***
BVS_{it}					
	0.73***	0.70***	**1.00**	0.15***	0.18***
EPS_{it}					
	0.38***	0.46***	0.50***	**1.00**	0.49***
LSIZE					
	0.25***	0.36***	0.19***	0.37***	**1.00**
CINDEX					

*This table shows bivariate correlations among dependent and Independent Variables. Notes: **, *** Correlation is significant at the 0.05 and 0.01 levels, respectively (two-tailed). Upper-right diagonal presents Spearman's correlation and lower-left diagonal presents Pearson's correlation of variables. Variables are defined as follows: P_{it} is the stock price per share for firm i at time t, three months after the fiscal year's end of time t; EPS_{it} is the earnings per share of firm i at time t; BVS_{it} is the book value per share of firm i at time t; LSIZE is the natural log of the total assets of firm i at time t (KD million); CINDEX is the IFRS-mandated disclosures index score and t = 2010, corresponding to the year 2010.*

Regression Analysis

Table 7 presents the results of the extended price models after incorporating the level of compliance with IFRS (DCINDEX, TCINDEX, or RESIDUAL), profitability, industry categories, and firm size. The regression results show that all the regression models are highly significant (p < 0.01) and each model explains about 76% to 79% of the association between the dependent variable and the independent variables. Furthermore, the estimated coefficients of accounting earnings and book values in all models are strongly positively related with firm value (p < 0.01), suggesting that earnings and book values reported by

KSE-listed nonfinancial firms played an important role in the equity valuation of KSE-listed nonfinancial firms in the year 2010.

Table 7: Results of Regression of Price on Earnings, Book Values, and IFRS Compliance

Dependent Variable: *Stock Price*								
	DCINDEX (High/Low)		TCINDEX (High/Med./Low)		RESIDUAL (Proxy for *DCINDEX*)		RESIDUAL (Proxy for *TCINDEX*)	
Variable	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
Intercept	− 0.15	−1.81*	−0.17	−1.68*	−0.19	−1.92*	−0.21	−1.81*
EPS	3.13	5.80***	3.23	5.92***	3.46	6.26***	3.61	6.35***
BVS	1.19	9.15***	1.17	8.85***	1.15	9.05***	1.15	8.86***
D/TCINDEX	0.08	1.92[++]	0.20	1.88[++]				
RESIDUAL					0.10	1.89[++]	0.16	1.67[++]
LOSS*EPS	−2.25	−2.57[+++]	−2.12	−2.53[+++]	−2.04	−2.37[+++]	−1.94	−2.31[+++]
IND_INDUS	0.23	1.75*	0.25	1.68*	0.25	2.32**	0.27	2.34**
IND_SERV	0.19	2.87***	0.21	2.57***	0.22	2.52***	0.22	2.55***
LSIZE	0.10	3.52	0.09	3.22***	0.10	3.74***	0.10	3.48***
Adj. R^2		0.79		0.78		0.78		0.76
F-stat		64.04***		62.54***		61.81***		61.69***
n		119		119		119		119

This table shows the results of regression of price on earnings, book values, and IFRS compliance. ++, +++ Significant at the 0.05 and 0.01 levels respectively (one-tailed); *, **, *** significant at the 0.1, 0.05, and 0.01 levels respectively (two-tailed). P_{it} is the stock price per share for firm i at time t, three months after the fiscal year's end of time t; EPS_{it} is the earnings per share of firm i at time t; BVS_{it} is the book value per share of firm i at time t; DCINDEX is a dummy variable that equals 1 if the firm achieves a level of compliance higher than the median level of compliance for all sample firms and 0 otherwise; TCINDEX is a variable that equal 2 if the firm achieves a level of compliance above 75% for all sample firms, 1 if the firm achieves a level of compliance between 75 and 25% and 0 otherwise; RESIDUAL is obtained from a two-stage, least-squares regression method, where the level of compliance (DCINDEX or TCINDEX) is first regressed on the common explanatory variables (firm size and industry category) to estimate the portion of DCINDEX (or TCINDEX) associated with the common explanatory variables; LOSS is a dummy variable that equals 1 if the firm achieves negative earnings and 0 otherwise; IND_INDUS is a dummy variable that equals 1 for firms in the industrial category and 0 otherwise; IND_SERV is a dummy variable that equals 1 for firms in the service category and 0 otherwise (the omitted industry category when all categories are 0 is the real estate category); LSIZE is the natural log of the total assets of firm i at the end of time t; and t =2010.

Consistent with expectations (H1 and H2) the results show that the coefficient estimates for the compliance variable (*DCINDEX, TCINDEX,* and *RESIDUAL)* are positive and significant in all models ($p < 0.05$). These finding indicate that greater compliance with IFRS in the financial reports is significantly associated with firm value, and thus suggesting that greater compliance with IFRS is significantly valued by market participants in valuing accounting earnings and book values. As predicted, the results also show that all the control variables related to industry categories and firm size have coefficient estimates that are strongly positively related to firm value. These results are consistent with the value relevance literature findings and confirm the influence of industry categories, and firm size on the value relevance of earnings and book values. In addition, the results reveal that the coefficient estimates of the profitability variable *(LOSS*EPS)* are negative and significant ($p < 0.01$) in all models.

CONCLUDING COMMENTS

This study examines the association between the levels of compliance with International Financial Reporting Standards (IFRS) and the value relevance of accounting information to market participants. In particular, this study investigates whether the extent of compliance with IFRS influences the value relevance of accounting information. A review of value relevance literature shows that a prominent characteristic in most of the previous studies on value relevance of accounting information is a failure to distinguish between accounting standards that are *used* and those that are *actually* implemented. Interestingly, the review of the literature on compliance with IFRS shows substantial evidence of noncompliance with IFRS by companies that claim to comply with the standards. Thus, there is a clear need for research that examines the association between compliance with IFRS and the value relevance of accounting information.

Based on this motivation, we examine the value relevance of compliance with IFRS by KSE-listed nonfinancial companies in 2010. Kuwait offers an ideal setting to explore the value relevance of IFRS compliance because of its long IAS/ IFRS history and evidence that accounting standard compliance is not strongly enforced. In this setting, it is predicted that KSE-listed firms with greater IFRS compliance are more likely to have greater earnings (H1) and book values (H2) value relevance than firms that are associated with lower compliance. These hypotheses are based on the assumption that lax enforcement of IFRS standards may result in limited compliance and thus, undermine the effectiveness of these standards in producing high-quality information for market participants.

The hypotheses are tested by first developing a compliance index to capture the level of compliance with the 24 applicable IFRSs among all KSE-listed nonfinancial firms in 2010. The value relevance of compliance with IFRS is then tested by applying the Ohlson (1995) valuation model inclusive of the compliance index variable. The results of the price model reveal a significant association between the level of compliance with IFRS and the value relevance of earnings and book values to KSE investors. Thus, in support of the hypotheses, compliance represents additional information that investors incorporate into their valuation models.

Although prior studies have theorized a positive association between the quality of accounting information and the existence and enforcement of effective laws that ensure compliance with those standards (see Kothari, 2000; Barth *et al.*, 2008), there is no known research that empirically explores the association between the extent of compliance with accounting standards and the value relevance of accounting information. Hence, this study is the first to offer empirical evidence to support the theoretical expectation of the association between the level of compliance with IFRS and the value relevance of accounting information to market participants.

These findings have important policy implications for standard setters and enforcement bodies. In particular, they highlight the importance of establishing and maintaining adequate monitoring and enforcement mechanisms to ensure compliance with accounting standards. In addition, the finding that stricter compliance with IFRS improves the value relevance of accounting information highlights the importance of full compliance with IFRS and not just mere adoption.

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THE IMPACT OF DIVERSIFYING ACQUISITIONS ON SHAREHOLDER WEALTH: EVIDENCE FROM TURKISH ACQUIRERS

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ABSTRACT

This study examines the impact of diversifying acquisitions on acquiring Turkish firms. Using a sample of 98 acquisitions during 2000-2011, the study finds that acquiring firms experience statistically significant wealth gains surrounding the announcement date. The cross-sectional regression results show that diversifying acquisitions create higher wealth gains to acquirers compared with focused acquisitions. The results also show that smaller firms experience higher abnormal returns compared to larger firms and that acquiring public firms result in higher wealth gains to acquirers. Finally, the findings indicate that results differ among group affiliates and independent firms. If an acquisition is made by an independent firm, diversifying acquisitions generate higher abnormal returns compared to focused acquisitions. However, if the acquirer is a group affiliate, there is no significant difference between the two types of acquisition activities in terms of wealth effects.

INTRODUCTION

In recent years, mergers and acquisitions (M&As) attracted the attention of both scholars and policy makers. The dominant rationale used to explain M&A is that acquiring firms seek improved financial performance. M&A activities can be considered as a means of corporate diversification. In finance literature, many theories on benefits and costs associated with diversification have been developed. In particular, the benefits of corporate diversification, which result in diversification premium, can originate from the theories of an efficient internal capital market, coinsurance effect, economies of scope, and market power. On the other hand, the costs arising from corporate diversification that cause diversification discount are theoretically justified by agency arguments, overinvestment and cross-subsidization problem, and inefficient resource allocation within the firm (Dey and Benerjee, 2011; Maksimovic and Phillips, 2007; Martin and Sayrak, 2003; Kiymaz and Mukherjee, 2000). The average net effect of diversification through M&As is an empirical question.

Several studies conclude that diversification destroys value and cross-sectional studies implicitly assume that single-segment firms are a valid benchmark for valuing the divisions of conglomerates (Lang and Stulz, 1994; Berger and Ofek, 1995). The excess value method for estimating the value effects of corporate diversification can be misleading if there are systematic differences between the divisions of conglomerates and the single-segment firms to which they are benchmarked. Failure to account for these differences can lead to false inferences about the effect of corporate diversification on firm value. To assess the extent to which these selection bias issues are important, we examine a sample of firms that expand by acquisition. Using an event study method, we explore the abnormal returns of the Turkish

acquirer on announcing takeovers. Our objective is to study whether diversifying and non-diversifying takeovers differ by acquirer abnormal returns once we control other reasons affecting returns. We find positive abnormal returns to acquiring firms during various event windows. The results of the cross-sectional regression analysis show that diversifying acquisitions produce higher abnormal returns compared to focused acquisitions. Further, we find statistically significant negative coefficient for size of acquirers, showing that smaller firms experience higher abnormal returns compare to larger firms. These findings are in line with the existing literature. We further find that firms acquiring publicly traded target firms experience higher returns. This finding is contrary to findings of other studies.

The rest of the paper is organized as follows. The next section provides a review of the literature. Then, we explain our data collection procedure and present sample description and methodology. The control variables used in multiple regression analysis is presented in the next section. The empirical findings for wealth gains and factors explaining wealth gains are reported in the following section. The final section concludes the paper.

LITERATURE REVIEW

Event studies in the diversification literature analyze the value effects of refocusing events such as spin-offs or diversifying events such as mergers and acquisitions (M&As) on firms involving these activities. Literature report mixed results on market reactions to diversifying acquisitions. Morck, Shleifer, and Vishny's (1990) study is often cited as evidence of a negative market reaction to diversifying acquisitions. This study analyzes a sample of 327 US acquisitions between 1975 and 1987 and reports negative announcement day returns for bidding firms. Agrawal, Jaffe, and Mandelker (1992) and Morgan, Nail, and Megginson (2000) also provide evidence of negative returns of acquiring firms that increase corporate diversification. Examining cross-border M&A transactions over the period 1990 to 1999, Dos Santos, Errunza, and Miller (2008) find no evidence that US acquirer firms' excess values decrease in the two-year period surrounding the acquisition. They also show that US acquirers experience a significant post-merger drop when they are involved in unrelated M&As.

Comment and Jarrell (1995) find that increases in focus, following asset sales, are associated with positive abnormal stock returns in the year in which focus increases. Similarly, John and Ofek (1995) document improvements in operating performance over the three years following a refocusing decision. Daley, Mehrotra, and Sivakumar (1997) find evidence of adding value by refocusing spin-offs, and Desai and Jain (1999) show that long run returns after a refocusing spin-off are greater than the returns for non-focus-increasing spin-offs. Sicherman and Pettway (1987) report in a sample of 147 US M&A announcements that related acquisitions increase the shareholder wealth of acquiring firms whereas the opposite is true for unrelated acquisitions. In contrast to studies documenting a diversification discount, there is also contrary empirical evidence. For instance, Graham, Lemmon, and Wolf (2002) use Compustat data for 356 firms from 1980 to 1995 that have made acquisitions and find that these characteristics of the target explain nearly all the decline in the excess value. Walker (2000) also document that related acquisitions did not create higher value than unrelated acquisitions for both targets and acquirers in a sample of 278 US M&A announcements during the period of 1980-1996.

Finally, there are studies reporting positive market reactions to diversifying acquisitions. Kaplan and Weisbach (1992) mirror the general result of acquisition event studies that bidder returns are slightly negative but combined returns to bidder and targets are found to be positive. Schipper and Thompson (1983) find significant positive abnormal performance associated with the announcement of acquisition programs by diversified firms in 1960s. In a later study, Hubbard and Palia (1999) analyze 392 unrelated acquisitions for the period 1960-1971 and confirm the existence of positive abnormal returns for the bidding firm. Hyland and Diltz (2002) find positive abnormal returns for diversifying acquisitions for the 1980s and 1990s. Among non-US studies, Sudarsanam, Holl, and Salami (1996) analyze a sample of 429

deals made by UK companies during 1980-1990 and do not find any difference between the gains to shareholders in related and unrelated acquisitions. In a more recent European study, Martynova and Renneboog (2011) report that bidders experienced significantly higher short-term returns around the announcement of related acquisitions. Kiymaz (2006) find that both divesting and acquiring firms experience statistically significant wealth gains during the sell-off announcements. For the matched sample, only divesting firms continue to have statistically significant wealth gains. The author also reports direct relationships between wealth gains to divesting firms and motive announcements related to paying debt and increasing firm focus.

Only limited studies have dealt with takeover effects on shareholder wealth in emerging markets. In one of them, Cai (2004) examines acquisition announcements made by public companies in eight East Asian countries from 1993 to 2003 and does not document significant abnormal returns. Kiymaz and Mukherjee (2001) examine the wealth effects of U.S. targets and bidders involved in cross-border mergers with firms in other countries during 1982–1991, and show that wealth effects vary, depending on country affiliations of two merging firms, and are inversely related to the degree of economic co-movement between the two countries. In a follow up study, Kiymaz (2004) finds that while U.S. targets experience positive significant wealth gains, U.S. bidders encounter insignificant wealth gains during the merger announcements. There are also differences in wealth gains with respect to industry classification and to the regional location of foreign targets and bidders. The macroeconomic variables, including foreign and U.S. economic conditions, economic development of target country, exchange rate volatility with the effectiveness of foreign government, relative size of participants, and control of target largely explain the wealth gains to bidders and targets. In a more recent study, Bhagat, Malhotra, and Zhu (2011) investigate 698 cross-border acquisitions by emerging country firms during the period between 1991 and 2008. The authors find that emerging country acquirers experience a positive and significant market response of 1.09 percent on the announcement day in unrelated acquisitions. This study intends to provide evidence from a rapidly growing emerging market by examining Turkish acquisitions from corporate diversification perspective.

DATA AND METHODOLOGY

Data: The sample includes acquisition announcements by the firms listed on the Istanbul Stock Exchange (ISE) during January 2000 and December 2011 period. The list of these transactions was obtained from Dealwatch database whereas İş Yatırım (İş Investment) provided the daily stock price data. The official announcement date for each transaction also relies on Dealwatch. We screened the sample for the following: (1)The transaction was completed; (2) The acquiring firm is headquartered in Turkey; (3) The acquiring firm was listed on the ISE with daily stock prices available at least 250 trading days prior and 5 trading days after the announcement date; (4) There were no contaminating acquisition announcements of acquiring firm during 250 days before and after the given transaction.

Table 1: Sample Selection

	Number of Deals
Beginning sample	188
Less: Contaminated events	44
Less: Clustered takeovers	9
Less: Missing data	37
Final sample	98

This table shows the number of remaining firms after screening the sample for contaminated events, clustered takeovers, and companies with missing data.

In case of clustered takeovers where the same company acquires two or more targets within the same day, we take the largest one in transaction value. Acquisitions in different years by the same company are considered separate events as long as estimation and event windows do not overlap. This sample selection

procedure resulted in 98 deals made by 72 companies. Table 1 above provides data on our sample selection procedure. Acquisitions are defined as "diversifying" when the first two-digits of the main industry code of the bidder and the target are not the same and "focused" when the first two-digits of the main industry code of the bidder and target are identical. Table 2 below presents the frequency distribution of focused and diversifying acquisitions based on two-digit SIC codes. Of all the acquisitions, about 64 percent were classified as focused acquisitions while the remaining 36 percent as diversifying acquisitions. This pattern is in line with the literature that most firms are interested in focusing strategy and are in search of synergies. The highest number of acquisitions occurred in 2007 and 2011 with 13 acquisitions. The distribution of sample overtime is even and stable. We also report the distribution of sample by industry affiliation in Table 3. We use Campbell's (1996) classification to group firms.

Table 2: Distribution of Acquisitions by Type and Year

Year	Focused	Diversifying	Total
Pre-2005	19	9	28
2005	4	2	6
2006	6	1	7
2007	7	6	13
2008	6	2	8
2009	6	5	11
2010	9	3	12
2011	6	7	13
Total	**63**	**35**	**98**
Percentage	**64%**	**36%**	**100%**

This table reports the distribution of acquisition type and years. Acquisitions are classified as either focused (bidder and target have the same 2-digit SIC code) or diversified (bidder and target have different SIC codes).

Table 3: Distribution of Acquisitions by Industry Affiliation

	Acquiring Firms		Target Firms	
Industry	No of Firms	%	No of Firms	%
Petroleum industry	0	0	1	1
Finance/real estate industry	18	25	14	14
Consumer durables industry	8	11	13	13
Basic industry	10	14	11	11
Food/tobacco industry	8	11	12	12
Construction industry	9	13	6	6
Capital goods industry	0	0	3	3
Transportation industry	3	4	5	5
Utilities industry	8	11	13	13
Textiles/trade industry	4	6	11	11
Services industry	1	1	7	7
Leisure industry	3	4	2	2
Total	**72**	**100**	**98**	**100**

This table reports industry affiliations of both acquirers and target firms.

Among the 72 bidder firms, Finance/Real Estate industry is on the top with 18 firms, followed by Basic industry (10 firms) and Construction industry (9 firms). The lowest numbers of acquirers is in Services industry with only one firm. Similarly, most target firms operate in Finance/Real Estate industry with 14 firms. Consumer Durables and Utilities industries are in second place with 13 firms each.

Methodology
Standard event study methodology is used to measure the wealth effect of acquisition announcements on acquiring firms' stock prices. The event is the announcement of an acquisition by a Turkish company listed on the ISE. The following single-market model is employed in parameter estimation:

$$R_{i,t} = \alpha_i + \beta_{i,D} \cdot R_{D,t} + \varepsilon_{i,t} \tag{1}$$

where,
$R_{i,t}$ = the rate of return on security i on day t,

$R_{D,t}$ = the rate of return on the ISE-All Share Index,
$\beta_{i,D}$ = the slope of the regression line of the firm i's returns against the returns on the ISE-All Share Index,
α_i = the intercept term,
$\varepsilon_{i,t}$ = the residuals.

An abnormal return (wealth effect) for common stock of firm i on day t is defined as:

$$AR_{i,t} = R_{i,t} - \hat{R}_{i,t} \qquad\qquad (2)$$

where,

$$\hat{R}_{i,t} = \hat{\alpha}_i + \hat{\beta}_{i,D} \cdot R_{D,t} \qquad\qquad (3)$$

in which α_i and $\beta_{i,D}$ are estimated market model parameters obtained by using the pre-estimation period (t = - 250 to t = - 31). The estimation does not include the 30 days prior to the announcement date since information leakage within this range may have an effect on the share price. The expected value of abnormal returns and average abnormal returns is zero in the absence of abnormal performance. The test of significance is performed by following Brown and Warner (1985) and is not illustrated here. In order to test whether the CARs differ between diversifying and focusing acquisitions, we perform a cross-sectional multiple regression analysis. The cumulative abnormal returns (CARs) for the [-2;+2] period around the announcement date are used as the dependent variable in the regression. The following independent variables are included in the model.

Diversifying vs. Focused Acquisitions: Since our main objective is to investigate whether diversifying acquisitions create value, we introduce a dummy variable, DIVERS that is equal to "1" if the first two-digits of the main industry code of the bidder and the target are different. If there exists a diversification premium, the coefficient of this variable would be positive. In case of a diversification discount, the coefficient would be negative.

Cross-Border vs. Domestic Acquisitions: Cross-border M&As may affect acquirer returns in different ways. On the one hand, the acquisition of a foreign target may provide competitive advantage to the bidder through the acquisition of unique resources (Barney, 1991). On the other hand, the lack of country and firm specific knowledge of the foreign target firm could lead to unsuccessful acquisitions (Reuer, Oded, & Ragozzino, 2004). Empirically, Doukas and Travlos (1988) presented evidence of positive abnormal returns to US acquirers for international acquisitions. Kiymaz (2004) also reports positive returns to acquiring firms' shareholders. However, Datta and Puia (1995) and Fatemi and Furtado (1998) reported no significant abnormal to shareholders of acquiring firms in cross-border acquisitions. To investigate whether there is a cross-border effect in our sample, we introduce a dummy variable INT that is equal to "1" if the target is a foreign company, "0" otherwise.

Payment Type: From a theoretical point of view, Jensen (1986) argues that acquisitions financed with cash will generate larger benefits than those accomplished through exchange of stocks because stock acquisitions are unlikely to motivate managers to use resources more efficiently. In addition, Hansen (1987) argues that bidders, in the case of uncertainty in target valuation, make stock offers as they have a "contingency pricing effect" . Finally, an alternative tax-based hypothesis exists that favors stock offers. In cash offers, a larger premium is required because cash acquisitions are immediately taxable but stock acquisitions are tax deferrable until the shares are sold. (Travlos, 1987; Fuller, Netter, & Stegemoller, 2002). Empirical research generally supports the hypothesis that shareholders of acquiring firms view cash offers more positively. For instance, Travlos (1987), Fuller et al. (2002), and Moeller, Schlingemann and Stulz (2003) report higher abnormal returns to bidders in cash acquisitions. To investigate whether the method of payment has an impact on CARs, we use a dummy variable PMT that is equal to "1" for acquisitions paid with cash, "0" otherwise.

Target Type: Empirical studies generally report higher returns for private target acquisitions. For example, Chang (1998), Fuller et al. (2002), Hansen and Lott (1996) and Moeller et al. (2003) report positive abnormal returns to bidders acquiring private targets. Three reasons are given in the previous literature to explain these findings. First, buying and selling private firms and subsidiaries is more difficult. This lack of liquidity makes these investments less attractive and hence offers are generally lower for private firms (Fuller et al., 2002). Second, firms acquiring privately held targets through common stock exchanges tend to create outside block holders which can serve as an effective monitoring device of management, which, in turn, can increase bidder returns (Chang, 1998). A final reason concerns the portfolio preferences of investors. Hansen and Lott (1996) hypothesize that if investors are diversified, management's goal should be to maximize the value of the shareholder's portfolio, not to maximize shareholder value. Thus, when a public bidder acquires a public target, diversified shareholders who own stock in both firms should be indifferent to how the gains from the acquisitions are divided. To investigate whether the type of the target has an impact on wealth gains, we use a dummy variable PUBLIC that is equal to "1" for deals involving public targets, and "0" for private targets.

Cash Reserves of the Acquirer; Jensen (1986) argues that the presence of large free cash flows can compound a firm's agency problem by insulating managers from being monitored by external market forces. Managers at firms with more cash reserves may use that excess cash in making poor investments such as nonproductive acquisitions. which generate lower levels of abnormal returns. Yet, Moeller, Schlingemann and Stulz (2004) do not find support for this hypothesis in the US context. On the other hand, higher free cash flows can also proxy for better recent firm performance, which could be correlated with higher quality managers, who tend to make better acquisition decisions (Masulis, Wang, & Xie, 2007). To investigate whether acquirer's cash reserves have an effect on wealth gains, we use the variable CASH that is measured by total cash divided by total assets of the acquirer at the year-end before the acquisition.

Leverage of the Acquirer: Past studies argue that leverage can be used to limit managerial discretion and discourage managers from conducting empire building activities (Stulz, 1990). Leverage would have a positive impact on the acquirer's announcement return because it would provide managers with the incentive to make more value maximizing acquisitions. Leverage also provides incentives for managers to improve firm performance, since managers have to cede significant control to creditors and often lose their jobs if their firms fall into financial distress. Following the existing literature, we include leverage as a control variable, LEV, defined as a firm's book value of short-term and long-term debt divided by its total assets at the end of the year preceding the acquisition.

Pre-bid Performance of the Acquirer: According to empirical studies, pre-bid acquiring firm performance, usually measured by price-to-earnings (P/E) or market-to-book (MTB) ratios, has a negative impact on abnormal returns. For instance, Rau and Vermaelen (1998) and Sudarsanam and Mahate (2003) find that high P/E acquirers receive significantly negative returns. The authors argue that glamour acquirers (i.e. high P/E or MTB) are overvalued based on superior past performance. Value acquirers (i.e. low P/E or MTB), however, were subject to poor performance in the past and therefore forced to evaluate acquisitions more carefully. Much research cites Roll (1986), who suggested a "hubris" explanation for acquisitions, stating that acquiring firm managers are unaware of how bad their acquisitions are because they seem to become over-optimistic when their company has a strong market value. An alternative explanation could be that executives are under pressure to invest when their companies have a high market value. Competition among acquirers for targets could also be stronger during "hot" market periods, therefore allowing management less time for a careful evaluation. To investigate whether pre-bid acquirer performance affects abnormal returns, we employ the variable PE that is equal to the stock price of the acquirer divided by its net income per share at the end of the year preceding the acquisition.

Size of the Acquirer: Studies such as Banz (1981) and Reinganum (1983, 1992) show that small firms consistently experience significantly larger risk adjusted returns compared to larger firms. In a more recent study, Moeller et al. (2004) find robust evidence that bidder size is negatively correlated with acquirer return measured by announcement period CARs. There are several possible reasons for such observations. First, managers of larger firms may suffer from managerial hubris (Roll, 1986) and may overpay. Second, larger firms tend to make acquisitions by stock, which typically sends a negative signal to the market. Finally, smaller firms are more likely to acquire private firms, thus having a favorable market reaction (Masulis et al., 2007). To control for these effects we use the variable SIZE defined as the natural logarithm of the acquirer's total assets at the year-end preceding the acquisition.
Group Affiliation of the Acquirer

Industrial groups (or holdings) consisting of companies with strong cross-shareholdings are common in Turkey. These groups are somewhat similar to diversified firms since member companies may support each other economically in potentially profitable projects. Previous studies found that sensitivity of investment to cash flow is smaller for group member firms (Lins & Servaes, 2002). Therefore, it is possible that diversification via acquisitions only benefits firms that do not belong to industrial groups. For firms that have a group affiliation, further diversification via acquisitions might not be beneficial because some of the benefits of internal capital markets may already be captured by the group structure (Lins & Servaes, 2002). Therefore, diversifying acquisions made by group affiliates may not be perceived as positive as those made by independent firms. To capture this effect, we include the dummy variable GR which is equal to 1 for group affiliates in the regression equation. We consider a firm to be a group affiliate if the ultimate owner is a holding company. We also include the interaction between diversification dummy and group membership dummy.

Table 4 describes both dependent and independent variables use in cross-sectional regression analysis. Correlation coefficients among independent variables are also reported. We use (-2,+2) event window cumulative abnormal returns (AARs) as our dependent variable. Table 4 also provides descriptive statistics for the variables. The mean cumulative abnormal return over (-2, 2) event window surrounding the acquisition is 2.39 percent. About 36 percent of the acquisitions in our sample are classified as diversifying based on two-digit SIC codes. Around 18 percent of the acquisitions are cross-border and 13 percent were financed with cash. 17 percent of the target companies in the sample are public. The cash reserves of the acquirer firms divided by their total assets has a mean value of 0.11 at the end of the year preceding the acquisition. The leverage of the acquirer has a mean of 0.46 while the average P/E ratio for acquirers registers a mean of 19.09. The mean acquirer size measured by the natural logarithm of its total assets is equal to 20.17. Finally, 56 percent of the acquirer companies in the sample are group affiliates.

EMPRICAL FINDINGS

<u>Wealth Effect</u>

The wealth gains to acquiring firms are calculated by using a market model. The behavior of abnormal returns to acquiring firms surrounding the acquisition announcement is reported in Table 5. We both report average abnormal returns (AARs) and cumulative abnormal returns (CARs) to capture potential news leakage as well as post-announcement market corrections. We use multiple event windows to report wealth gains. As shown on Panel A of Table 5, average abnormal returns (AARs) for days 0 and -2 are positive and statistically significant. However, the AAR on day +3 is negative and significant. As shown on Panel B, over the event windows [-1,0], [-2,0], [-1,+1], and [-2,+2], CARs are positive and statistically significant. For example, during [-2,+2] window, the acquiring firms experience abnormal returns of 2.39 percent. Over the two-day [0,+1], three-day [0,+2] and eleven-day [-5,+5] event windows surrounding the acquisition, the CAARs are also positive but not statistically significant. Over the event window [-10,+10], CAARs is negative but not significant. Overall, the evidence suggests that, at the time of the

announcement, the Turkish market considers acquisitions as a value creating strategy as by the fact that abnormal returns are significantly positive for the majority of event windows considered.

Table 4: Variables Used in Cross-Sectional Regression Analysis

Panel A. Variable Descriptions and Descriptive Statistics			
Variable	**Description of Variable**	**Mean**	**Standard Deviation**
Dependent Variable	(CARs -2,+2)	0.0239	0.0555
Deal variables			
DIVERS	Diversifying vs. focused acquisition: Dummy equal to 1 if the target and the acquirer's main businesses are different	0.3571	0.4816
INTL	Cross-border acquisition: Dummy equal to 1 if the target is not a Turkish company	0.1837	0.3892
PMT	Payment type: Dummy equal to 1 for cash payments	0.1327	0.3409
Target characteristic			
PUBLIC	Public vs. private target: Dummy equal to 1 if the target is a public company	0.1735	0.3806
Acquirers' pre-bid characteristics			
CASH	Cash reserves of the acquirer: Cash / Total Assets	0.1127	0.1357
LEV	Leverage of the acquirer: Total Debt / Total Assets	0.4611	0.2613
PE	Performance of the acquirer: Price per share / Earnings per share	19.0911	35.7294
SIZE	Size of the acquirer: ln (Total Assets)	20.1706	1.9274
GR	Group affiliation: Dummy equal to 1 for group affiliates	0.5612	0.4988

Panel B. Correlation Coefficients									
	DIVERS	**INTL**	**PMT**	**PUBLIC**	**CASH**	**LEV**	**PE**	**SIZE**	**GR**
DIVERS	1								
INTL	-0.0786	1							
PMT	0.0852	-0.0301	1						
PUBLIC	-0.1165	-0.0781	-0.0203	1					
CASH	0.1619	-0.0609	0.0498	-0.054	1				
LEV	-0.0971	0.3081	0.1143	-0.0098	-0.2934	1			
PE	0.0613	-0.0641	-0.1052	-0.1306	0.5377	-0.1831	1		
SIZE	-0.0438	0.3372	0.2252	-0.0054	-0.2378	0.4984	-0.2847	1	
GR	0.187	-0.1647	-0.0786	0.0249	0.0441	-0.1619	0.0322	-0.145	1

This table presents the variables used in cross-sectional analysis. In Panel A, both description of variables and statistical properties are reported. Panel B displays correlation coefficients among independent variables.

Table 5: Abnormal Returns to Turkish Acquirers during Announcements of Acquisitions

Panel A: Average Abnormal Returns (AARs)				
Days	**AARs (%)**	**t-value**	**Positive**	**Negative**
-3	-0.18	-1.04	38	60
-2	1.32	1.69*	59	39
-1	0.25	0.99	46	52
0	0.80	2.27**	46	52
1	-0.15	-0.45	43	55
2	0.18	0.63	47	51
3	-0.41	-2.01**	46	52

Panel B: Cumulative Abnormal Returns (CARs)				
Windows	**CARs (%)**	**t-value**	**Positive**	**Negative**
(-1,0)	1.04	2.58**	56	42
(-2,0)	2.36	3.33***	64	34
(-1,+1)	0.89	1.70*	52	46
(0,+1)	0.65	1.29	46	52
(0,+2)	0.83	1.51	52	46
(-2,+2)	2.39	4.27**	70	28
(-5,+5)	0.22	0.24	44	54
(-10,+10)	-0.18	-0.14	43	55

This table presents the average abnormal returns (AARs) and cumulative abnormal returns (CAR) to Turkish acquirers (N=98) surrounding the announcement of acquisitions. The null hypothesis is that the average abnormal returns (AARs) are not statistically different from zero. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

We also report wealth gains to acquirers with respect to industry affiliation on Table 6 that follows. The results show differences in CARs to acquiring firms based on industry affiliation. The basic industry, construction industry, finance/real estate industry, textiles/trade industry, transportation industry and utilities industry subgroups exhibit statistically significant CARs. With the exception of the average CAR for textiles/trade industry which is negative over the window (-2, 0), CAR values are positive, indicating significant wealth gains. The highest CAR is 6.69 percent for the construction industry over the event window (-2, 0) followed by 5.98 percent for the same industry over the event window (-2,+2). Six of the

ten subgroups display statistically significant wealth gains, indicating that there is a difference in the impact of M&A activities on acquirers based on industry affiliation.

Table 6: Abnormal Returns to Turkish Acquirers by Industrial Classification

	N		CAR (-1,0)	CAR (-1,+1)	CAR (-2,0)	CAR (-2,+2)
Basic industry	12	Mean	1 30	-0.09	3 64	1 75
		t-value	1.50	-0.09	2.96**	1.65
Consumer durables industry	11	Mean	1.45	0.82	-0.18	-0.05
		t-value	0.79	0.30	-0.06	-0.03
Construction industry	11	Mean	-0.03	-0.11	6.69	5.98
		t-value	-0.05	-0.11	2.64**	2.50**
Finance/real estate industry	29	Mean	1.03	1.17	1.76	1.73
		t-value	1.65	1.78*	2.12**	2.91***
Food/tobacco industry	12	Mean	-0.20	1.48	-0.10	1.84
		t-value	-0.35	0.69	-0.03	1.04
Leisure industry	4	Mean	4.88	2.51	3.60	1.15
		t-value	1.23	0.56	2.02	0.76
Services industry	1	Mean	4.20	2.26	18.44	17.94
		t-value	-	-	-	-
Textiles/trade industry	5	Mean	-0.73	-0.20	-3.78	0.43
		t-value	-0.86	-0.14	-2.54*	0.14
Transportation industry	4	Mean	2.91	2.45	3.10	3.00
		t-value	2.07	1.62	4.95**	4.09**
Utilities industry	9	Mean	1.32	0.88	4.45	4.39
		t-value	0.63	0.45	2.21*	1.82

This table displays wealth gains to acquirers with respect to industry affiliation.

Factors Influencing Wealth Effects

The results of the cross-sectional regression analyses are reported in Table 7. To control heteroskedasticity problem, variables are normalized by the standard errors of the market model. Table 7 contains results for four separate equations. The first equation uses deal characteristics (DIVERS, INTL, PMT) and the status of the target (PUBLIC) to explain wealth effects. The second equation contains acquirer's pre-bid characteristics (CASH, LEV, PE, SIZE) as independent variables. The third equation considers deal variables as well as acquirer and target characteristics together. Finally, the fourth equation adds the group affiliation of the acquirer (GR) and the interaction between group affiliation and diversification dummy (GR*DIVERS) into the model. The fourth equation containing all the independent variables is as follows.

$$CAR = \beta_0 + \beta_1 DIVERS + \beta_2 CASH + \beta_3 LEV + \beta_4 PE + \beta_5 SIZE + \beta_6 INT + \beta_7 PMT + \beta_8 PUBLIC + \beta_9 GR + \beta_{10} GR*DIVERS + \varepsilon \qquad (4)$$

The regression results reported on Table 7 have adjusted R-squared values between 4.43 percent and 24.84 percent. The F-statistic values are significant for all four equations. The first equation tests the impact of deal variables and target status on wealth gains. Among these variables, the coefficient estimate for the variable DIVERS is positive and statistically significant at the ten percent level, meaning that diversifying acquisitions generate higher abnormal returns compared to focused acquisitions. This finding indicates existence of diversification premium in Turkish market. These findings support the earlier studies on corporate diversification (Schipper and Thompson, 1983; Hubbard and Palia, 1999; and Hyland & Diltz, 2002) and contradict more recent studies in this area (Morck et al., 1990; Agrawal et al., 1992; Morgan et al., 2000, among others). The coefficient estimate for the variable PUBLIC is also positive and significant at the one percent level. This indicates that firms acquiring publicly traded target firms experience higher returns. This finding is contrary to findings of other studies. For example, Chang (1998), Fuller et al. (2002) and Moeller et al. (2003) report higher abnormal returns to bidders acquiring private companies. The ownership structure in Turkey is very concentrated, firms mostly owned by a group or family. Acquiring firms may have to pay excess premium to convince these firms to sell their

entities and it may be easier to buy public companies. The coefficients of the variables PMT and INT are positive but not statistically significant.

Table 7: Cross-Sectional Regression Results for Turkish Acquirers

Variables	1		2		3		4	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
Constant	0.0061	0.76	0.1953	3.00***	0.1990	3.09***	0.1825	2.98***
DIVERS	0.0186	1.65*			0.0194	1.75*	0.0603	3.43***
INT	0.0085	0.61			0.0182	1.25	0.0201	1.46
PMT	0.0046	0.29			0.0129	0.81	0.0065	0.42
PUBLIC	0.0519	3.66***			0.0504	3.62***	0.0498	3.8***
CASH			0.0201	0.40	-0.0019	-0.04	-0.0106	-0.24
LEV			0.0331	1.33	0.0304	1.27	0.0241	1.06
PE			-0.0003	-1.62	-0.0002	-1.12	-0.0001	-0.83
SIZE			-0.0091	-2.68***	-0.0102	-3.05***	-0.0102	-3.23***
GR							0.0392	3.21***
GR*DIVERS							-0.0704	-3.16***
F-statistic	3.75***		2.13*		3.22***		4.21***	

This table displays the estimation results for the following equation: $CAR= \beta_0+\beta_1 DIVERS+\beta_2 CASH+\beta_3 LEV+\beta_4 PE+\beta_5 SIZE+\beta_6 INT+\beta_7 PMT+\beta_8 PUBLIC+\beta_7 GR+ \beta_8 GR*DIVERS+\varepsilon$ ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels respectively.

The second equation tests the impact of the acquirer firm's pre-bid characteristics using CASH, LEV, PE and SIZE variables. Among these, the coefficient estimate for the variable SIZE is negative and statistically significant at the one percent level, indicating that smaller firms experience higher abnormal returns compare to larger firms. These findings are in line with the existing literature, reporting consistent higher risk adjusted returns to smaller firms (Banz, 1981; Reinganum, 1992; Moeller et al. 2004, among others). The variables CASH and LEV have positive coefficient estimates while the coefficient estimate for the variable PE is negative. However, neither of these is statistically significant. The third equation considers previous variables together and confirms the results that diversifying acquisitions generate higher abnormal returns to acquirers compared to focused acquisitions. We also demonstrate that smaller firms experience higher abnormal returns compare to larger firms in our sample and that acquiring public firms result in higher wealth gains to acquirers.

Finally the fourth equation investigates whether the perception of diversifying acquisitions by the investors depends on the group affiliation of the acquirer by adding a group dummy (GR) and the interaction between the group dummy and diversification dummy (GR*DIVERS) into the equation. In this specification, the coefficient of the diversification dummy represents difference in abnormal returns between diversifying and focused acquisitions for non-group affiliates only. Since the coefficient is equal to 0.06 and significant at one percent level of significance, it can be inferred that, for the acquisitions made by independent firms, wealth gains to diversifying acquisitions are higher than wealth gains to focused acquisitions. This result is consistent with the overall sample. However, for group affiliates, the difference between diversifying and focused acquisitions is captured by the sum of coefficients of the variables DIVERS and GR*DIVERS. This coefficient is equal to -0.101 (0.060-0.070) and is not statistically significant. Hence, for group affiliates, there is no difference between diversifying and focused acquisitions in terms of acquirer abnormal returns. It might be the case that, since group members are already capturing positive effects of diversification such as access to internal funds or risk reduction, due to their group structure, investors do not perceive any difference between focused and diversifying acquisitions in terms of value creation.

SUMMARY AND CONCLUSION

Mergers and acquisitions (M&As) continue to receive attention of both scholars and policy makers. M&A activities could give firm opportunity to diversify to its operations. Diversification can either destroys value or create value for the acquirers. Most recent studies tend to show that the diversification at the

corporate level is redundant and value destroying. We examine this issue by analyzing a group of Turkish firms that expand via acquisitions. Using an event study methodology, we investigate the abnormal returns of the Turkish acquirer upon the announcement of acquisitions. Our objective is to investigate whether diversifying and non-diversifying acquisitions differ in terms of acquirer abnormal returns while controlling other factors.

Our findings show that Turkish acquirer enjoy positive abnormal returns during various event windows. The results of the cross-sectional regression analysis show that diversifying acquisitions generate higher abnormal returns to acquirers compared to focused acquisitions. We also demonstrate that smaller firms experience higher abnormal returns compare to larger firms in our sample. Finally, acquiring public firms result in higher wealth gains to acquirers. We also analyzed whether results differ among group affiliates and independent firms. Indeed, estimation results showed that if an acquisition is made by an independent firm, diversifying acquisitions generate higher abnormal returns compared to focused acquisitions. However, if the acquirer is a group affiliate, there is no significant difference between the two types of acquisition activities in terms of wealth effects.

The main limitation of this study is the limited sample size. Moreover, factors such as the ownership structure of the companies involved could not be investigated due to limited availability of this type of data for Turkish firms. In addition to addressing these limitations, future studies could also perform a long run event study to show whether diversifying acquisitions are beneficial for investors holding the shares of the combined company.

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SOUTH AFRICA'S IMPORT DEMAND FUNCTION WITH CHINA: A COINTEGRATION APPROACH

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ABSTRACT

During the past decade China has emerged as South Africa' largest trade partner. In an effort to understand this important and remarkable trend, we estimate South Africa's import demand function with China over the period 1993-2012. Specifying an error-correction model, we use the bounds testing approach of Pesaran, Shin and Smith (2001) and find evidence of long-run cointegration among the variables. Our long-run elasticity estimates suggest that income is the most important factor in the determination of South Africa's imports from China. Interestingly, the effect of the real relative price is positive, but this counterintuitive result is consistent with evidence from other middle-income countries. These combined factors imply that the South African trade deficit with China will continue to widen despite a real depreciation of the rand.

JEL: F10, F14

KEYWORDS: South Africa, China, Bilateral Trade, Elasticities, Cointegration

INTRODUCTION

In October 2000 South Africa, China and forty-three other African countries launched the Forum on China-Africa Cooperation (FOCAC), marking the beginning of modern China's turn towards Africa. During that year South Africa's imports from China, in real dollars, were valued at $1.24 billion, representing 3.68% of all imports. By 2012 imports from China increased more than tenfold to $13.9 billion, representing 15% of all imports (IMF, 2013; Çakir and Kabundi, 2013). This remarkable growth in the bilateral trade relationship between South Africa and China is but one of many indicators of China's increasing economic commitment to trade and invest in African countries, and it is emblematic of the emergence of significant "South-South" trade within the global trade pattern (Nayyar, 2008; Hanson, 2012).

China formalized its approach to "go global" as part of its tenth five-year plan in 2001, the same year it joined the World Trade Organization (WTO). Although the subject of continued debate, China's engagement with the economies of Sub-Saharan Africa (SSA) is informed by its own development experience, and it is characterized by a belief in mutual benefits and noninterference in countries' domestic policies (Ncube and Fairbanks, 2012; Aguillar, 2009; Brautigam, 2008, Taylor, 2006). These relationships are multifaceted, involving and affecting investment (Cheung, Haan, Qian and Yu, 2013; Sanfilippo, 2010; Kaplinsky and Morris, 2009), aid (Brautigam, 2008), migration (Mohan and Tan-Mullins, 2009), politics (Flores-Macias and Kreps, 2012; Hanusch, 2012), economic growth (Diaw and Lessona, 2013; Baliamoune-Lutz, 2011) and trade (Tran, Diaw and Rieber, 2012; De Grauwe, 2012, Montinari and Prodi, 2011; Ademola, Bankole and Adewayi, 2009; Giovanni and Sanfilippo, 2009).

Yet Sub-Saharan Africa constitutes a diverse collection of economies, with distinct resources, populations, histories and economic structures. Consequentially, country-level studies provide an important level of detail and specificity that undermines sweeping generalizations. South Africa is SSA's largest and most

diversified economy, is China's largest African trading partner, and has joined China in the increasingly relevant BRICS (Brazil, Russia, India, China, South Africa) group of nations. This underscores the necessity of studying the drivers of the South Africa-China trade relationship to provide important insights into the effectiveness of trade and currency policies between the two countries. Using quarterly data from 1993Q1 to 2012Q4, we adopt an autoregressive distributed lag (ARDL) framework and test for a cointegrating relationship using the bounds test of Pesaran, Shin and Smith (2001) and Pesaran and Shin (1999). The estimation results indicate that the dramatic increase in South African imports from China is strongly associated with economic growth over the past decade and has persisted despite adverse relative price movements.

The paper is organized as follows. The next section reviews the existing literature, after which we present our modeling strategy and empirical methodology. We then discuss the estimation results and end the paper with concluding comments.

LITERATURE REVIEW

There is a voluminous literature devoted to estimating import and export demand functions and their associated elasticities. Early contributions (Marquez, 1990, Giovanneti, 1989, Thursby, 1988, Goldstein and Khan, 1985) provided important advances in understanding the functional relationship among relevant variables, but because they assumed stationarity of variables in time-series data, they yielded potentially spurious results and may have contributed to problematic policies. With the development and widespread adoption of cointegration techniques, researchers have been able to estimate long-run and short-run elasticities using standard reduced-form import and export demand functions.

Much of the literature focuses on income and price elasticities because of their power in providing precise quantitative analyses of changes in income and prices on the demand for tradable goods. Equipped with such analyses, producers are able to determine pricing strategies in the short and long runs. For example, if demand is inelastic, higher prices yield greater returns, and when demand is elastic, it is fortuitous to lower prices, ceteris paribus. At the macroeconomic level, trade policies such as tariffs and quotas are based in part on these estimated elasticities. For example, subsidies are granted to industries that face relatively elastic demand. Similarly, forecasters are able to explain the impact of a change in national income on the demand for tradable goods. If these tradable goods have domestic substitutes and complements, domestic policy is also affected.

Until recently, the focus of the trade literature has been on developed economies because of the lack of accurate data among developing countries. For example, Konno and Fukushige (2002) consider trade between the U.S. and Canada, while Fullerton and Sprinkle (2005) examine U.S. trade with Mexico, and Bahmani-Oskooee and Ratha (2008) and Walter, Baek and Koo (2012) investigate U.S. bilateral trade with multiple trade partners. Ketenci and Uz (2011) estimate bilateral elasticities for the European Union, Irandoust, Ekblad and Parmier (2006) explore the bilateral trade of Sweden, and Tang (2003) and Bahmani-Oskooee and Goswami (2004) examine the trade elasticities of Japan. Though the estimates vary across these different studies, most income elasticities are positive and near unit elastic or relatively elastic, while most price elasticities are negative and relatively inelastic.

With greater availability of data and increasing integration into the global economy, there is growing emphasis in the literature on estimating the income and price elasticities of developing-country trade. For example, Ozturk and Acaravci (2009) estimate trade elasticities for several countries in Latin America, Arize, Malindretos and Grivoyannis (2004) explore Pakistan's trade function, and Dutta and Ahmed examine Bangladesh's (1999) and India's (2004) trade functions with different partners. Razafimahefa and Hamori (2005) examine trade between Mauritius and Madagascar, and Reinhart (1995), Senhadji (1998) and Harb (2005) estimate trade elasticities for large cross-sections of developing countries. These estimates

also vary across different studies, but income elasticities are generally positive and relatively inelastic, while the price elasticities lack any specific pattern.

This configuration of trade elasticities is broadly consistent with theoretical expectations and reflects what was, until recently, the predominant structure of the global economy. High-income countries accounted for the vast majority of trade flows, while low-income developing countries existed largely on the periphery of international trade. Yet recent research on the trade flows of the emerging middle-income economies has uncovered important departures from this pattern. Using data that extends into the post-2000 trade boom, Arize and Nippani (2010) and Zhou and Dube (2011) estimate income elasticities of trade that are positive, significantly greater than previous studies of developing countries, and slightly higher than previous studies of developed economies. And in the case of Zhou and Dube (2011), their reported price elasticities of trade also defy conventional wisdom, being slightly positive or statistically insignificant. These results appear to reflect the emergence of "southern engines of economic growth," (Zhou and Dube, 2011: 91), with demand for imports closely resembling that observed in developed economies.

Using pre-2000 aggregate trade data, early estimates of South Africa's income and price elasticities of imports included, respectively, 0.43 and -0.53 (Bahman-Oskoosee and Niroomand, 1998), 0.67 and -1.00 (Senhadji, 1998), and 1.06 and -1.56 (Gumede, 2000). Using more recent aggregate trade data, the income and price elasticities are, respectively, 1.85 and -0.78 (Arize and Nippani, 2010), 1.65 and -1.00 (Narayan and Narayan, 2010), 1.07 and -0.08 (Thaver and Ekanayake, 2010) and 1.36 and -0.57 (Zhou and Dube, 2011). However, estimates of income and price elasticities of aggregate trade flows may mask important variation across trade partners. Only a few studies, among them Thaver (2013), and Thaver, Ekanayake and Plante (2012), investigate South Africa's trade on a bilateral basis, and none model trade with China. This paper contributes to the literature in three important ways. First, we estimate South Africa's import demand function with China for the period 1993 to 2012. Second, we augment the traditional import demand equation to include the level of foreign reserves and exchange rate volatility as regressors, and we control for advanced-economy industrial production and China's entry into the WTO. Finally, we use the most recent data available and the most appropriate empirical methodology for small-sample cointegration tests, namely the bounds testing procedure of Pesaran, Shin and Smith (2001).

MODELING STRATEGY AND EMPIRICAL METHODOLOGY

We adopt a standard reduced-form representation of the import demand function (Goldstein and Khan, 1985; Carone, 1996), which can be derived within a representative-agent, general equilibrium framework (Clarida, 1994; Reinhart, 1995). Let M_t represent bilateral real imports such that $M_t = f(Y_t, RP_t, Z_t^M)$, where Y_t is real national income of South Africa, RP_t is the real relative aggregate price level, and Z_t^M is a vector of other factors that affect imports. Following Tang (2003) and Bahmani-Oskooee and Goswami (2004), the functional relationship is given as

$$m_t = a_0 + a_1 y_t + a_2 rp_t + a_3 fer_t + a_4 vol_t + a_5 ip_t + a_6 D_t \tag{1}$$

In this equation, lowercase variables represent the logarithmic transformation of their uppercase counterparts, e.g., $m_t = \ln(M_t)$, while a_0 to a_6 are parameters. y_t is the real GDP of South Africa. Economic theory suggests that domestic income is a major determinant of a country's imports and so has a positive impact on demand. We therefore expect that a_1 will be positive. Bilateral import price indices are unavailable, so the relative price effect is modeled using rp_t, calculated as the ratio of the aggregate consumer price indices. While standard economic theory predicts an inverse relationship between imports and rp_t, as indicated in the literature review empirical studies of developing countries lack any specific pattern. Hence a_2 may be either negative or positive.

The availability of foreign exchange has been shown to stimulate import demand (Emran and Shilpi, 2010; Arize and Nippani, 2010), so we include South Africa's stock of real foreign exchange reserves, fer_t, and we expect that $a_3 > 0$. Exchange rate volatility may introduce risk and affect expectations (Ekanayake and Thaver, 2011), so we include it as a control variable. To ensure robustness vol_t is calculated using two different methods. The first method (VOL1) uses the moving average of the standard deviation of the growth rate of the bilateral real exchange rate defined over the previous four periods. The second method (VOL2) uses a GARCH (1,1) representation of the bilateral real exchange rate. Bredin, et al. (2003) showed that the effects of exchange rate volatility on imports are theoretically ambiguous, so a_4 could be either positive or negative. ip_t is the industrial production index of "advanced" economies as defined by the IMF, included here to capture and control for any spillover effects from the global economy onto South African imports from China. We expect $a_5 > 0$ insofar as this trade flow mirrors the global business cycle. On the other hand, if Chinese exporters are turning to South Africa during U.S. and European economic downturns, then this effect may be negative. Finally, D_t is a dummy variable that takes the value of 1 for all periods following China's accession to the WTO, and we expect $a_6 > 0$. All variables are measured quarterly for the period 1993Q1 to 2012Q4 and are taken from the International Monetary Fund's International Financial Statistics and Direction of Trade Statistics databases. All nominal values were deflated using consumer price indices with 2005=100 as the base year.

Table 1: Descriptive Statistics and Correlation Matrix

Variable	Mean	Std. Dev.	M	Y	FER	VOL1	VOL2	RP
Imports (M)	$5.93b	$5.43b	1.00					
GDP S.A. (Y)	$138.5b	$78.4b	0.96***	1.00				
Reserves (FER)	$8.41b	$5.44b	0.91***	0.91***	1.00			
Volatility (VOL1)	0.031	0.022	0.01	-0.02	-0.07	1.00		
Volatility (VOL2)	0.073	0.011	-0.01	0.01	-0.04	0.04	1.00	
Real Relative Price (RP)	1.105	0.217	-0.87***	-0.90***	-0.76***	-0.13	-0.06	1.00
Industrial Productivity (IP)	95.12	7.241	0.54***	0.71***	0.80***	-0.07	-0.15	0.65***

This table reports the mean and standard deviation of each variable used in the final specification. The sample runs from 1993Q1-2012Q4. The correlation matrix shows the pairwise correlations among all variables. *** indicates significance at the 1 % level.

Economic theory suggests that equation (1) should hold in a long-run equilibrium. We adopt a cointegration methodology to model departures from, and adjustment to, the long-run equilibrium, and to distinguish between long-run and short-run effects. Specifically, we employ Pesaran's bounds testing procedure to estimate the model (Pesaran, Shin and Smith, 2001; Pesaran and Shinn, 1999). It has the advantage of being applicable in the presence of I(0) variables, I(1) variables, or any mix of the two. Thus, the bounds testing results are not dependent upon unit-root pretesting. In addition, the bounds testing procedure has been shown to be more efficient in small samples than either the Engle-Granger (Engle and Granger, 1987) or the Johansen (Johansen and Juselius, 1990) tests for cointegration.

The first step is to rewrite equation (1) as an unrestricted error-correction model (UECM):

$$\Delta m_t = \alpha_0 + \sum_{k=1}^{m1} \alpha_{1i} \Delta y_{t-k} + \sum_{k=1}^{m2} \alpha_{2i} \Delta rp_{t-k} + \sum_{k=1}^{m3} \alpha_{3i} \Delta fer_{t-k} + \sum_{k=1}^{m4} \alpha_{4i} \Delta vol_{t-k}$$

$$+ \sum_{k=1}^{m5} \alpha_{5i} \Delta ip_{t-k} + \alpha_6 \Delta D_t + \sum_{k=1}^{m7} \alpha_{7i} \Delta m_{t-k} + \gamma_1 y_{t-1} + \gamma_2 rp_{t-1} + \gamma_3 fer_{t-1} \qquad (2)$$
$$+ \gamma_4 vol_{t-1} + \gamma_5 ip_{t-1} + \gamma_6 m_{t-1} + \gamma_7 D_t + \varepsilon_t$$

All variables are defined as before, while $m_1, m_2, \dots m_7$ are maximum lag lengths, and ε_t is a white noise error term. We employ Hendry's (1986) approach to settle on the specific lag lengths for each of the variables. Beginning with relatively long lag lengths, we follow an algorithm whereby statistically insignificant lags are dropped in succession until a parsimonious specification is achieved. The resulting version of (2) is then used for all further estimation and statistical inference.

The bounds test of the import demand equation takes the form of a Wald or *F*-test of the null hypothesis that the variables are not cointegrated, $H_0: \gamma_1 = \gamma_2 = \gamma_3 = \gamma_4 = \gamma_5 = \gamma_6 = 0$. Given our relatively small sample, we use the critical values of the nonstandard *F*-distribution provided by Narayan (2005) to form the upper I(1) and lower I(0) bounds. If the *F*-statistic falls below the lower bound, we cannot reject the no cointegration H_0, whereas if it exceeds the upper bound, we reject H_0. An *F*-statistic between the lower and upper bound leads to an inconclusive test. Once we establish evidence of cointegration, the parameters in equation (2) can then be estimated and interpreted. Specifically, the long-run elasticities are equal to the coefficients on the lagged regressors normalized by the negative of the coefficient on the lagged dependent variable. The short-run elasticities correspond to the coefficients on the first-differenced regressors.

RESULTS AND DISCUSSION

Cointegration Test

The result of the bounds test for cointegration appears in Table 2. The F-statistic for the import demand equation is 14.92, well above the upper bound critical value at the 1% level, leading us to reject the null hypothesis of no cointegration among the variables. That is, there is a unique long term relationship between real imports, domestic income, relative prices, foreign reserves, exchange rate volatility, industrial production, and China's integration into the WTO. Table 3 presents the results of diagnostic tests for serial correlation, specification errors, normality and stationarity of the residuals. The test statistics and associated p-values are all deemed acceptable. These results allow us to move to our next procedural step, namely, to estimate and interpret the long- and short-run elasticities.

Table 2: Cointegration Test Results – South Africa's Import Demand Function with China

Critical Value Bounds of the *F*-Statistic: Intercept and No Trend						
	10 Percent Level		**5 Percent Level**		**1 Percent Level**	
k	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
3	2.50	3.33	2.97	3.90	4.06	5.20
5	2.22	3.22	2.60	3.71	3.50	4.80
Calculated F-Statistic:	**k=5**					
F_M(M | Y, RP, FER, VOL, IP)	14.92***					

This Table Shows The Results of The ARDL Bounds Test for Cointegration. Critical Values Are Taken from Narayan, (2005), P. 300. K is the number of Regressors. ***, **, * Indicates Significance at the 1 %, 5 %, and 10 % levels, respectively.

Table 3: Diagnostic Test Results

	Statistic	p-value
Durbin Watson Test	2.131	0.61
Breusch-Godfrey Test	0.868	0.49
RESET Test	0.437	0.65
Jacque-Bera Test	2.757	0.25
Augmented Dickey-Fuller	-3.040	0.15
R^2	0.81	-
$\bar{R}^2$	0.75	-

Long-Run Elasticities

Table 4 contains estimates of the long-run elasticities. The long-run income elasticity estimate of 2.101 is statistically significant at the 1% level, revealing that South Africa's imports increase by more than 2% for every 1% change in GDP in the long run. This income elasticity estimate is considerably larger than those generated by studies of developing economies using earlier data (Bahman-Oskoosee and Niroomand, 1998; Razafimahefa and Hamori, 2005), and more consistent with recent estimates for middle-income countries based on post-2000 trade data (Narayan and Narayan, 2010; Zhou and Dube, 2011). It is also larger in magnitude than recent estimates of South Africa's income elasticity of imports from Nigeria (Thaver, Ekanayake, and Plante, 2012) and from India and Brazil (Thaver, 2013). We expect GDP growth to trigger an increased demand for imports, but our results suggest that this is especially true of imports from China. Consequently, as post-Apartheid South Africa develops and grows, the composition and behavior of its imports resemble that of other middle-income and developed countries.

Table 4: Long-run Elasticities - South African Imports from China, 1993-2012

Regressors	Elasticity	t-statistic
Constant	-43.323	7.844***
FER	0.045	0.880
RP	1.668	4.848***
VOL1	0.070	1.911*
Y	2.101	7.740***
IP	1.286	4.072***
D	0.196	3.024***

This table shows the estimated long-run elasticities of South Africa's import demand function with China. The long-run elasticities are equal to the estimated coefficients on the lagged regressors normalized by the negative of the estimated coefficient on the lagged dependent variable. *** and * indicate statistical significance at the 1% and 10% level, respectively.

The long-run price elasticity estimate is 1.668 and it is statistically significant at the 1% level. While the positive sign is theoretically counterintuitive, studies of developing and middle-income countries have yielded similar positive results (Zhou and Dube, 2011). Indeed, estimates of South Africa's long-run price elasticity of bilateral imports from Nigeria and India are also significantly positive (Thaver, Ekanayake, and Plante, 2012; Thaver, 2013). One explanation for this result is that South Africa's economic growth is fueled by imports of intermediate inputs and capital goods that cannot be substituted for easily. It is also possible that this estimate is a consequence of the lack of good data on bilateral import prices.

Neither the stock of foreign reserves nor exchange rate volatility has appreciable long-run effects. The results in Tables 4 and 5 correspond to the specification including VOL1. An alternative specification using VOL2 produced qualitatively similar results and is not reported here. However, industrial productivity in the advanced economies has a considerable positive long-run impact on South Africa's imports from China. This result appears to refute the decoupling hypothesis that China has turned to South Africa as a substitute for developed-country markets. Rather, it suggests that growth in this bilateral trading relationship is pro-

cyclical and closely connected to the overall growth strategies in South Africa and in China (Aguillar, 2009). Finally, as expected, the dummy variable for China's WTO membership is positive and statistically significant.

<u>Short-Run Elasticities</u>

The short-run dynamics of the model are captured by the parameters of the Error Correction Model (ECM). In the ECM the movement of any of the independent variables in time *t* is related to the gap of that same variable in time *t-1* from its long-run equilibrium. This step recognizes that although tending towards long run equilibrium, import demand functions seldom stay in equilibrium because of fluctuations of economic and political forces affecting trade. The lagged error correction term (ECM_{t-1}) is important for the cointegrated system as it allows for adjustment back to long-run equilibrium after a shock to the system. Table 5 reveals that the ECM_{t-1} of -0.995 is statistically significant at the 1% level. That is, 99.5% of a shock to imports is erased within the first quarter. This estimate is further evidence of long-run cointegration among the variables, and it indicates a very strong long-run trend that may be due to recent trade liberalization policies aimed at reducing transaction costs (Saayman, 2010; Kabundi, 2009; Lesufi, 2004).

The estimates of the short-run elasticities of imports with respect to each independent variable are also presented in Table 5. As expected, national income and the WTO dummy have positive impacts on imports. A change in foreign reserves has a negative impact on trade during the short run adjustment process, while the effect of a change in the relative price resembles the *J*-curve, where initially imports rise then fall. The short-run effect of industrial productivity in advanced economies is negative, suggesting that the South African market may serve as a substitute for developed economy markets only temporarily. The short-run effect of exchange-rate volatility is negative, indicating that the corresponding uncertainty and pessimism dampens import demand. However, as noted in Table 4, this effect dissipates in the long run.

Table 5: Short-run Elasticities - South African Imports from China, 1993-2012

Regressors	Elasticity	*t*-statistic
Δm_{t-1}	0.271	3.411***
Δm_{t-4}	0.024	3.035***
Δfer_{t-1}	-0.236	-3.529***
Δvol_{t-2}	-0.092	-3.181***
$\Delta vol1_{t-3}$	-0.069	-2.327**
$\Delta vol1_{t-4}$	-0.144	-4.923***
Δrp_{t-1}	-3.518	-3.564***
Δrp_{t-2}	3.489	3.926***
Δy_t	3.647	3.581***
Δip_{t-1}	-2.277	-4.837***
ΔD_t	0.195	6.090***
ECM_{t-1}	-0.995	-9.867***

This table shows the estimated short-run elasticities of South Africa's import demand function with China. The short-run elasticities correspond to the estimated coefficients on the first-differenced regressors. ***, **, * indicates significance at the 1 %, 5 %, and 10 % levels, respectively.

CONCLUDING COMMENTS AND SUGGESTIONS FOR FUTURE RESEARCH

China's emergence as a global economic power is by now well documented, and its importance as a trade partner and source of foreign investment for Sub-Saharan Africa is increasingly evident. This is especially true for South Africa, which has witnessed China become its top source of imports and its top destination for exports during the past decade. This paper offers an examination of the dramatic growth in this bilateral trading relationship. Employing cointegration analysis, we estimate South Africa's import demand function and distinguish between long-run and short-run determinants. Most importantly, we find that South Africa's imports from China are driven overwhelmingly by the growth and development of South Africa's

economy as measured by GDP. In the long-run, this effect far outweighs any influence of the real relative price level, volatility in the real exchange rate, or the availability of foreign exchange reserves. Moreover, this effect is strong enough to absorb shocks and very quickly return to trend. One important implication of this study is that South Africa's trade deficit with China will continue to widen despite a real depreciation of the rand.

South African imports from China represent but one side of this bilateral trading relationship, however. South African exports to China have also increased markedly during this period, from $378.5 million (1.96% of all exports) in 2000 to $9 billion (13.68% of all exports) in 2012 (IMF, 2013; Çakir and Kabundi, 2013). A comprehensive appreciation of the new economic relationship between these two countries requires a better understanding of the determinants and dynamics of trade in both directions. We estimated export demand functions using many of the same variables discussed in this paper, but the results were disappointing and the overall fit of the model was poor. Our conclusion is that the determinants of South Africa's exports to China are notably different from standard explanations of export demand. Further analysis of this trade pattern appears to be a fruitful area for future research.

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LONG TERM ADR PERFORMANCE: HOW DO REGIONAL ISSUES LISTED ON THE NYSE COMPARE TO US AND REGIONAL INDEX RETURNS?

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ABSTRACT

This study examines the long-term performance of Asia Pacific, European, and Latin American ADRs versus the S&P500 and their respective regional indexes from 1990-2010. The sample was dividend by stable markets (1990s) and volatile markets (2000s). We find that, when analyzed in total, regional indexes perform similarly to the S&P500. However, the Asia Pacific and Latin America regions do offer diversification benefits individually. Furthermore, the ADRs from each region underperform in stable markets (1990s) and outperform in volatile markets (2000s) leading to great diversification benefits.

INTRODUCTION

In 1927, during an incredible bull market, the firm of J.P. Morgan wanted to provide their clients with a way to invest in foreign firms traded on foreign exchanges. To achieve this goal, they created the American Depository Receipt (ADR), which, despite its longevity, remains among the most popular ways for US investors to diversify internationally.

Many studies have examined ADRs and the ability to reduce overall portfolio risk as well as compete with domestic stock performance. Early studies on the subject presented mixed results with some suggesting ADRs underperformed when compared to a US benchmark (see Foerster and Karolyi, 2000 and Schaub, 2003) and others showing ADRs outperformed the domestic market index (for example, see Callaghan, Kleiman and Sahu, 1999). Schaub (2004) found that the timing of the issue played an important role in whether the ADR outperformed or underperformed the US index.

Because ADRs are created using the stock of foreign firms, one would believe that their returns would track different from the US market index due to country risk and exchange rate differences. Therefore, an examination of ADR performance differences relative to respective regional indexes should provide useful information for the international investor. For that reason, we examine the month by month excess returns of ADRs issued by Latin American, Asia Pacific and European firms using both the relevant US market index and respective regional indexes in order to close the gaps in the literature that ignore relative performance versus both indexes. We additionally capture the market-timing effects prevalent in a series of studies by Schaub (2013, 2014a, 2014b).

In the remainder of this study, we present background information and a review of relevant literature in the next section. Next, the methodology section explains utilized methods and provides an understanding of

computations, statistical testing and sample composition. Section 4 discusses the results we obtained and the final section concludes the study.

LITERATURE REVIEW

The ADR creation process carried out by large US banks provides investors with the convenience of purchasing foreign equities without having to deal with foreign equity markets or foreign exchange transactions. The goal initially is to get the ADR value into a relevant price range that the US banks believe investors prefer. Therefore, shares are bundled accordingly. For example, if an ADR should initially trade for $20 then a foreign stock with a translated dollar value of $1 per share would require the ADR to be backed by 20 shares. Also, a foreign stock with a dollar value (after translating from the foreign currency) of $200 per share would require the ADR be backed by one-tenth of a share to get to $20 per ADR. Thus, ADRs may be backed by many shares or fractions of a share depending on the starting dollar per ADR trading value the creating bank desires.

ADRs normally are created at the request of the foreign firm; however, there are some instances when the US bank creates ADRs from companies that have not sought to raise equity capital in the United States. The former ADRs are therefore called sponsored issues while the latter are unsponsored. In addition, ADRs may differ in information requirements. Normally the most information is required of Level III ADRs that tend to be sold to raise capital on an exchange in the US. Lower level ADRs require less information and may be sold over the counter or via direct placement (called SEC Rule 144A offerings). Seeing our purposes are to isolate differences in index tracking, we use ADRs listed on the New York Stock Exchange to control for information and firm size.

A couple of papers written by Karolyi (1998, 2004) suggest that ADRs have played a major role in the global economy. Karolyi (1998) finds that the shares tend to react favorably to cross-border listing in the first month of trading with mixed results after a year. However, Karolyi (2004) contends that as cross-border listings from emerging market firms increased in the 1990s, the more developed those markets became. Hence, the ability for emerging market firms to cross-list their equities via ADRs has actually allowed emerging markets to become more stable.

The ADR literature has several studies that show international diversification benefits US investors. These include Jiang (1998), Officer and Hoffmeister (1988), and Schaub (2004). While Jiang (1998) emphasizes reduction in portfolio variation, Schaub (2004) emphasizes a market timing issue where ADRs outperform the US index when the US market is doing poor but may underperform when the US market is doing well (the main purpose of a defensive diversification instrument).

Because ADRs are originally denominated in the currency of the issuing firm and then translated into dollars, the ADR investor is exposed to currency risk. De Santis and Gerard (1998) found that the market indexes of four different countries were affected by exchange rate changes when translating returns into dollars, while Griffin and Stulz (2001) found that exchange rate shock effects actually differed by industry. Of further interest, Phylaktis and Ravazzolo (2005) suggest that the US stock market prices can have long-run and short-run effects on foreign exchange markets based on their examination of Pacific Basin countries from 1980 through 1998.

In looking at how exchange rate risk specifically affects ADRs, Liang and Mougoue (1996) found ADRs exposed U.S. investors to foreign exchange risk (most of which could be diversified away). Likewise, Kim, Szakmary and Mathur (2000) found exchange rates affect ADR values, although the bulk of the returns to ADRs were based on the price of the underlying shares. Bae, Kwon and Li (2008), in their examination of the exchange rate exposure of ADRs, suggest that exchange rate changes negatively affect the value of underlying shares in the local country but positively affect the ADR returns in the US market for 623 ADRs

listed in the US from 1998 through 2001. Furthermore, Esqueda and Jackson (2012), in their examination of the effects of the currency crises in Latin American countries, found the ADRs associated with the countries experiencing the crisis experienced significant losses due to translation exposure.

Callaghan, Kleiman and Sahu (1999) did an important study that finds ADRs outperform the domestic benchmark. Although looking at only 66 ADRs issued from 1986 through 1993, they found that in the first year of trading the cumulative excess returns for ADRs were positive and significant relative to the US benchmark. They also found the result to be true regardless of whether they broke the sample into IPOs and SEOs or emerging and developed market issues. Similarly, Surz (2007) finds that ADRs outperform the S&P 500 Index by 16 percent in the long term while Sundaram and Logue (1996) suggest ADRs outperform the US market index in short-term trading.

In contrast, Foerster and Karolyi (2000) investigated 333 ADRs, which significantly underperformed the domestic market index (datastream). In their study, both emerging and developed market ADRs underperformed the market index, as well as IPOs and SEOs over a 36-month period after date of listing. A major difference between their study and others was the inclusion of Rule 144A private placement issues. These tend to have more informational asymmetry since they are not scrutinized as much as ADRs traded on exchanges or even in the over the counter market.

Schaub (2003) investigated the excess performance of 179 NYSE-listed ADRs listed from 1987 through 1998. Findings show these significantly underperformed the S&P 500 during the initial three-year trading period. No matter how the sample was sliced (emerging versus developed issues, IPOs versus SEOs, Latin American, European and Asia Pacific issues), the ADR portfolios consistently underperformed the US market index. Since previous examinations offered differing conclusions, Schaub (2004) examined for differences in ADR excess performance based on timing an issue to trade predominantly through a US bear market versus through a US bull market. In doing this the study found a sample of Asia Pacific ADRs trading through a bear market outperformed those trading through a bull market. Even though a conclusive timing effect was not found for European issues, this study opened up the possibility that ADRs may truly perform a function as defensive investments.

A more relevant series of studies by Schaub (2013, 2014a, 2014b) provides insights into market timing and its impact on the three-year excess performance of regional issues. The author mostly emphasized regional samples broken down into SEOs and IPOs. Based on these segments the studies determined that large-firm ADRs performed very differently relative to the US market index during the 1990s when the US market was stable and the 2000s when the US market suffered extreme volatility. These studies completely ignored how the ADRs tracked with respective regional indexes, however, and emphasized performance solely compared with the US market. Those studies provide a framework for this study that compares 1990s issues and 2000s issues based on region of firm domicile and appropriate regional index comparisons to determine whether those issues truly do track closer to home market equities than US market equities. If ADR performance is very similar to the respective regional index performance, then an investor may more reasonably just purchase the easily obtainable regional index. However, if not, ADR investing may provide some additional benefits that make owning them more attractive than index investing.

DATA AND METHODOLOGY

The purpose of this study is to identify tracking patterns of ADRs with regional indexes as compared to the US market index. To fulfill that goal, we examine regional ADR issues listed on the New York Stock Exchange in order to hold risks associated with firm size and informational asymmetry as constant as possible. Our sample contains 353 ADRs listed on the NYSE from January 1990 through December 2009. This timing allows for the comparison of issues listed in the 1990s with those from the 2000s to isolate market-timing differences in ADR excess performance. In Table 1, our sample breakdown is illustrated by

region and date of issue. The S&P 500 index represents the US market returns because it is a very popular, very achievable, and consists of large firms traded predominantly on the NYSE (see Schaub, 2004). For the European region index returns, we use the Morgan Stanley Capital International Index for Europe (MSCI Europe Index). Likewise, for the Asia Pacific and Latin American Indexes we use the MSCI Latin America Index and the MSCI Asia Pacific Index respectively.

Table 1: Sample Description by Region and Date

Region of Issue	Number of Observations	Date of Issue	
		Before 1/1/2000	After 1/1/2000
Asia Pacific	90	31	59
Europe	145	90	55
Latin America	118	88	30
Totals	353	209	144

As in other ADR studies (see Schaub, 2003), standard ADR and IPO methodology is used to compute and test average excess returns. Excess returns are computed for each ADR to determine the performance relative to both market indexes (US and regional). These excess returns are averaged for each month and then added up each month for statistical testing. This process follows the series of equations below. First, in Equation 1, the excess return for security i during month t (xr_{it}) is the difference between the return of the security in month t (r_{it}) and the return of the respective market index in month t (r_{mt}).

$$xr_{it} = r_{it} - r_{mt} \tag{1}$$

Once excess returns are computed each month for each ADR, Equation 2 is used to compute the average excess return for each sample during month t (XRt). This is done by dividing the sum of the excess returns by the number (n) of securities in the sample.

$$XR_t = \frac{1}{n} \sum_{i-1}^{n} xr_{it} \tag{2}$$

Then average excess returns are cumulated month by month as shown in Equation 3. Here the cumulative excess returns (CXR) as of month s is the sum of the average excess returns starting at month 1 until month s. Since the study examines returns for three years, s ends at month 36.

$$CXR_{1,s} = \sum_{i-1}^{s} xr_t \tag{3}$$

The computed monthly average excess returns and cumulative excess returns are tested each month to determine significance. Respective P-values for these tests are reported and are used to indicate whether monthly and/or cumulative average excess returns are significantly different from 0 with an alpha level of 0.10.

RESULTS AND DISCUSSION

The cumulative excess returns for our entire sample and regional samples are provided in Tables 2 through 9. Each table calculates the CXR using both the S&P500 and the appropriate Morgan Stanley Capital Intl (MSCI) regional index for each ADR. Furthermore, the final section of each table is the difference between the CXRs using the S&P500 and the MSCI regional index.

As seen in Table 2, the 3-year CXR by month for NYSE ADRs for January 1990 through December 2009, the CXR for the entire sample verses the U.S. index was 6.72% while the CXR for the entire sample versus their respective regional index was 9.41% after the 36-month period. The sample included 353 observations and the difference between the regional index and the U.S. index was -2.70%. The results suggest that the three regional indexes that were used in this study (Asia Pacific, Europe, and Latin America) can be combined to closely mirror the S&P500.

Table 2: 3-Year Performance by Month for NYSE-Listed ADRs US versus Regional Indexes (1990 – 2009)[a]

Month	Entire Sample Versus US Index				Entire Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
+ 1	0.73%	0.19	0.73%	0.19	1.10%	*0.10*	1.10%	*0.10*	-0.37%	*0.09*	-0.37%	*0.09*
+ 2	1.70%	*0.02*	2.43%	*0.02*	1.88%	*0.02*	2.98%	*0.01*	-0.18%	0.28	-0.55%	*0.09*
+ 3	-0.22%	0.38	2.21%	*0.06*	-0.50%	0.27	2.48%	*0.05*	0.28%	0.19	-0.27%	0.31
+ 4	1.35%	*0.04*	3.56%	*0.01*	1.35%	*0.06*	3.83%	*0.01*	0.00%	0.50	-0.27%	0.33
+ 5	1.29%	*0.05*	4.85%	*0.00*	1.92%	*0.02*	5.75%	*0.00*	-0.63%	*0.04*	-0.90%	*0.10*
+ 6	-0.83%	0.13	4.01%	*0.02*	-0.60%	0.24	5.14%	*0.01*	-0.23%	0.23	-1.13%	*0.07*
+ 7	-0.04%	0.48	3.97%	*0.03*	0.11%	0.45	5.25%	*0.01*	-0.15%	0.29	-1.28%	*0.06*
+ 8	-1.14%	*0.05*	2.83%	*0.10*	-0.96%	0.11	4.29%	*0.04*	-0.18%	0.28	-1.45%	*0.05*
+ 9	-1.47%	*0.01*	1.36%	0.27	-1.74%	*0.01*	2.55%	0.16	0.27%	0.19	-1.19%	*0.10*
+10	-0.04%	0.48	1.33%	0.29	-0.14%	0.43	2.41%	0.18	0.10%	0.37	-1.08%	0.13
+11	-0.70%	0.11	0.63%	0.40	-0.63%	0.18	1.78%	0.26	-0.07%	0.40	-1.16%	0.13
+12	0.17%	0.41	0.79%	0.38	0.34%	0.34	2.12%	0.23	-0.17%	0.26	-1.33%	*0.10*
+13	0.34%	0.33	1.13%	0.34	0.43%	0.31	2.55%	0.20	-0.09%	0.37	-1.42%	*0.10*
+14	0.63%	0.19	1.77%	0.26	0.72%	0.18	3.28%	0.14	-0.09%	0.38	-1.51%	*0.09*
+15	1.01%	*0.10*	2.78%	0.17	0.74%	0.19	4.02%	*0.10*	0.28%	0.18	-1.24%	0.15
+16	-0.22%	0.39	2.56%	0.19	-0.23%	0.40	3.79%	0.13	0.01%	0.49	-1.23%	0.16
+17	-0.03%	0.48	2.53%	0.20	-0.09%	0.45	3.69%	0.14	0.06%	0.41	-1.16%	0.18
+18	0.19%	0.40	2.72%	0.19	-0.24%	0.39	3.46%	0.16	0.43%	*0.07*	-0.74%	0.28
+19	0.43%	0.28	3.15%	0.16	0.20%	0.40	3.66%	0.15	0.23%	0.20	-0.50%	0.35
+20	1.32%	*0.06*	4.48%	*0.09*	1.49%	*0.05*	5.14%	*0.08*	-0.16%	0.29	-0.67%	0.31
+21	-0.81%	0.17	3.67%	0.14	-1.35%	*0.06*	3.79%	0.16	0.54%	*0.03*	-0.13%	0.46
+22	0.02%	0.49	3.68%	0.15	0.21%	0.39	4.00%	0.15	-0.20%	0.25	-0.32%	0.41
+23	-0.07%	0.46	3.62%	0.16	0.12%	0.43	4.13%	0.15	-0.19%	0.25	-0.51%	0.36
+24	0.54%	0.21	4.16%	0.13	0.85%	0.12	4.97%	0.11	-0.30%	0.13	-0.81%	0.29
+30	0.68%	0.14	8.05%	*0.02*	0.51%	0.24	9.97%	*0.01*	0.18%	0.23	-1.92%	0.11
+36	1.19%	*0.04*	6.72%	*0.06*	1.29%	*0.04*	9.41%	*0.02*	-0.10%	0.33	-2.70%	*0.06*

[a]The computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

Table 3 Panel A subdivides that entire sample into those ADRs that were issued in the 1990s. For this comparison, the sample included 209 observations and CXR for the entire sample versus the U.S. index was -11.84% after 36 months. The CXR for the entire sample versus the regional index was -6.27% and the difference is -5.57%. This would seem to indicate that during stable markets (1990s), ADRs tend to underperform both the S&P500 and their regional indexes.

Table 3 Panel B shows a comparison of the NYSE-listed ADRs versus the domestic and regional indexes for the 2000s issues and has a sample of 144 observations. The CXR for the sample versus the U.S. index was 34.76% while it is 32.54% for the sample versus the regional index in month 36. This shows a difference of only 2.23%. The over performance of ADRs during volatile times (2000s) reinforce their diversification benefits (recall the 1990s ADRs underperformed the market indexes).

Table 4 shows a comparison of the Asia Pacific ADRs for January 1990 through December 2009. The sample includes 90 observations and shows a CXR of 13.22% in month 36 for the Asia Pacific sample versus the U.S. index. It also shows a CXR of 23.50% for the Asia Pacific sample versus the regional index, which gives a difference of -10.28% between the regional index and the U.S. index.

Table 3: 3-Year Performance by Month for NYSE-Listed ADRs US versus Regional Indexes[a]

Month	Entire Sample Versus US Index				Entire Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
Panel A: 1990s Issues												
+ 1	-0.10%	0.46	-0.10%	0.46	0.44%	0.34	0.44%	0.34	-0.54%	*0.10*	-0.54%	*0.10*
+ 2	0.70%	0.26	0.60%	0.34	0.61%	0.32	1.06%	0.26	0.08%	0.43	-0.46%	0.23
+ 3	-0.27%	0.39	0.33%	0.42	-0.61%	0.29	0.45%	0.41	0.34%	0.24	-0.12%	0.44
+ 4	0.42%	0.33	0.75%	0.35	0.59%	0.29	1.04%	0.32	-0.17%	0.36	-0.29%	0.38
+ 5	1.71%	*0.06*	2.46%	0.14	3.01%	*0.01*	4.04%	*0.06*	-1.30%	*0.01*	-1.58%	*0.07*
+ 6	-0.64%	0.25	1.82%	0.23	-0.22%	0.43	3.83%	*0.09*	-0.42%	0.18	-2.01%	*0.04*
+ 7	-1.69%	*0.03*	0.13%	0.48	-1.60%	*0.07*	2.23%	0.23	-0.09%	0.41	-2.10%	*0.04*
+ 8	-1.49%	*0.05*	-1.36%	0.31	-1.61%	*0.07*	0.62%	0.43	0.12%	0.39	-1.98%	*0.06*
+ 9	-0.93%	0.11	-2.30%	0.21	-1.64%	*0.03*	-1.03%	0.38	0.71%	*0.06*	-1.27%	0.18
+10	-0.41%	0.33	-2.71%	0.18	-1.07%	0.16	-2.09%	0.28	0.65%	*0.07*	-0.62%	0.33
+11	-1.40%	*0.03*	-4.11%	*0.09*	-1.35%	*0.08*	-3.44%	0.17	-0.05%	0.45	-0.67%	0.33
+12	0.31%	0.38	-3.80%	0.12	0.33%	0.38	-3.11%	0.21	-0.03%	0.47	-0.70%	0.33
+13	-0.33%	0.38	-4.13%	0.12	-0.21%	0.43	-3.32%	0.21	-0.11%	0.39	-0.81%	0.31
+14	-0.21%	0.41	-4.34%	0.11	-0.24%	0.41	-3.56%	0.20	0.03%	0.47	-0.78%	0.32
+15	1.08%	0.13	-3.26%	0.19	0.36%	0.37	-3.20%	0.23	0.72%	*0.06*	-0.06%	0.49
+16	-0.94%	0.17	-4.20%	0.14	-1.18%	0.16	-4.38%	0.16	0.24%	0.30	0.18%	0.46
+17	-0.69%	0.22	-4.89%	0.11	-0.39%	0.35	-4.77%	0.15	-0.30%	0.23	-0.12%	0.47
+18	-0.07%	0.47	-4.96%	0.11	-0.48%	0.33	-5.25%	0.13	0.41%	0.17	0.29%	0.44
+19	-0.66%	0.25	-5.62%	*0.09*	-0.48%	0.33	-5.74%	0.12	-0.18%	0.33	0.12%	0.48
+20	1.25%	0.14	-4.37%	0.16	1.82%	*0.08*	-3.92%	0.22	-0.57%	*0.10*	-0.45%	0.41
+21	-2.55%	*0.01*	-6.92%	*0.06*	-3.01%	*0.01*	-6.92%	*0.09*	0.46%	0.12	0.01%	0.50
+22	-1.16%	0.11	-8.08%	*0.04*	-0.39%	0.36	-7.31%	*0.08*	-0.77%	*0.03*	-0.76%	0.36
+23	-0.88%	0.15	-8.96%	*0.03*	-0.61%	0.27	-7.92%	*0.07*	-0.27%	0.25	-1.03%	0.31
+24	-0.37%	0.31	-9.33%	*0.02*	0.20%	0.41	-7.72%	*0.08*	-0.57%	*0.07*	-1.61%	0.23
+30	0.35%	0.34	-6.25%	0.12	0.22%	0.40	-2.05%	0.37	0.13%	0.36	-4.21%	*0.03*
+36	0.82%	0.21	-11.84%	*0.02*	0.87%	0.21	-6.27%	0.17	-0.04%	0.45	-5.57%	*0.01*
Panel B: 2000s Issues												
+ 1	1.86%	*0.10*	1.86%	*0.10*	2.05%	*0.08*	2.05%	*0.08*	-0.19%	0.28	-0.19%	0.28
+ 2	3.28%	*0.01*	5.14%	*0.00*	3.73%	*0.00*	5.77%	*0.00*	-0.45%	*0.10*	-0.64%	*0.09*
+ 3	0.04%	0.49	5.18%	*0.01*	-0.09%	0.47	5.68%	*0.01*	0.13%	0.36	-0.50%	0.20
+ 4	2.88%	*0.01*	8.06%	*0.00*	2.86%	*0.02*	8.54%	*0.00*	0.02%	0.48	-0.48%	0.25
+ 5	1.00%	0.18	9.05%	*0.00*	0.60%	0.31	9.14%	*0.00*	0.40%	0.12	-0.08%	0.46
+ 6	-1.11%	0.15	7.95%	*0.00*	-1.48%	*0.09*	7.66%	*0.01*	0.37%	0.20	0.29%	0.37
+ 7	1.92%	*0.05*	9.87%	*0.00*	1.92%	*0.05*	9.58%	*0.00*	0.01%	0.50	0.29%	0.38
+ 8	-0.67%	0.28	9.20%	*0.00*	-0.11%	0.46	9.47%	*0.00*	-0.57%	*0.05*	-0.27%	0.40
+ 9	-2.05%	*0.03*	7.15%	*0.02*	-1.71%	*0.06*	7.76%	*0.02*	-0.34%	0.17	-0.61%	0.29
+10	0.86%	0.22	8.01%	*0.02*	1.56%	*0.10*	9.32%	*0.01*	-0.70%	*0.05*	-1.31%	0.13
+11	0.11%	0.45	8.12%	*0.02*	0.26%	0.39	9.58%	*0.01*	-0.15%	0.35	-1.46%	0.12
+12	-0.29%	0.39	7.83%	*0.03*	0.01%	0.50	9.59%	*0.01*	-0.30%	0.19	-1.76%	*0.09*
+13	1.18%	0.14	9.01%	*0.02*	1.39%	0.11	10.98%	*0.01*	-0.21%	0.29	-1.97%	*0.07*
+14	1.82%	*0.06*	10.84%	*0.01*	2.14%	*0.04*	13.12%	*0.00*	-0.31%	0.18	-2.28%	*0.05*
+15	0.81%	0.26	11.65%	*0.00*	0.97%	0.22	14.09%	*0.00*	-0.17%	0.31	-2.45%	*0.04*
+16	0.38%	0.38	12.02%	*0.01*	0.65%	0.31	14.75%	*0.00*	-0.28%	0.22	-2.72%	*0.03*
+17	0.45%	0.33	12.48%	*0.00*	-0.11%	0.46	14.64%	*0.00*	0.56%	*0.06*	-2.16%	*0.08*
+18	0.78%	0.27	13.25%	*0.00*	0.30%	0.41	14.94%	*0.00*	0.48%	*0.10*	-1.68%	0.14
+19	2.63%	*0.01*	15.88%	*0.00*	1.60%	*0.10*	16.54%	*0.00*	1.02%	*0.01*	-0.66%	0.34
+20	1.53%	*0.10*	17.41%	*0.00*	1.34%	0.13	17.88%	*0.00*	0.20%	0.31	-0.46%	0.39
+21	1.30%	0.13	18.72%	*0.00*	0.87%	0.23	18.74%	*0.00*	0.44%	*0.10*	-0.03%	0.49
+22	1.49%	*0.07*	20.21%	*0.00*	1.03%	0.16	19.77%	*0.00*	0.46%	*0.09*	0.44%	0.40
+23	1.62%	*0.08*	21.83%	*0.00*	1.67%	*0.07*	21.44%	*0.00*	-0.05%	0.45	0.39%	0.41
+24	2.28%	*0.03*	24.11%	*0.00*	2.02%	*0.05*	23.46%	*0.00*	0.26%	0.25	0.65%	0.36
+30	1.07%	0.15	29.94%	*0.00*	0.67%	0.27	27.96%	*0.00*	0.40%	0.13	1.97%	0.16
+36	1.75%	*0.01*	34.76%	*0.00*	1.98%	*0.01*	32.54%	*0.00*	-0.23%	0.25	2.23%	0.15

[a]*The computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.*

Table 4: 3-Year Performance for Asia Pacific NYSE-Listed ADRs US versus Regional Index (1990 – 2009)[a]

	Asia Pacific Sample Versus US Index				Asia Pacific Sample Versus Regional Index				Regional Index – US Index			
Month	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
+ 1	0.95%	0.32	0.95%	0.32	1.81%	0.18	1.81%	0.18	-0.86%	*0.03*	-0.86%	*0.03*
+ 2	3.34%	*0.08*	4.29%	*0.09*	4.73%	*0.03*	6.54%	*0.02*	-1.38%	*0.00*	-2.24%	*0.00*
+ 3	-1.85%	0.12	2.44%	0.25	-0.86%	0.30	5.68%	*0.05*	-1.00%	*0.03*	-3.24%	*0.00*
+ 4	2.10%	0.15	4.54%	0.13	2.47%	0.11	8.15%	*0.02*	-0.37%	0.22	-3.61%	*0.00*
+ 5	1.91%	*0.12*	6.45%	*0.07*	2.63%	*0.06*	10.78%	*0.01*	-0.72%	*0.07*	-4.33%	*0.00*
+ 6	-1.17%	0.24	5.28%	0.13	-1.31%	0.22	9.46%	*0.02*	0.15%	0.40	-4.18%	*0.00*
+ 7	2.14%	0.11	7.42%	*0.07*	2.07%	0.12	11.54%	*0.01*	0.07%	0.45	-4.12%	*0.00*
+ 8	-3.49%	*0.01*	3.93%	0.23	-1.72%	0.13	9.81%	*0.03*	-1.76%	*0.00*	-5.88%	*0.00*
+ 9	-2.40%	*0.02*	1.54%	0.39	-1.19%	0.16	8.62%	*0.06*	-1.20%	*0.02*	-7.08%	*0.00*
+10	-2.06%	*0.07*	-0.53%	0.46	-1.43%	0.17	7.18%	*0.10*	-0.63%	0.14	-7.71%	*0.00*
+11	-1.43%	0.13	-1.96%	0.37	-1.53%	0.11	5.65%	0.16	0.10%	0.42	-7.61%	*0.00*
+12	-0.31%	0.43	-2.27%	0.35	-0.15%	0.46	5.51%	0.18	-0.16%	0.36	-7.78%	*0.00*
+13	2.32%	*0.08*	0.05%	0.50	3.04%	*0.02*	8.55%	*0.08*	-0.72%	*0.07*	-8.50%	*0.00*
+14	1.46%	0.19	1.51%	0.41	1.67%	0.16	10.22%	*0.06*	-0.21%	0.35	-8.71%	*0.00*
+15	3.55%	*0.03*	5.05%	0.22	4.25%	*0.00*	14.47%	*0.01*	-0.70%	*0.09*	-9.41%	*0.00*
+16	-1.65%	0.15	3.40%	0.31	-1.90%	0.12	12.57%	*0.03*	0.24%	0.32	-9.17%	*0.00*
+17	0.02%	0.49	3.42%	0.31	-0.40%	0.36	12.17%	*0.04*	0.42%	0.22	-8.75%	*0.00*
+18	1.69%	0.17	5.10%	0.24	1.97%	0.13	14.14%	*0.02*	-0.28%	0.30	-9.04%	*0.00*
+19	1.69%	0.16	6.79%	0.18	0.80%	0.32	14.94%	*0.02*	0.89%	*0.03*	-8.15%	*0.00*
+20	0.80%	0.31	7.60%	0.16	0.81%	0.31	15.75%	*0.02*	0.00%	0.50	-8.15%	*0.00*
+21	-1.24%	0.21	6.36%	0.21	-2.48%	*0.05*	13.27%	*0.04*	1.24%	*0.01*	-6.91%	*0.00*
+22	1.56%	0.16	7.92%	0.16	0.90%	0.28	14.17%	*0.04*	0.66%	*0.09*	-6.25%	*0.01*
+23	0.60%	0.36	8.52%	0.15	0.55%	0.37	14.72%	*0.03*	0.04%	0.47	-6.20%	*0.01*
+24	3.06%	*0.04*	11.57%	*0.08*	4.01%	*0.01*	18.73%	*0.01*	-0.96%	*0.03*	-7.16%	*0.00*
+30	1.77%	0.12	15.10%	*0.05*	1.62%	0.15	23.88%	*0.00*	0.15%	0.36	-8.77%	*0.00*
+36	0.39%	0.39	13.22%	*0.09*	0.85%	0.26	23.50%	*0.01*	-0.47%	0.13	-10.28%	*0.00*

[a]The computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

Table 5 Panel A shows the same comparison but only for the 1990s issues. It includes a sample of 31 observations and tells us that the Asia Pacific sample versus the U.S. index CXR was -21.20%. The Asia Pacific sample versus the regional index was 28.83%, giving us a difference of -50.03%. The major differences between the two indexes may point to the currency problems that existed in many of the Asia Pacific countries during the 1990s.

Panel B of Table 5 shows how the Asia Pacific ADRs listed in the 2000s decade performed. Overall these ADRs outperformed the S&P 500 by over 31% while outperforming the regional index by over 19%. Seeing that the ADRs listed in the 1990s underperformed while those listed in the 2000s outperformed the US index indicates these provided US investors with measurable diversification benefits while the US market was volatile (in the 2000s decade) versus when the US market was stable (in the 1990s). Since the Asia Pacific regional index severely underperformed the US index in the 1990s by 50% but outperformed the US index in the 2000s by nearly 12%, this may indicate that the emerging markets in the region developed over the 20-year period.

Table 6 illustrates the 3-year performance for the European ADRs versus the S&P500 the regional index. The CXR for the European sample versus the U.S. Index was 7.03% while the CXR for the European sample versus the regional index was 2.41% after 36 months. This is a difference between the regional index and the U.S. index of 4.62%.

Table 5: 3-Year Performance for Asia Pacific NYSE-Listed ADRs US versus Regional Index[a]

Month	Asia Pacific Sample Versus US Index				Asia Pacific Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
Panel A: 1990s Issues												
+ 1	-0.52%	0.40	-0.52%	0.40	2.04%	0.17	2.04%	0.17	-2.57%	*0.00*	-2.57%	*0.00*
+ 2	1.24%	0.40	0.71%	0.45	3.48%	0.25	5.53%	0.16	-2.25%	*0.00*	-4.81%	*0.00*
+ 3	-1.37%	0.28	-0.66%	0.46	1.85%	0.23	7.38%	0.11	-3.22%	*0.00*	-8.04%	*0.00*
+ 4	-3.21%	0.14	-3.86%	0.28	-1.47%	0.30	5.90%	0.19	-1.73%	*0.04*	-9.77%	*0.00*
+ 5	0.75%	0.37	-3.12%	0.33	3.83%	*0.07*	9.73%	*0.08*	-3.08%	*0.00*	-12.85%	*0.00*
+ 6	-0.93%	0.38	-4.05%	0.30	-0.98%	0.39	8.75%	0.13	0.05%	0.49	-12.80%	*0.00*
+ 7	-1.34%	0.32	-5.39%	0.25	0.04%	0.49	8.79%	0.15	-1.38%	0.11	-14.18%	*0.00*
+ 8	-1.66%	0.28	-7.04%	0.21	1.45%	0.30	10.25%	0.12	-3.11%	*0.00*	-17.29%	*0.00*
+ 9	-3.27%	*0.02*	-10.32%	0.12	-1.04%	0.31	9.21%	0.16	-2.23%	*0.02*	-19.52%	*0.00*
+10	-2.99%	*0.03*	-13.31%	*0.07*	-1.90%	0.12	7.31%	0.21	-1.09%	0.16	-20.62%	*0.00*
+11	-3.41%	*0.02*	-16.71%	*0.03*	-2.14%	0.12	5.17%	0.29	-1.26%	*0.09*	-21.88%	*0.00*
+12	1.84%	0.30	-14.87%	*0.06*	2.41%	0.23	7.58%	0.22	-0.57%	0.24	-22.45%	*0.00*
+13	2.34%	0.22	-12.54%	0.11	4.64%	*0.05*	12.22%	0.12	-2.31%	*0.00*	-24.76%	*0.00*
+14	-3.66%	*0.03*	-16.20%	*0.06*	-2.39%	0.13	9.83%	0.18	-1.27%	0.12	-26.03%	*0.00*
+15	5.05%	*0.03*	-11.15%	0.15	5.95%	*0.00*	15.78%	*0.07*	-0.90%	0.18	-26.92%	*0.00*
+16	-6.26%	*0.00*	-17.41%	*0.05*	-6.00%	*0.00*	9.78%	0.19	-0.26%	0.41	-27.19%	*0.00*
+17	-1.82%	0.19	-19.23%	*0.04*	-0.88%	0.34	8.90%	0.22	-0.95%	0.16	-28.13%	*0.00*
+18	-1.79%	0.22	-21.02%	*0.03*	-0.63%	0.39	8.27%	0.24	-1.16%	0.11	-29.29%	*0.00*
+19	-1.29%	0.31	-22.30%	*0.03*	-0.98%	0.36	7.29%	0.27	-0.31%	0.38	-29.60%	*0.00*
+20	-0.54%	0.42	-22.85%	*0.03*	0.60%	0.41	7.90%	0.26	-1.15%	0.11	-30.74%	*0.00*
+21	-2.26%	0.20	-25.11%	*0.02*	-3.03%	0.12	4.87%	0.35	0.77%	0.26	-29.97%	*0.00*
+22	-1.49%	0.29	-26.59%	*0.02*	-1.16%	0.34	3.71%	0.38	-0.33%	0.35	-30.30%	*0.00*
+23	0.66%	0.40	-25.93%	*0.02*	2.07%	0.20	5.78%	0.33	-1.41%	*0.07*	-31.72%	*0.00*
+24	-2.99%	*0.07*	-28.92%	*0.01*	-0.62%	0.38	5.16%	0.35	-2.37%	*0.00*	-34.08%	*0.00*
+30	1.41%	0.29	-18.82%	0.11	0.96%	0.36	23.57%	*0.06*	0.45%	0.31	-42.39%	*0.00*
+36	0.55%	0.43	-21.20%	*0.10*	1.63%	0.28	28.83%	*0.04*	-1.08%	*0.09*	-50.03%	*0.00*
Panel B: 2000s Issues												
+ 1	1.73%	0.28	1.73%	0.28	1.81%	0.26	1.81%	0.26	-0.08%	0.43	-0.08%	0.43
+ 2	4.45%	*0.04*	6.18%	*0.06*	5.23%	*0.02*	7.05%	*0.03*	-0.78%	*0.08*	-0.87%	0.12
+ 3	-2.11%	0.16	4.07%	0.18	-2.15%	0.15	4.90%	0.13	0.04%	0.47	-0.83%	0.19
+ 4	4.88%	*0.03*	8.95%	*0.04*	4.87%	*0.04*	9.76%	*0.03*	0.02%	0.49	-0.81%	0.23
+ 5	2.52%	0.12	11.47%	*0.02*	1.85%	0.20	11.62%	*0.02*	0.67%	0.11	-0.14%	0.45
+ 6	-1.29%	0.26	10.18%	*0.04*	-2.15%	0.11	9.47%	*0.05*	0.86%	0.14	0.71%	0.31
+ 7	3.97%	*0.03*	14.15%	*0.01*	2.58%	0.12	12.04%	*0.03*	1.39%	*0.03*	2.11%	*0.10*
+ 8	-4.45%	*0.01*	9.70%	*0.07*	-3.39%	*0.03*	8.65%	*0.09*	-1.06%	*0.03*	1.05%	0.27
+ 9	-1.94%	0.12	7.77%	0.13	-1.18%	0.22	7.47%	0.13	-0.75%	0.11	0.30%	0.44
+10	-1.58%	0.22	6.19%	0.19	-1.06%	0.31	6.41%	0.18	-0.52%	0.23	-0.22%	0.46
+11	-0.40%	0.41	5.79%	0.22	-1.24%	0.23	5.17%	0.24	0.84%	*0.08*	0.62%	0.38
+12	-1.43%	0.22	4.36%	0.28	-1.25%	0.24	3.91%	0.30	-0.18%	0.37	0.44%	0.42
+13	2.31%	0.12	6.66%	0.20	2.25%	0.11	6.16%	0.21	0.06%	0.46	0.50%	0.41
+14	4.15%	*0.03*	10.81%	*0.09*	4.07%	*0.04*	10.24%	*0.10*	0.08%	0.44	0.58%	0.40
+15	2.75%	0.13	13.57%	*0.06*	3.43%	*0.06*	13.66%	*0.05*	-0.68%	0.14	-0.10%	0.48
+16	0.77%	0.37	14.33%	*0.05*	-0.03%	0.49	13.63%	*0.06*	0.80%	*0.09*	0.70%	0.39
+17	0.98%	0.25	15.31%	*0.04*	-0.34%	0.40	13.29%	*0.06*	1.32%	*0.02*	2.03%	0.21
+18	3.52%	*0.07*	18.83%	*0.02*	3.01%	*0.10*	16.30%	*0.04*	0.51%	0.23	2.53%	0.17
+19	3.25%	*0.06*	22.08%	*0.01*	1.17%	0.29	17.47%	*0.03*	2.08%	*0.00*	4.62%	*0.05*
+20	1.51%	0.23	23.59%	*0.01*	1.44%	0.24	18.91%	*0.02*	0.07%	0.46	4.68%	*0.05*
+21	-0.70%	0.35	22.89%	*0.01*	-2.00%	0.13	16.91%	*0.04*	1.29%	*0.01*	5.98%	*0.02*
+22	3.16%	*0.05*	26.05%	*0.00*	2.01%	0.14	18.93%	*0.03*	1.15%	*0.03*	7.13%	*0.01*
+23	0.56%	0.40	26.62%	*0.00*	0.12%	0.48	19.05%	*0.03*	0.44%	0.27	7.57%	*0.01*
+24	6.23%	*0.00*	32.85%	*0.00*	6.09%	*0.00*	25.14%	*0.01*	0.14%	0.42	7.71%	*0.01*
+30	1.96%	0.14	32.93%	*0.00*	1.58%	0.20	22.55%	*0.02*	0.38%	0.25	10.37%	*0.00*
+36	0.30%	0.41	31.30%	*0.00*	0.76%	0.30	19.35%	*0.05*	-0.45%	0.24	11.95%	*0.00*

[a]*The computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.*

The comparison for only the 1990s issues, shown in in Table 7 Panel A, has the CXR for the European sample versus the U.S. index is -1.87%, while the CXR for the European sample versus the regional index was -0.46%. This gives a difference between the regional index and the U.S. index of -1.41%. In Table 7 Panel B, the same comparison is made, but it is for the 2000s issues. It includes 55 observations in the

sample and shows a CXR for the European sample versus the U.S. index of 25.91% and a CXR for the European sample versus the regional index of 10.09%. This means that the difference between the regional index and the U.S. index was 15.82%. These results would seem to indicate that the European index tracks closely with the S&P500 and there appears to be less benefit of diversification for purchasing European ADRs.

Table 6: 3-Year Performance for European NYSE-Listed ADRs US versus Regional Index (1990 – 2009)[a]

	European Sample Versus US Index				European Sample Versus Regional Index				Regional Index – US Index			
Month	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
+ 1	0.77%	0.22	0.77%	0.22	0.67%	0.26	0.67%	0.26	0.10%	0.38	0.10%	0.38
+ 2	1.38%	*0.08*	2.15%	*0.06*	1.76%	*0.04*	2.44%	*0.04*	-0.39%	0.13	-0.29%	0.27
+ 3	1.64%	*0.07*	3.79%	*0.02*	1.48%	*0.10*	3.91%	*0.02*	0.16%	0.32	-0.13%	0.42
+ 4	1.12%	0.14	4.90%	*0.01*	0.69%	0.27	4.60%	*0.02*	0.43%	*0.10*	0.31%	0.33
+ 5	-0.57%	0.29	4.33%	*0.03*	-0.81%	0.22	3.79%	*0.06*	0.24%	0.27	0.55%	0.24
+ 6	-0.56%	0.29	3.77%	*0.07*	-0.45%	0.33	3.34%	*0.10*	-0.11%	0.38	0.44%	0.30
+ 7	-0.13%	0.44	3.65%	*0.09*	-0.04%	0.48	3.29%	0.12	-0.08%	0.40	0.36%	0.35
+ 8	0.60%	0.28	4.24%	*0.07*	0.95%	0.19	4.24%	*0.07*	-0.36%	0.15	0.00%	0.50
+ 9	-1.69%	*0.02*	2.55%	0.20	-2.12%	*0.01*	2.12%	0.24	0.43%	*0.10*	0.43%	0.34
+10	0.41%	0.33	2.96%	0.17	0.22%	0.41	2.34%	0.23	0.19%	0.30	0.62%	0.29
+11	0.05%	0.47	3.01%	0.17	0.28%	0.34	2.63%	0.21	-0.23%	0.25	0.39%	0.37
+12	0.17%	0.43	3.18%	0.17	0.39%	0.34	3.02%	0.19	-0.22%	0.23	0.17%	0.44
+13	-1.82%	*0.02*	1.36%	0.35	-1.93%	*0.01*	1.08%	0.38	0.11%	0.36	0.28%	0.41
+14	-0.30%	0.37	1.06%	0.38	-0.34%	0.35	0.74%	0.42	0.04%	0.45	0.32%	0.40
+15	1.09%	0.15	2.15%	0.28	0.42%	0.35	1.16%	0.38	0.66%	*0.04*	0.98%	0.23
+16	1.01%	0.17	3.16%	0.21	1.46%	*0.09*	2.63%	0.25	-0.45%	*0.09*	0.53%	0.35
+17	0.09%	0.46	3.25%	0.21	0.16%	0.43	2.79%	0.25	-0.07%	0.41	0.46%	0.37
+18	0.58%	0.28	3.82%	0.17	0.30%	0.38	3.09%	0.23	0.27%	0.17	0.73%	0.31
+19	-1.34%	*0.06*	2.49%	0.28	-1.85%	*0.02*	1.24%	0.39	0.51%	*0.05*	1.25%	0.20
+20	1.35%	0.12	3.83%	0.19	1.46%	*0.09*	2.70%	0.27	-0.12%	0.36	1.13%	0.23
+21	1.29%	0.16	5.12%	0.13	0.82%	0.27	3.52%	0.22	0.47%	*0.08*	1.60%	0.15
+22	-1.35%	*0.09*	3.77%	0.21	-1.13%	0.13	2.39%	0.31	-0.22%	0.27	1.38%	0.19
+23	0.57%	0.29	4.34%	0.18	0.51%	0.31	2.90%	0.27	0.06%	0.43	1.44%	0.19
+24	0.13%	0.44	4.47%	0.18	0.11%	0.45	3.01%	0.27	0.02%	0.48	1.46%	0.19
+30	-0.02%	0.49	7.08%	*0.09*	-0.53%	0.27	3.93%	0.23	0.52%	*0.04*	3.16%	*0.04*
+36	-0.31%	0.37	7.03%	0.11	-0.68%	0.24	2.41%	0.34	0.37%	*0.10*	4.62%	*0.01*

[a]*The computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.*

Comparing the excess performance across decades shows that the ADRs performed about the same as the US and European indexes in the 1990s. However they outperformed both indexes in the 2000s while the world stock markets were very volatile. This suggests these ADRs provided diversification benefits to investors in both regions.

The 3-year performance for Latin American ADRS is shown in Table 8. The Latin America sample includes 118 observations. After 36 months, the CXR was 1.38% for the Latin America sample versus the U.S index and 7.29% for the Latin America sample versus the regional index. This means that the difference between the regional index and the U.S. index was -5.91%.

Table 7: 3-Year Performance for European NYSE-Listed ADRs US versus Regional Index[a]

	European Sample Versus US Index				European Sample Versus Regional Index				Regional Index – US Index			
Month	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
Panel A: 1990s Issues												
+ 1	0.62%	0.30	0.62%	0.30	0.58%	0.32	0.58%	0.32	0.04%	0.46	0.04%	0.46
+ 2	1.33%	0.12	1.95%	0.12	1.68%	*0.07*	2.25%	*0.09*	-0.35%	0.22	-0.31%	0.32
+ 3	1.86%	0.11	3.81%	*0.04*	1.79%	0.12	4.05%	*0.04*	0.06%	0.45	-0.24%	0.38
+ 4	1.47%	0.14	5.28%	*0.02*	1.44%	0.16	5.48%	*0.02*	0.04%	0.47	-0.21%	0.41
+ 5	-0.63%	0.32	4.65%	*0.06*	-0.85%	0.27	4.63%	*0.06*	0.22%	0.35	0.01%	0.50
+ 6	0.31%	0.40	4.96%	*0.06*	0.56%	0.33	5.20%	*0.06*	-0.25%	0.30	-0.24%	0.42
+ 7	-0.64%	0.29	4.31%	*0.10*	-0.86%	0.24	4.34%	0.11	0.21%	0.31	-0.03%	0.49
+ 8	-0.43%	0.38	3.89%	0.14	0.27%	0.43	4.61%	0.11	-0.70%	*0.07*	-0.73%	0.30
+ 9	-1.24%	*0.10*	2.64%	0.24	-1.77%	*0.05*	2.84%	0.24	0.53%	0.13	-0.20%	0.44
+10	-0.14%	0.45	2.50%	0.26	-0.31%	0.60	2.53%	0.27	0.17%	0.36	-0.03%	0.49
+11	-0.30%	0.37	2.20%	0.29	-0.43%	0.66	2.10%	0.31	0.13%	0.40	0.10%	0.48
+12	0.04%	0.48	2.24%	0.30	0.44%	0.36	2.54%	0.28	-0.39%	0.83	-0.29%	0.43
+13	-1.80%	*0.03*	0.44%	0.46	-1.60%	*0.06*	0.94%	0.42	-0.20%	0.33	-0.50%	0.38
+14	-0.45%	0.35	-0.01%	0.50	-0.59%	0.31	0.35%	0.47	0.14%	0.39	-0.36%	0.42
+15	2.33%	*0.02*	2.32%	0.31	1.15%	0.19	1.50%	0.38	1.18%	*0.02*	0.82%	0.33
+16	0.84%	0.25	3.16%	0.26	1.46%	0.13	2.96%	0.28	-0.63%	0.11	0.19%	0.46
+17	0.33%	0.39	3.49%	0.24	0.87%	0.22	3.84%	0.23	-0.54%	*0.09*	-0.34%	0.43
+18	1.31%	0.14	4.80%	0.17	1.37%	0.14	5.21%	0.16	-0.06%	0.44	-0.40%	0.42
+19	-1.46%	*0.09*	3.34%	0.26	-1.65%	*0.07*	3.55%	0.26	0.19%	0.34	-0.21%	0.46
+20	-0.08%	0.48	3.27%	0.27	0.71%	0.29	4.27%	0.22	-0.79%	*0.04*	-1.00%	0.32
+21	0.12%	0.47	3.39%	0.27	-0.41%	0.59	3.85%	0.25	0.54%	0.13	-0.46%	0.41
+22	-2.52%	*0.02*	0.87%	0.44	-1.56%	0.11	2.30%	0.35	-0.96%	*0.02*	-1.43%	0.26
+23	0.45%	0.37	1.32%	0.41	0.47%	0.37	2.76%	0.33	-0.02%	0.49	-1.44%	0.26
+24	0.27%	0.41	1.60%	0.40	0.65%	0.30	3.42%	0.29	-0.38%	0.22	-1.82%	0.21
+30	0.87%	0.22	2.19%	0.37	0.41%	0.36	3.25%	0.32	0.47%	0.13	-1.06%	0.34
+36	-1.98%	*0.06*	-1.87%	0.40	-1.92%	0.08	-0.46%	0.48	-0.06%	0.44	-1.41%	0.30
Panel B: 2000s Issues												
+ 1	0.95%	0.28	0.95%	0.28	0.87%	0.31	0.87%	0.31	0.08%	0.43	0.08%	0.43
+ 2	2.39%	*0.09*	3.34%	*0.08*	2.75%	*0.05*	3.63%	*0.07*	-0.36%	0.24	-0.28%	0.34
+ 3	1.82%	0.11	5.16%	*0.03*	1.56%	0.16	5.18%	*0.04*	0.26%	0.28	-0.02%	0.49
+ 4	0.98%	0.27	6.14%	*0.03*	-0.08%	0.48	5.10%	*0.06*	1.07%	*0.00*	1.04%	0.13
+ 5	0.52%	0.35	6.67%	*0.03*	0.27%	0.42	5.37%	*0.07*	0.25%	0.29	1.29%	*0.10*
+ 6	-1.72%	0.12	4.95%	*0.10*	-1.91%	*0.09*	3.46%	0.19	0.19%	0.34	1.49%	*0.09*
+ 7	-0.08%	0.48	4.86%	0.12	0.44%	0.38	3.90%	0.17	-0.52%	0.12	0.96%	0.21
+ 8	2.21%	*0.06*	7.07%	*0.05*	2.07%	*0.06*	5.97%	*0.09*	0.14%	0.37	1.10%	0.19
+ 9	-2.13%	*0.07*	4.94%	0.14	-2.48%	*0.04*	3.49%	0.22	0.35%	0.23	1.45%	0.14
+10	2.79%	*0.05*	7.73%	*0.06*	2.44%	*0.08*	5.93%	0.11	0.35%	0.26	1.80%	0.11
+11	0.25%	0.39	7.99%	*0.05*	1.10%	*0.09*	7.03%	*0.08*	-0.85%	*0.04*	0.95%	0.27
+12	-0.18%	0.44	7.81%	*0.06*	-0.33%	0.38	6.71%	*0.09*	0.15%	0.36	1.10%	0.25
+13	-1.79%	0.12	6.02%	0.13	-2.19%	*0.07*	4.51%	0.20	0.40%	0.22	1.50%	0.19
+14	-0.29%	0.41	5.72%	0.15	-0.33%	0.40	4.18%	0.22	0.04%	0.47	1.54%	0.19
+15	-1.14%	0.27	4.58%	0.21	-1.46%	0.21	2.72%	0.32	0.32%	0.15	1.86%	0.15
+16	0.25%	0.45	4.83%	0.22	0.62%	0.38	3.35%	0.29	-0.38%	0.15	1.48%	0.21
+17	-1.09%	0.27	3.75%	0.28	-1.76%	0.15	1.59%	0.40	0.67%	*0.06*	2.16%	0.12
+18	-0.12%	0.47	3.63%	0.29	-0.72%	0.32	0.87%	0.45	0.60%	*0.06*	2.76%	*0.07*
+19	-0.27%	0.43	3.36%	0.31	-1.55%	0.15	-0.68%	0.46	1.28%	*0.00*	4.04%	*0.02*
+20	3.82%	*0.02*	7.18%	0.15	2.65%	*0.07*	1.97%	0.39	1.17%	*0.00*	5.21%	*0.00*
+21	2.37%	*0.10*	9.56%	*0.10*	2.07%	0.13	4.04%	0.29	0.30%	0.24	5.51%	*0.00*
+22	-0.58%	0.34	8.98%	0.11	-1.32%	0.18	2.72%	0.35	0.74%	*0.04*	6.25%	*0.00*
+23	2.10%	*0.09*	11.08%	*0.07*	1.72%	0.13	4.45%	0.28	0.38%	0.21	6.63%	*0.00*
+24	0.91%	0.26	11.98%	*0.06*	-0.01%	0.50	4.43%	0.28	0.92%	*0.01*	7.55%	*0.00*
+30	-1.30%	0.17	19.29%	*0.01*	-1.85%	*0.07*	8.43%	0.16	0.55%	*0.06*	10.86%	*0.00*
+36	2.73%	*0.01*	25.91%	*0.00*	1.52%	*0.08*	10.09%	0.13	1.21%	*0.00*	15.82%	*0.00*

[a]*The computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.*

Table 8: 3-Year Performance for Latin American NYSE-Listed ADRs US versus Regional Index (1990 – 2009)[a]

Month	Lat. Amer. Sample Versus US Index				Lat. Amer. Sample Versus Regional Index				Regional Index – US Index			
	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
+ 1	0.50%	0.36	0.50%	0.36	1.07%	0.26	1.07%	0.26	-0.57%	0.18	-0.57%	0.18
+ 2	0.85%	0.25	1.35%	0.24	-0.14%	0.47	0.93%	0.35	0.99%	*0.08*	0.42%	0.33
+ 3	-1.25%	0.15	0.09%	0.48	-2.66%	*0.05*	-1.73%	0.28	1.41%	*0.03*	1.82%	*0.07*
+ 4	1.06%	0.18	1.15%	0.32	1.31%	0.20	-0.42%	0.45	-0.25%	0.37	1.57%	0.14
+ 5	3.11%	*0.02*	4.26%	*0.08*	4.73%	*0.01*	4.32%	0.13	-1.63%	*0.03*	-0.05%	0.49
+ 6	-0.92%	0.24	3.34%	0.15	-0.25%	0.44	4.06%	0.17	-0.67%	0.17	-0.72%	0.35
+ 7	-1.60%	0.11	1.74%	0.31	-1.20%	0.23	2.86%	0.27	-0.40%	0.25	-1.12%	0.28
+ 8	-1.48%	0.11	0.26%	0.47	-2.73%	*0.04*	0.13%	0.49	1.26%	*0.04*	0.14%	0.47
+ 9	-0.49%	0.35	-0.23%	0.48	-1.68%	0.13	-1.55%	0.38	1.19%	*0.04*	1.33%	0.27
+10	0.96%	0.26	0.73%	0.43	0.41%	0.41	-1.15%	0.42	0.55%	0.21	1.88%	0.20
+11	-1.06%	0.17	-0.33%	0.47	-1.05%	0.25	-2.20%	0.35	-0.01%	0.49	1.87%	0.21
+12	0.52%	0.35	0.19%	0.48	0.64%	0.35	-1.56%	0.39	-0.11%	0.43	1.75%	0.24
+13	1.48%	0.19	1.67%	0.37	1.35%	0.26	-0.21%	0.49	0.13%	0.42	1.88%	0.23
+14	1.16%	0.21	2.83%	0.29	1.31%	0.22	1.10%	0.43	-0.15%	0.40	1.73%	0.25
+15	-1.01%	0.23	1.82%	0.36	-1.55%	0.17	-0.45%	0.47	0.54%	0.22	2.27%	0.20
+16	-0.65%	0.33	1.18%	0.41	-1.05%	0.29	-1.49%	0.41	0.40%	0.29	2.67%	0.17
+17	-0.20%	0.44	0.98%	0.43	-0.16%	0.46	-1.66%	0.41	-0.04%	0.48	2.64%	0.18
+18	-1.43%	0.16	-0.45%	0.47	-2.59%	*0.07*	-4.24%	0.28	1.15%	*0.05*	3.79%	*0.10*
+19	1.65%	0.13	1.20%	0.42	2.26%	*0.10*	-1.98%	0.40	-0.61%	0.16	3.18%	0.15
+20	1.69%	0.16	2.88%	0.32	2.03%	0.16	0.05%	0.50	-0.35%	0.31	2.83%	0.18
+21	-3.05%	*0.02*	-0.17%	0.49	-3.14%	*0.03*	-3.09%	0.35	0.09%	0.44	2.92%	0.18
+22	0.51%	0.34	0.34%	0.48	1.33%	0.20	-1.76%	0.41	-0.82%	*0.10*	2.10%	0.26
+23	-1.36%	*0.07*	-1.02%	0.44	-0.69%	*0.30*	-2.45%	0.38	-0.67%	0.14	1.43%	0.33
+24	-0.86%	0.20	-1.88%	0.39	-0.66%	0.31	-3.11%	0.35	-0.20%	0.36	1.24%	0.36
+30	0.72%	0.26	3.85%	0.30	0.94%	0.25	6.78%	0.23	-0.22%	0.35	-2.93%	0.21
+36	3.65%	*0.00*	1.38%	0.43	4.04%	*0.00*	7.29%	0.23	-0.39%	0.21	-5.91%	*0.06*

[a]The computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.

In Table 9 Panel A, the same comparison is made but for the 1990s issues only. The Latin America sample versus the U.S. index CXR was -18.74%. The CXR for the Latin America sample versus the regional index was -24.57%, giving a 5.83% difference between the regional index and the U.S. index in the 1990s.

Table 9 Panel B shows the comparison of a Latin America sample of 30 observations and the U.S. and regional indexes for the 2000s issues. It shows the CXR for the Latin America sample versus the U.S. index is 57.79% while the Latin America versus the region CXR was 99.62%. This gives us a difference between the regional index and the U.S. index of -41.83%. The performance of Latin American ADRs indicates that they provide the most diversification benefits of the three regions. Furthermore, because Latin American ADRs traded on the NYSE are probably the largest firms in the emerging regions, they seem to have a wider range of performance relative to the regional index (as indicated by the ADRs strongly outperforming the regional index).

By comparing the excess performance of the Latin American ADRs listed in the 1990s to the 2000s, we see that the ADRs did better versus the S&P 500 index when the US market was volatile (the 2000s) than when the US market was stable (the 1990s). The same holds true when comparing the ADRs versus the regional index. Therefore, the Latin American firms listed as ADRs on the NYSE provided diversification benefits for investors in both regions.

Table 9: 3-Year Performance for Latin American NYSE-Listed ADRs US versus Regional Index[a]

	Lat. Amer. Sample Versus US Index				Lat. Amer. Sample Versus Regional Index				Regional Index – US Index			
Month	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value	XR	P-value	CXR	P-value
Panel A: 1990s Issues												
+ 1	-0.69%	0.35	-0.69%	0.35	-0.26%	0.45	-0.26%	0.45	-0.43%	0.29	-0.43%	0.29
+ 2	-0.14%	0.46	-0.83%	0.36	-1.49%	0.25	-1.74%	0.28	1.35%	*0.07*	0.92%	0.23
+ 3	-2.06%	*0.08*	-2.88%	0.15	-3.93%	*0.02*	-5.68%	*0.06*	1.88%	*0.02*	2.79%	*0.03*
+ 4	0.62%	0.33	-2.26%	0.23	0.45%	0.40	-5.23%	*0.10*	0.18%	0.43	2.97%	*0.05*
+ 5	4.45%	*0.01*	2.19%	0.27	6.67%	*0.01*	1.44%	0.38	-2.22%	*0.02*	0.75%	0.36
+ 6	-1.51%	0.17	0.68%	0.43	-0.74%	0.36	0.70%	0.45	-0.77%	0.19	-0.01%	0.50
+ 7	-2.89%	*0.03*	-2.21%	0.30	-2.94%	*0.06*	-2.25%	0.35	0.05%	0.47	0.04%	0.49
+ 8	-2.52%	*0.03*	-4.73%	0.15	-4.61%	*0.00*	-6.86%	0.12	2.10%	*0.01*	2.13%	0.20
+ 9	0.21%	0.44	-4.52%	0.17	-1.73%	0.13	-8.59%	*0.08*	1.93%	*0.01*	4.07%	*0.07*
+10	0.21%	0.45	-4.31%	0.20	-1.54%	0.24	-10.13%	*0.06*	1.75%	*0.02*	5.82%	*0.02*
+11	-1.81%	*0.10*	-6.12%	0.12	-2.01%	0.15	-12.14%	*0.04*	0.20%	0.41	6.02%	*0.02*
+12	0.04%	0.49	-6.09%	0.13	-0.50%	0.41	-12.64%	*0.04*	0.54%	0.25	6.56%	*0.02*
+13	0.25%	0.45	-5.84%	0.16	-0.51%	0.43	-13.15%	*0.04*	0.75%	0.19	7.31%	*0.01*
+14	1.25%	0.24	-4.59%	0.23	0.88%	0.33	-12.27%	*0.06*	0.37%	0.32	7.68%	*0.01*
+15	-1.60%	0.17	-6.19%	0.17	-2.42%	0.12	-14.69%	*0.04*	0.82%	0.17	8.50%	*0.01*
+16	-0.88%	0.31	-7.07%	0.14	-2.18%	0.18	-16.87%	*0.02*	1.30%	*0.07*	9.81%	*0.00*
+17	-1.33%	0.21	-8.40%	0.11	-1.51%	0.23	-18.38%	*0.02*	0.18%	0.41	9.99%	*0.00*
+18	-0.89%	0.31	-9.28%	*0.09*	-2.32%	0.15	-20.71%	*0.01*	1.44%	*0.05*	11.42%	*0.00*
+19	0.38%	0.42	-8.91%	0.11	0.88%	0.33	-19.83%	*0.02*	-0.50%	0.25	10.92%	*0.00*
+20	3.23%	*0.07*	-5.67%	0.23	3.38%	*0.10*	-16.45%	*0.04*	-0.14%	0.44	10.77%	*0.00*
+21	-5.38%	*0.00*	-11.05%	*0.08*	-5.65%	*0.00*	-22.10%	*0.01*	0.27%	0.35	11.05%	*0.00*
+22	0.35%	0.41	-10.70%	*0.09*	1.08%	0.29	-21.02%	*0.02*	-0.73%	0.19	10.32%	*0.00*
+23	-2.79%	*0.01*	-13.49%	*0.05*	-2.66%	*0.05*	-23.68%	*0.01*	-0.13%	0.43	10.20%	*0.01*
+24	-0.11%	0.46	-13.60%	*0.05*	0.03%	0.49	-23.66%	*0.01*	-0.14%	0.42	10.06%	*0.01*
+30	-0.57%	0.33	-10.47%	0.12	-0.23%	0.44	-16.49%	*0.07*	-0.33%	0.30	6.02%	*0.09*
+36	3.79%	*0.02*	-18.74%	*0.02*	3.45%	*0.03*	-24.57%	*0.02*	0.34%	0.28	5.83%	0.11
Panel B: 2000s Issues												
+ 1	3.78%	*0.05*	3.78%	*0.05*	4.67%	*0.03*	4.67%	*0.03*	-0.89%	0.15	-0.89%	0.15
+ 2	2.60%	0.13	6.38%	*0.02*	2.54%	0.16	7.21%	*0.02*	0.06%	0.47	-0.83%	0.24
+ 3	1.00%	0.29	7.38%	*0.02*	0.92%	0.35	8.13%	*0.03*	0.08%	0.47	-0.75%	0.32
+ 4	2.43%	0.11	9.81%	*0.01*	4.31%	*0.06*	12.44%	*0.01*	-1.88%	*0.06*	-2.63%	*0.10*
+ 5	-1.14%	0.30	8.68%	*0.03*	-1.28%	0.32	11.16%	*0.03*	0.15%	0.44	-2.48%	0.13
+ 6	0.39%	0.43	9.06%	*0.04*	0.64%	0.41	11.81%	*0.03*	-0.26%	0.41	-2.74%	0.13
+ 7	1.58%	0.22	10.64%	*0.03*	3.34%	*0.10*	15.14%	*0.01*	-1.76%	*0.04*	-4.50%	*0.05*
+ 8	1.47%	0.30	12.11%	*0.03*	2.36%	0.24	17.51%	*0.01*	-0.89%	0.18	-5.39%	*0.03*
+ 9	-2.12%	0.25	9.99%	*0.08*	-1.35%	0.36	16.16%	*0.03*	-0.77%	0.18	-6.16%	*0.02*
+10	2.12%	0.15	12.11%	*0.05*	5.11%	*0.02*	21.26%	*0.01*	-2.99%	*0.00*	-9.15%	*0.00*
+11	0.84%	0.31	12.95%	*0.04*	1.66%	0.23	22.93%	*0.01*	-0.83%	0.21	-9.98%	*0.00*
+12	1.76%	0.22	14.71%	*0.03*	3.11%	0.13	26.03%	*0.00*	-1.34%	*0.05*	-11.32%	*0.00*
+13	4.43%	*0.03*	19.14%	*0.01*	6.28%	*0.01*	32.31%	*0.00*	-1.85%	*0.02*	-13.18%	*0.00*
+14	1.13%	0.31	20.26%	*0.01*	2.86%	0.14	35.17%	*0.00*	-1.73%	*0.02*	-14.91%	*0.00*
+15	0.55%	0.38	20.82%	*0.01*	0.61%	0.39	35.78%	*0.00*	-0.06%	0.47	-14.97%	*0.00*
+16	-0.14%	0.47	20.67%	*0.01*	2.07%	0.22	37.85%	*0.00*	-2.21%	*0.01*	-17.17%	*0.00*
+17	2.24%	0.16	22.91%	*0.01*	3.37%	0.11	41.21%	*0.00*	-1.13%	0.13	-18.30%	*0.00*
+18	-2.97%	*0.07*	19.94%	*0.02*	-3.16%	0.12	38.05%	*0.00*	0.19%	0.42	-18.11%	*0.00*
+19	6.70%	*0.00*	26.64%	*0.00*	8.22%	*0.00*	46.28%	*0.00*	-1.53%	*0.06*	-19.64%	*0.00*
+20	-2.61%	*0.10*	24.02%	*0.01*	-1.28%	0.31	45.00%	*0.00*	-1.34%	*0.08*	-20.98%	*0.00*
+21	3.29%	*0.09*	27.31%	*0.00*	4.29%	*0.07*	49.29%	*0.00*	-1.00%	0.13	-21.98%	*0.00*
+22	2.01%	0.11	29.32%	*0.00*	3.40%	*0.04*	52.70%	*0.00*	-1.40%	*0.04*	-23.38%	*0.00*
+23	2.81%	*0.01*	32.13%	*0.00*	4.63%	*0.01*	57.32%	*0.00*	-1.81%	*0.04*	-25.19%	*0.00*
+24	-2.96%	*0.07*	29.17%	*0.00*	-2.27%	0.19	55.05%	*0.00*	-0.69%	0.25	-25.88%	*0.00*
+30	3.65%	*0.05*	43.57%	*0.00*	3.51%	0.12	74.40%	*0.00*	0.14%	0.45	-30.83%	*0.00*
+36	2.80%	*0.01*	57.79%	*0.00*	5.25%	*0.00*	99.62%	*0.00*	-2.45%	*0.00*	-41.83%	*0.00*

[a]*The computation of average excess returns (XR) is described in equation 2 in the text and the computation of cumulative excess returns (CXR) is described in equation 3 in the text. P-values in bold italics represent returns that are significant at the 10% alpha level.*

CONCLUDING COMMENTS

Previous ADR performance studies have focused mostly on excess returns relative to the US market benchmark during brief periods. This study analyzed the characteristics and benefits of ADRs compared

to US and regional indexes for two full decades. We computed cumulative excess returns of ADRs listed by companies headquartered in the Asia Pacific, European, and Latin American regions. We calculated the CXR using both the S&P 500 index and the relevant Morgan Stanley Capital International regional indexes (these represent a typical US investor's easily obtainable investment set). We then divided our samples to analyze performance during stable periods (1990s) and volatile periods (2000s). Utilizing only ADRs listed on the New York Stock Exchange ensured the highest information requirements were met by the ADR issuing firms and helped to control somewhat for firm size. The results show that ADRs are a great way to diversify your portfolio even though their regional indexes closely follow the US market. We found that the developing and emerging regions of Asia Pacific and Latin American provide more diversification than those of the more established European region. Our study provides evidence that the ADRs provided US investors with good diversification benefits based on their performance in the 1990s (during stable times) versus their much better performance versus the S&P 500 in the 2000s (when the markets were volatile). Offsetting portfolio losses when the US market is correcting makes ADR investing very attractive.

A major reason for tracking performance with the regional indexes was to help understand the role of country and exchange rate risks not accounted for when comparing ADR returns solely to US benchmark returns. Overall, the entire sample shows that lumping the regional ADRs together eliminates most of these risks as shown by how the indexes performed roughly the same. This result is in spite of some of the vast differences of isolated regions versus the US index. Once again, ADRs not only provide diversification benefits based on market timing (when US markets are stable versus volatile) but also provide exchange rate and country risk diversification benefits as well when employing a well-diversified portfolio across different regions. Also, a case can be made that ADR investing can in some instances be superior to international index investing as seen by how much ADRs tended to do versus the regional indexes. While most European countries have the same currency, this is not true for Asia Pacific countries nor those in Latin American. Therefore, to better analyze exchange rate risk benefits of ADRs, future research should focus on calculating cumulative excess return using country specific indexes; particularly those country specific indexes that can be easily acquired as exchange traded index funds (ETFs).

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HEDGING STRATEGY COMPARISONS OF VOLATILITY INDEX OPTIONS USING DIFFUSION MODELS

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ABSTRACT

With the innovation of derivatives, the Standard and Poor's (S&P) 500 index -- as an underlying asset of the volatility index (VIX) introduced by the Chicago Board Options Exchange (CBOE) -- was adopted as the research subject in this study. Since the financial crisis of 2008, the degree of market volatility has increased substantially. In addition, a random process has been found jumping about in the VIX data. In this study we compare VIX options based on different diffusion models. In this study, when a jump component is considered in the VIX process, the expectation maximization (EM) method is used to estimate parameters; this is a different perspective of evaluation from other studies. This paper further analyzes different hedging strategies based on different diffusion models.

INTRODUCTION

In recent years, volatility indices have been popular as a measure of market uncertainty. The first volatility index, VIX, was introduced by the Chicago Board Options Exchange (CBOE) in 1993. The VIX is calculated from Standard and Poor's (S&P) 500 option prices. In 2003, the CBOE modified the VIX by using the model-free methodology as a weighted sum of the out-of-the-money S&P 500 call and put option prices at two nearby maturities across all available strikes. In order to hedge volatility risk, Brenner and Galai (1989, 1993) first suggest the volatility derivatives. Until now, there are several types of derivatives used for hedging (or trading) volatility, including variance and volatility swaps, futures, and options. In this paper, we compare different hedging strategies of VIX options using different models. Specifically, unlike prior research, this study uses both maximum likelihood estimation (MLE) and expectation maximization (EM) algorithms to estimate parameters of diffusion processes. These two approaches are taken because recent studies have found that the MLE algorithm has some weakness in parameter estimations when the stochastic processes feature jump components.

We find that VIX option values, based on a diffusion model, will undervalue in a short time to maturity but overvalue in a long time to maturity. In addition, when investors consider hedging strategies, VIX options based on different diffusion models might influence the performance of the hedging strategies. The remainder of this paper is organized into five sections. Section 2 reviews the previous findings in the literature. In Section 3, we describe the methodology -- the EM algorithm. In Section 4, we present the numerical results for comparisons. A conclusion is provided in Section 5.

LITERATURE REVIEW

In the related literature, various volatility option-pricing models have been developed. For example, Whaley (1993), and Detemple and Osakwe (2000) use different specifications of the process that the VIX may follow. Bollerslev, Kretschmer, Pigorsch and Tauchen (2009), as well as Aboura and Wagner (2014) use the ARCH model for volatility of the volatility of daily market returns. Kaeck and Alexander (2012) estimate

several continuous-time models by using the Markov chain Monte Carlo and then tested parameter estimates with extensive option data samples. Hao and Zhang (2013) propose a joint likelihood estimation with returns and VIX for option pricing. There has also been a growing interest in the literature concerning modeling the time series dynamics of implied volatility processes. For example, Daouk and Guo (2004) estimate mean-reverting processes from implied volatility indices. Bakshi *et al*. (1997) estimate various diffusion processes with a non-linear drift and a diffusion component on the square of VXO. Although previous studies focus on the dynamic process of implied volatility, most of them follow a standard Wiener process. However, it is obvious that the VIX process might elicit a jump component from the empirical data (see Figure 1).

Figure 1: Time Series Process of VIX
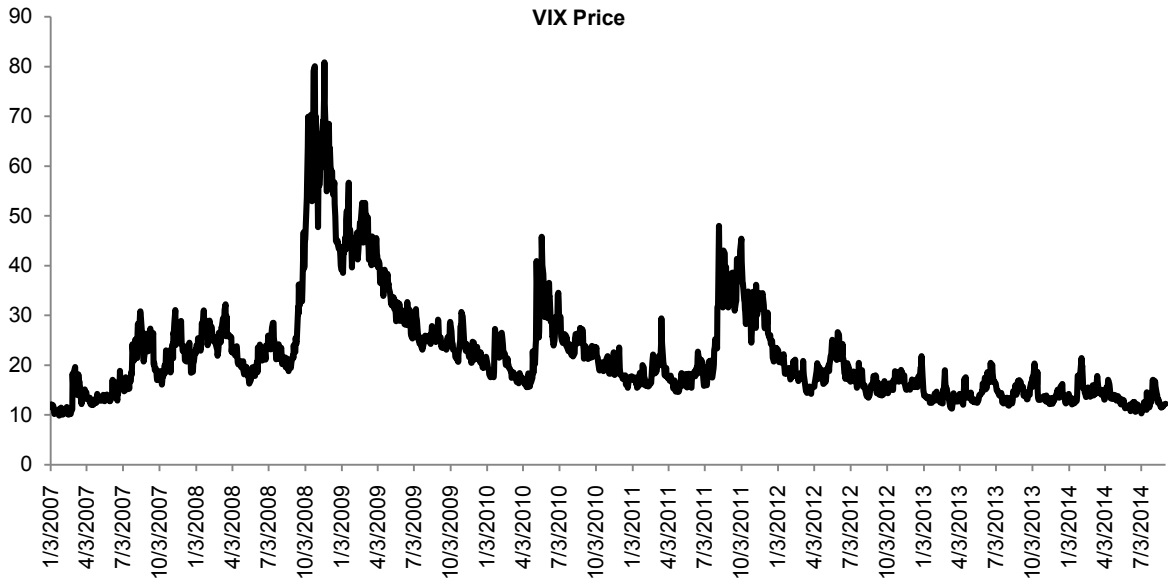
Note: *This figure depicts the daily VIX price from 1/2007 to 8/2014*

Due to this phenomenon, Wagner and Szimayer (2004) estimate a mean reverting jump diffusion process using the VIX and VDAX (VDAX is the implied volatility of German stock index) approaches. They find that positive jumps exist in implied volatilities. However, in their study, a constant jump size is used, which might affect the significance of jumps. Dotsis *et al*. (2007) examine the ability of alternative popular continuous-time diffusion and the jump diffusion processes to capture the dynamics of volatility indices. They find that the best fit to the data was the model featuring random jumps. Sepp (2008) model the VIX with the dynamics of the variance of the S&P 500 and find that jumps are important in variance. Psychoyios, Dotsis, and Markellos (2009) argue that a mean reverting logarithmic diffusion with jumps could successfully capture the VIX process. Wang and Daigler (2011) compare the empirical fit of the square root process (SQR) and Geometric Brownian Motion (GBM) models using data on options written on the VIX process. They also find evidence supporting the GBM assumption.

In related literature, researchers have addressed the jump component in other underlying asset processes. Zhou (2001) take the jump risk into account in his model and find that this jump-diffusion model is consistent with the fact that bond prices often drop at or around the time of default. Although a jump process is included in Zhou's model, there is still another problem that needed to be solved. In his model, the unobservable market value of a firm's assets is created by a Monte Carlo approach; this asset value is used to value a risky discount bond. How to get a more precise asset value becomes an important issue. Duan (1994) provide the MLE for evaluating asset values. By transferring the observable market equity data from the theoretical equity pricing formula, we can obtain the unobservable asset values. This transformed-data MLE method has been applied in Brockman and Turtle (2003), Duan, Gauthier, and Simonato (2003), Duan,

Gauthier, and Simonato (2004), Ericsson and Reneby (2005), and Wong and Choi (2009).

However, this MLE method has failed when jumps appear in the diffusion process. Craine, Lochstoer, and Syrtviet (2000) point out that when discontinuous jumps exist, the MLE is not appropriate often because local maxima are present and the algorithm would not always converge. Wong and Li (2006) argue that the MLE fails when jumps exist in credit risk models. They mention that two problems may arise when the MLE method is used for jump-diffusion structural models. First, the optimization algorithm keeps running for a very long time without converging to a stable solution. This occurrence is due to the act that the global maximum is indeed infinite. Second, an unreasonably small volatility is obtained because the volatility nears zero when the program is run for a long time.

Recent studies have shown that when occasional discontinuous jumps occur, the MLE algorithm does not always converge. The EM algorithm is then introduced. This EM algorithm is used by Duan, Gauthier, and Simonato (2004) and Wong and Li (2006) to deal with the problems that arise when the jump processes of asset values are adopted to price equity default swap (EDS). They argue that if jump components are considered, the EM algorithm is numerically more robust than the direct maximum likelihood.

DATA AND METHODOLOGY

The VIX daily data are obtained from the CBOE. A total of 2,265 observations are collected during the data period that ran from 2004 to 2012. In this study, we take the VIX data in order to estimate the parameters of diffusion processes; several diffusion processes are used to capture the VIX process. Let V_t serve as the value of the implied VIX at time t, and let dW_t be a standard Wiener process. In order to simplify the model, we will first assume that the default-free interest rate is constant over time. The first process is the Merton process:

$$dlnV_t = \mu\, dt + \sigma\, dW_t \tag{1}$$

As we mentioned before, Figure 1 shows the possibility of jumps in the VIX; hence, we also consider processes augmented with jumps.

$$\frac{dV_t}{V_{t^-}} = \mu\, dt + \sigma\, dW_t + d\left(\sum_{j=1}^{N_t}(Z_j - 1)\right) \tag{2}$$

By using the *Itô's lemma*, we can have:

$$d\omega_t = \left(\mu - \frac{1}{2}\sigma^2\right)dt + \sigma\, dW_t + Y dN_t \text{ , } \omega_t = \log V_t \tag{3}$$

$\mu = r - \lambda m,\ m = E[Z] - 1$, Z is the jump size, which follows log-normal distribution, $Y = \ln Z \sim N(k, s^2)$. dN_t presents the arrival of unexpected events, following the Poisson process, which means λ. dW, Y and dN_t are mutually independent. As previously mentioned, the MLE method has some disadvantages in estimating processes with jump components. In order to have a consistent analysis, we adopt the EM algorithm for both processes with and without jumps. Here we briefly introduce how the EM algorithm can be used for variable estimations under jump processes.

The EM algorithm is typically used to compute maximum likelihood estimates given incomplete data like a jump process or hidden variables. Let y be the observed data from a p.d.f. of $f(y, \varphi)$, where $\varphi =$

$(\varphi_1, \varphi_2, \ldots, \varphi_d)$ is a vector of parameters. Let x = [y, z] be a vector of complete data with the augmented data z. The incomplete data vector y comes from the incomplete sample space $y \in Y$. There is a 1-1 correspondence between the complete sample space x and the incomplete sample space y.

Let $\varphi^{(0)}$ be some initial value for φ. At the k-th step, the EM algorithm performs the following two steps: E-step: Projecting an appropriate functional containing the complete data on the space of the incomplete data. Calculate:

$$Q\left(\varphi, \varphi^{(k)}\right) = E_{\varphi^{(k)}}(logL(\varphi|x)|y)$$

M-step: Maximizing the functional evaluated in the E-step.

Choose the value $\varphi^{(K+1)}$ that maximizes:

$$Q\left(\varphi, \varphi^{(k)}\right), ie., Q\left(\varphi^{(k+1)}, \varphi^{(k)}\right) \geqq Q\left(\varphi, \varphi^{(k)}\right)$$

The E and M steps are iterated until the difference of $L\left(\varphi^{(K+1)}\right) - L(\varphi^{(K)})$ becomes small enough. Based on the above idea, we need the conditional p.d.f. of ω_t which is:

$$g(\omega_i|\omega_{i-1}) = (1 - \lambda\Delta t_i)f_X(\omega_i|\omega_{i-1}) + \lambda\Delta t_i f_{X+Y}(\omega_i|\omega_{i-1}) \tag{4}$$

Where:

$$X|_{\omega_{i-1}} \sim N(\omega_{i-1} + \tilde{\mu}, \sigma^2\Delta t_i) \,, \tilde{\mu} = \left(\mu - \frac{\sigma^2}{2}\right)\Delta t_i$$

$$(X + Y)|_{\omega_{i-1}} \sim N(\omega_{i-1} + \tilde{\mu} + k, \sigma^2\Delta t_i + s^2)$$

Here, we define $C = \{c_n \in \{0,1\}, n = 1, \ldots, N\}$. $c_n = j$ represents j times jumps in the (t_{n-1}, t_n) interval. Let $\pi_0 = (1 - \lambda\Delta_t)$ be the probability that no jump happens in the time interval Δ_t, so $\pi_1 = 1 - \pi_0$ indicates the probability for the jump. Wong and Li (2006) derived the EM algorithm by using the re-estimation formula. Following their steps, the re-estimation formula for all variables include (Please refer to Wong and Li (2006) for more details.):

$$\pi_0^{(m+1)} = \frac{1}{N}\sum_{j=1}^{N} P\left(c_j = 0|V^{(m)}, \theta^{(m)}\right) \tag{5}$$

Where:

$$P\left(c_j = 0|V^{(m)}, \theta^{(m)}\right) = \frac{\pi_0^{(m)} f_X\left(\omega_j^{(m)}|\omega_{j-1}^{(m)}, \mu^{(m)}, \sigma^{(m)}\right)}{\left(\omega_j^{(m)}|\omega_{j-1}^{(m)}, \theta^{(m)}\right)} \tag{6}$$

RESULTS AND DISCUSSION

Numerical Results

In order to examine whether our program can correctly estimate the needed parameters, we first create time series data based on some given parameters and then use the EM algorithm to check the accuracy. We repeat the estimation 100 times and the results are shown in Tables 1 and 2. We simulate a time series process based on the stochastic process we mentioned. For the Merton diffusion process, we can rewrite it as:

$$V_t = V_{t-1}exp\left[(\mu - 0.5\sigma^2)dt + \sigma\varepsilon\sqrt{dt}\right]$$

For the Merton jump diffusion process, we have:

$$V_t = V_{t-1}exp\left[(\mu - \lambda m - 0.5\sigma^2)dt + \sigma\varepsilon\sqrt{dt}\prod_{j=1}^{N}Z_j\right]$$

Table 1: The Comparisons between MLE and EM

	MLE_NO JUMP	EM_NOJUMP	EM_JUMP
μ=0.08	0.0730	0.0744	0.0777
σ=0.3	0.2994	0.2994	0.3025
λ=10			10.280
k=-0.05			-0.0556
s=0.1			0.0972
Likelihood function	664.63	664.63	675.97
AIC	-1325.3	-1325.3	-1341.9
BIC	-1310.8	-1310.4	-1322.4

Note: This table shows the comparisons between MLE and EM. The parameters are as follows: $\mu = 0.08, \sigma = 0.3, \lambda = 10, \kappa = -0.05, \ s = 0.1$

Table 1 shows the simulation results. From the above results, it seems that the EM algorithm has good parameter estimation results. Even though we use the EM algorithm for parameters estimation without a jump component process, we still have a lower AIC and BIC.   Since the EM algorithm can provide better results for parameters estimation, we then use the EM algorithm to estimate parameters for diffusion models by using the real VIX data. The results are shown in Table 2.

Table 2: The Parameters Estimation of the VIX Process

	EM_NOJUMP	EM_JUMP
μ	0.5686	-0.8115
σ	1.0676	0.7612
λ		39.405
k		0.0375
s		0.1193

Note: Table 2 shows the parameters estimation of VIX based on the EM algorithm.

The Relationship of Call Options and Time to Maturity

We can use the parameters obtained above for options pricing to demonstrate the performance of hedging strategies based on different diffusion process assumptions. We show the comparisons of in-the-money (ITM), out-the-money (OTM), and at-the-money (ATM) options based on different diffusion process settings. In Figure 2, we assume the diffusion model and jump-diffusion model for the VIX to gain the relation of time to maturity along with 20 percent ITM call options, 20 percent OTM, or 20 percent ATM call options. We find that when the time is getting closer to expiration, the price of 20 percent ITM call options are highest, followed by ATM call options. Furthermore, when compared with the jump-diffusion model, the diffusion models of 20 percent ITM, 20 percent OTM, and 20 percent ATM call options are

undervalued with shorter maturities but overvalued with longer maturities.

Figure 2: The Relation between Option Values and Time to Maturity
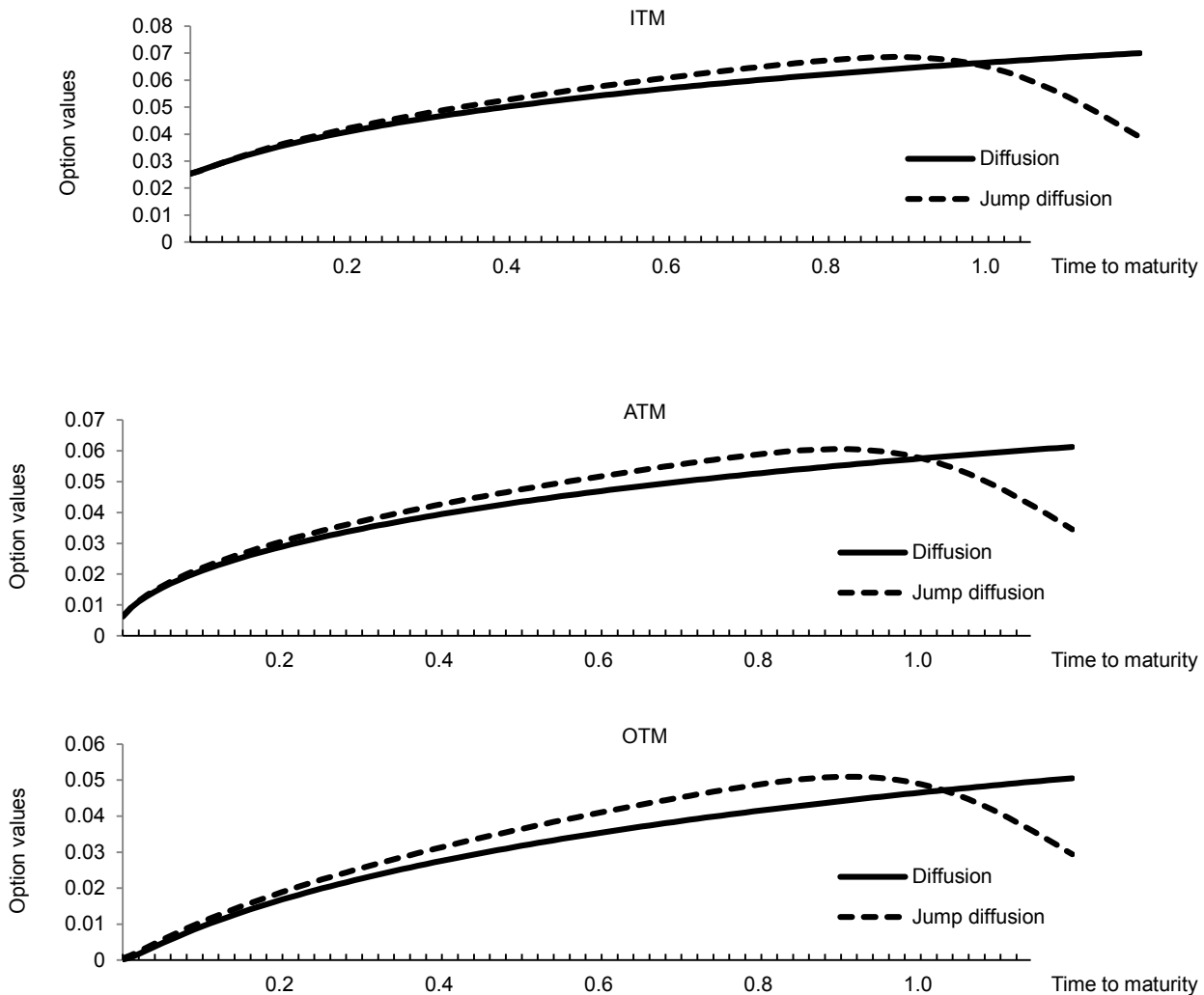
Note: This figure shows the relation between the Delta of VIX options and time to maturity of a 20% ITM call option, a 20% OTM, and a 20% ATM call option based on a diffusion model and jump-diffusion model to price VIX options. We assume r=5% and V_t=15%.

Sensitivity Analysis

We also compare different hedge strategies of call options based on different diffusion models. In Figure 3, we use a diffusion model and jump-diffusion model to estimate the Delta of VIX options. We then obtain the relation of time to maturity and 20 percent ITM call options, 20 percent OTM call options, or 20 percent ATM call options. Figure 3 shows that diffusion models are all higher than jump-diffusion models on any conditions as times goes by. In addition, we find that the longer the time to maturity, the bigger the difference between diffusion and jump diffusion process tends to be.

Figure 3: The Relation between Delta and Time to Maturity
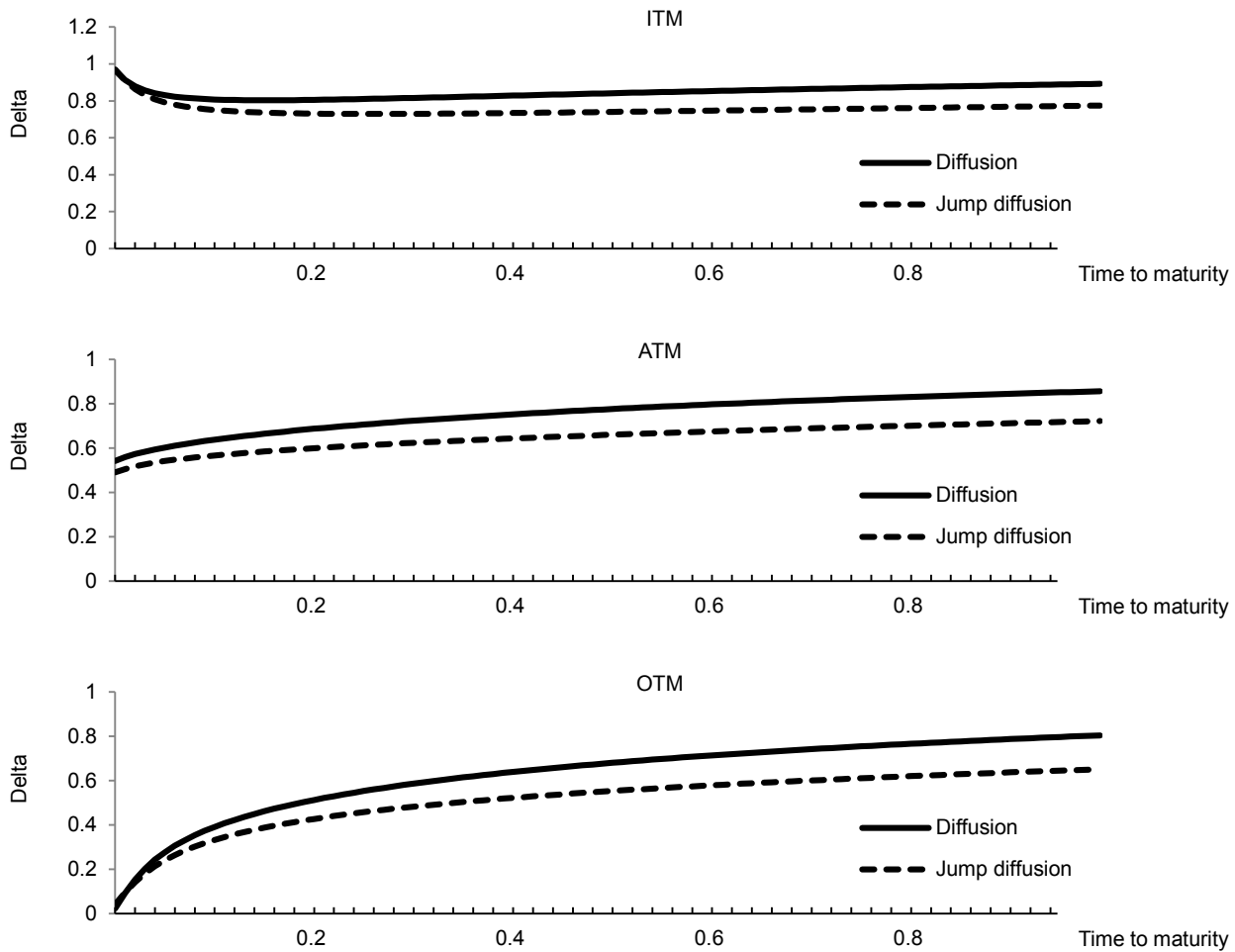
Note: This figure shows the relation between the Delta of VIX options and time to maturity of a 20% ITM call option, a 20% OTM, and a 20% ATM call option based on a diffusion model and a jump-diffusion model to price VIX options. We assume r=5% and V_t=15%.

In Figure 4, we use the diffusion model and jump-diffusion model and estimate the Theta of VIX options to gain the relationship of time to maturity and 20 percent ITM call options, 20 percent OTM call options, or 20 percent ATM call options. The picture shows that diffusion models manifest higher than jump-diffusion models as times goes on, but lower than jump-diffusion models when meeting a specific time point. However, diffusion models are not more significant than jump-diffusion models if the call is 20 percent ATM and 20 percent ITM.

Figure 4: The Relation between Theta of VIX Options and Time to Maturity
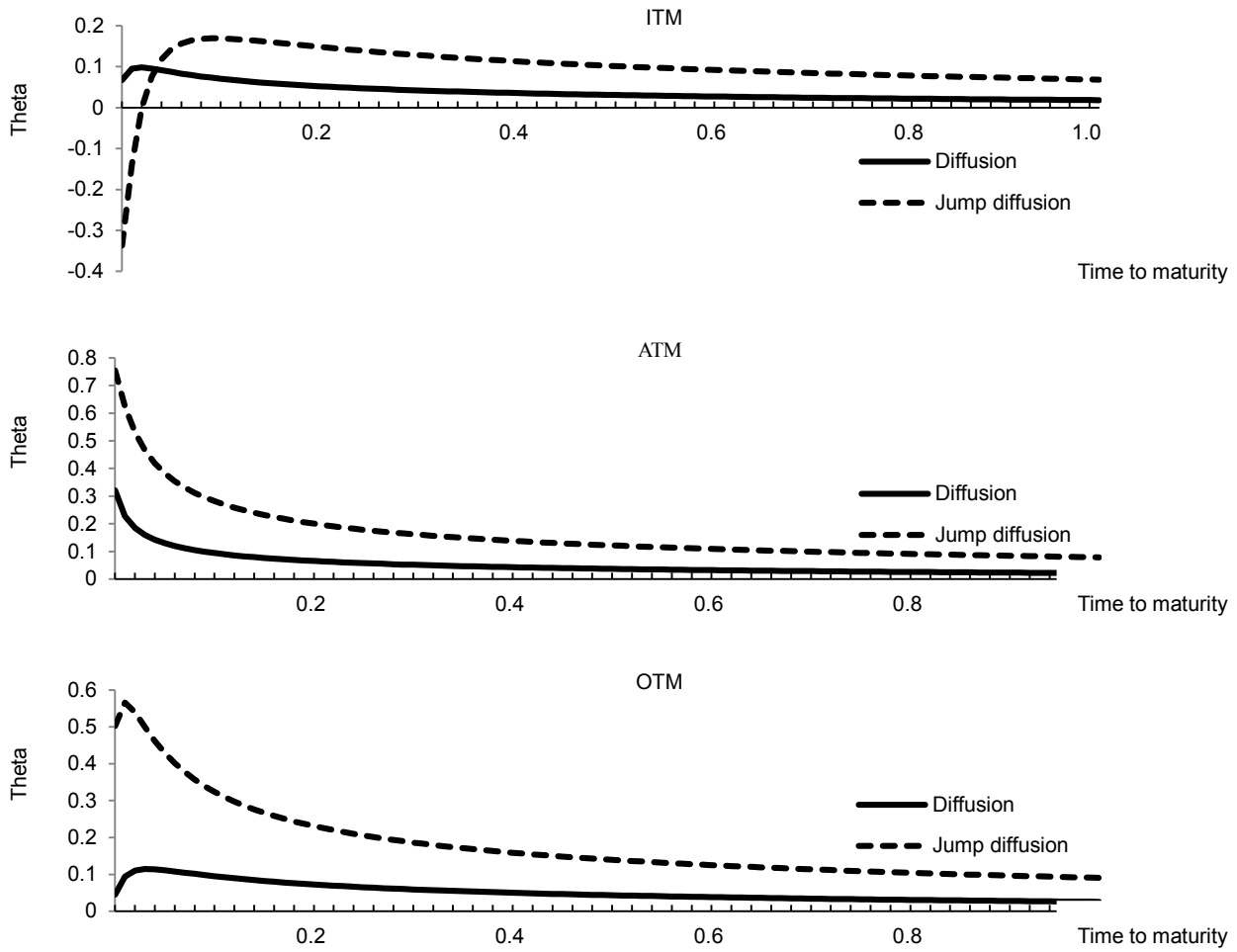
Note: *This figure shows the relation between the Theta of VIX options and time to maturity of a 20% ITM call option, a 20% OTM call option, and a 20% ATM call option based on a diffusion model and a jump-diffusion model to price VIX options. We assume r=5% and V_t=15%.*

Figure 5 shows the relation between the Gamma of VIX options and time to maturity of ITM, OTM, and ATM call options. We find that diffusion models are apparently lower than jump-diffusion models as times goes by. In addition, options based on these two different diffusion models are getting close as it takes longer to reach maturity.

Figure 5: The Relation between Gamma of VIX Options and Time to Maturity
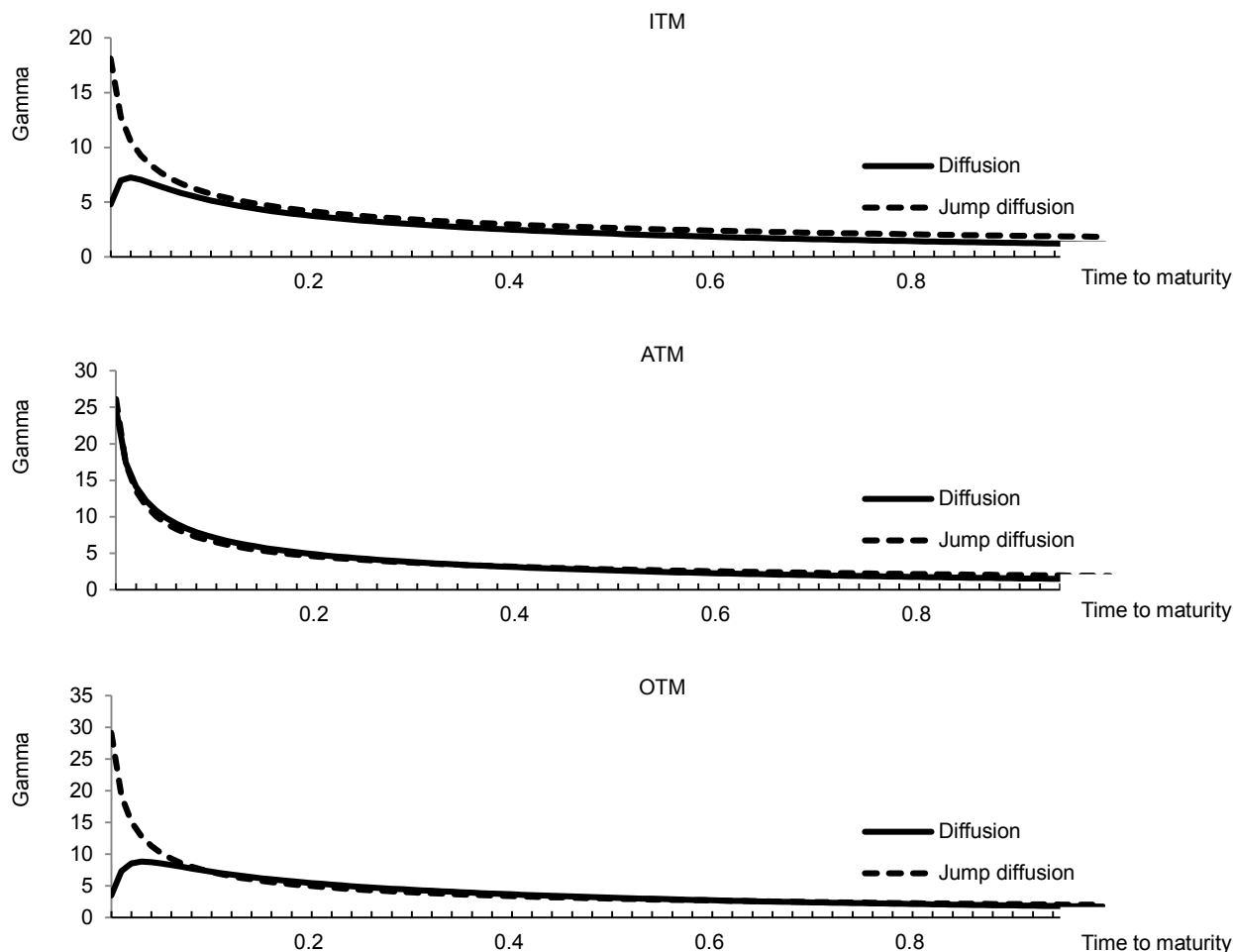
Note: This figure shows the relation between the Gamma of VIX options and time to maturity of a 20% ITM call option, a 20% OTM call option, and a 20% ATM call option based on a diffusion model and a jump-diffusion model to price VIX options. We assume r=5% and Vₜ=15%.

Note: This figure shows the relation between the Gamma of VIX options and time to maturity of a 20% ITM call option, a 20% OTM call option, and a 20% ATM call option based on a diffusion model and a jump-diffusion model to price VIX options. We assume $r=5\%$ and $V_t=15\%$.

CONCLUSION

In this paper, we diverge from previous studies and compare VIX options based on a diffusion model (Merton 1974) and a jump-diffusion model (Merton 1976). The reason we consider a jump component is that there are occasional jumps in the VIX process. By comparing AIC and BIC, we find that using an EM algorithm for a jump-diffusion model is more suitable than for a diffusion model. Since VIX options are usually used for hedging strategies, and to have a more general comparison, we show the relationship between VIX option Greeks based on different diffusion models and time to maturities. The results show that VIX option values based on a diffusion model will undervalue in a short time to maturity, but they will overvalue over a long duration to maturity. In addition, hedge ratios also show various levels of differences based on a diffusion model and a jump-diffusion model. This implies that when investors consider hedging strategies, VIX options based on different diffusion models might influence the strategies' performances. A worthy issue for future research would be to consider more complicated diffusion models for comparison such as a mean reverting model and a stochastic volatility model.

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IPO INITIAL RETURNS AND VOLATILITY: A STUDY IN AN EMERGING MARKET

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ABSTRACT

This study examines the impact of firm characteristics, signaling variables and financial variables on IPO initial returns and the volatility of initial returns. Hierarchical regression is first performed on all the three blocks of variables, after which a stepwise regression is executed to further test on the significance of the relationship amongst the respective individual variables. The results designate differences in the relationship between firm characteristics, signaling variables and financial variables on IPO initial returns and the volatility of initial returns. It is conjectured that oversubscription of IPOs have a positive impact on the initial returns, whilst prospective dividend yield has a negative impact on the volatility of IPOs' initial returns.

JEL: G1, G12, G14, G120

KEYWORDS: IPO, Initial Returns, Volatility of Initial Returns

INTRODUCTION

Going public is an important breakthrough in the maturation of a company and a good indulgent of IPOs by all participants may well offer a momentous support to the progress of the equity funding. Early studies on IPOs have mainly concentrated on the empirical evidence in the initial returns of new issues (Reilly and Hatfield, 1969; Stoll and Curley, 1970; McDonald and Fisher, 1972; Logue, 1973; Reilly, 1973; Nueberger, 2005; Hammond, 1974; Ibbotson, 1975; Ibbotson and Jaffe, 1975; Reilly, 1977 and Derrien, 2005) but later studies looked into the causes of initial returns etc. There is still a great absence in examining the volatility of IPOs' initial returns, except for some work undertaken by Lowry et al. (2010). This warrants further in depth research on the presence and causes to these fluctuations in the IPOs' initial returns and this study intends to bridge the gap.

Ambiguity surrounding the IPO atmosphere has constantly generated great interest among academicians over the eras due to the high initial returns. Initial return in this context is defined as the difference between the IPO's offer price and the closing market price on the first day of trading in the secondary market (Ibbotson, Sindelar, & Ritter, 1988; Ritter, 1998). A positive initial return is known as underpricing, whilst a negative initial return is known as overpricing. In the Malaysian front, Prasad, Vozikis and Ariff (2006) showed that the average market-adjusted initial returns on the first day of listing were 57% during the pre-policy period, in contrast with 118% during the post-policy period. Similarly, for the first week of listing was 59% in the pre-policy period, and 111% in the post-policy period, and finally, on the first month of trading were 60% in the pre-policy period against 109% in the post-policy period. Ariff, Prasad & Vozikis (2007) examined the degree of underpricing of initial public offerings (IPOs) of government linked companies (GLCs) and found the average market-adjusted initial returns in Malaysia for the first day of trading was 133.5%, whilst the first month's initial returns was 112%. As in Singapore, the first day's initial return was 41.71% on the first day but the first month's initial return was only 38.4%. These statistics clearly indicate that initial returns of IPOs differ among countries and over different periods.

This study will attempt to examine the impact of firm characteristics (firm size, firm age and industry), signaling variables (ownership retention, auditors' reputation, underwriters' reputation and over-subscription rate) and financial variables (prospective earnings per share and prospective dividend yield) on both the initial returns and the volatility of IPOs' initial returns.

The rest of the article proceeds as follows: The next section reviews the extant literature on initial public offerings and development of the hypotheses. This is followed by a description of the methodology used in this study. Lastly, a discussion on the analysis and the conclusion will be presented.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

At the root of an IPO's initial return is the asymmetric information theory (Leland and Pyle's, 1977; Baron, 1982; Rock, 1986; Beatty & Ritter, 1986; Loughran and Ritter, 2002; Ritter & Welch, 2002). Studies on asymmetric information and its impact on initial returns are imperative because when a company goes public, uncertainty arrives due to asymmetric information between all stakeholders, i.e., the issuers, investors and the investment banks (underwriters).

One of the strands of asymmetric information is signaling hypothesis, which advocates that certain characteristics in a company is able to send signals to potential investors on the credibility of the company. In that context, research documents that retained equity by the owners signal to investors on the credibility and the expected future prospects of the company. This gives a further boost to the investors, with higher levels of retained equity signaling greater confidence in the firm's future prospects and this may help in mitigating the asymmetric information problems between the issuers and the potential investors. Subsequently, this could also assist underwriters' in pricing the IPOs more accurately. The signaling theory predicts a negative relationship between the two variables because higher ownership retention reduces asymmetric information between issuers and investors, thus enabling underwriters to place a value close to the intrinsic value of the firm, ceteris paribus.

Leland and Pyle's (1977) pioneered the study on ownership retention and its impact on firm value. They found a positive relationship between the two variables. Downes and Heinkel (1982) undertook an empirical examination of the role of signaling in the valuation of initial public offerings of common stock and also found that the signaling hypothesis holds i.e., ownership retention sends a signal to investors on the value of the firm, thus reducing information asymmetry between issuers and investors. Ritter (1984) researched further on the above two studies and found that ownership retention does send a signal to investors on the value of the firm going public. Grinblatt and Hwang (1989) added to this body of literature by saying that the issuers signal higher quality in IPOs by underpricing as well as retaining some of the firms' shares in their personal portfolio.

Auditors' reputation has also been documented to signal firm quality, which will ease uncertainty surrounding IPOs and bridge the asymmetric information gap. DeAngelo (1981) and Shapiro (1983) demonstrated that larger and more prestigious auditors are more reliable in providing quality service. In line to that, Titman and Trueman's (1986) and Simunic and Stein's (1987) model implied that reputable auditors reduce the riskiness of new issues. Beatty (1989a) obtained similar results and found a negative association between auditors' reputation and underpricing. Feltham, Hughes, & Simunic, (1991) found that auditors affect the quality of information provided, thus reducing uncertainty amongst investors and this was further supported by Michaely and Shaw's (1995), whose results found that auditors' prestige and underpricing are inversely related. Empirical evidence by Wang and Wilkins (2007) showed that IPOs audited by the big-6 firms (then) experienced significantly less underpricing than IPOs audited by the non-big 6. Similarly, Albring, Elder and Zhou (2007) suggested that the selection of auditors' is essential as the

reputation of the auditors' may have an effect on the offered share prices. This is also concurred by Wang and Wilkins (2007), whose research revealed that IPOs that are audited by the Big-6 audit firms faced less underpricing compared to IPOs that are audited by the non-big-6. Interestingly, research conducted by Chang (2008) in Australia on 361 companies from the year 1996 to 2003 revealed no empirical proof that the quality of audit mitigated the ex-ante uncertainty and in turn lower underpricing.

Similar to the reputational effects of auditors' reputation, underwriters (investment banks) also have a signaling effect on firm quality. Many researches document a negative relationship between underwriters' reputation and underpricing. Logue (1973) and Beatty and Ritter (1986) are amongst the first to develop a measure of underwriter reputation, followed by Carter and Manaster (1990), Johnson and Miller (1988), Megginson and Weiss (1991) and Johnson and Weiss (1991). The authors found a negative association between reputable underwriters and short-run underpricing. Gordon and Jin (1993) asserted that underwriters reduce information asymmetry, hence govern a mutually beneficial offering price to both the parties. Thus, prestigious underwriters reduce uncertainty in an IPO environment, consequently enhancing the IPO firm's performance (Carter, Dark, & Singh, 1998; Carter & Manaster, 1990; Megginson & Weiss, 1991). Carter and Manaster (1990) found prestigious underwriters to be associated with low risk firms and their IPOs have low initial returns. Rock (1986) followed by Beatty and Ritter (1986) argued that IPO underpricing compensates uninformed investors for the risk of trading against superior information. Similarly, Michaely and Shaw (1994) found that IPOs managed by prestigious investment bankers tend to have smaller initial returns. Kenourgios et al. (2007) claimed that underwriters with a high reputation lower the possibility of under-pricing and long-term under-performance in their study of IPOs at the Stock Exchange of Athens. Contrasting to the above findings, Yip et al., (2009) documented that short-term excess returns and the following long-term under-performance are highly anticipated when companies are underwritten by reputable underwriters. Quite surprisingly, it was discovered by Goergen et al., (2007) that in U.K, there was no association between investment banks' reputation and the performance of IPOs. Chaturvedi et al. (2005) attempted to identify the relationship between market index, number of shares, deal size, growth rate, number of lead managers, retention and over-subscription against initial returns for Indian IPOs. His study conjectured that under-pricing is affected significantly by the over-subscription of IPOs.

In addition to auditors'/underwriters' reputation, firm characteristics also have an impact on the IPOs' initial returns and its volatility. Extant literature has documented firm size as having an impact on IPOs' initial returns and its volatility as investors perceive larger firms as companies with lower level of uncertainties. Larger firms generally have easier access to fundamental resources such as financial and human capital, which are vital in ensuring the future performance of these firms, (Finkle, 1998). Consistent with this, several studies have found a negative association between firm size and IPO underpricing (e.g., Carter, Dark, & Singh, 1998; Ibbotson, Sindelar, & Ritter, 1988; Ibbotson, Sindelar, & Ritter, 1994; Megginson & Weiss, 1991) Another factor affecting the correlation between firm size and IPO firm performance is the fact that larger firms tend to attract more prestigious underwriters (Carter, Dark, & Singh, 1998). Reputable underwriters may perceive smaller firms as more risky and thus minimize association with such firms. In conclusion, firm size has an inverse relationship with an IPO's initial returns and its volatility.

Similarly, the age of a firm has served as a proxy for risk in previous IPO pricing research, i.e., more established firms are less risky (Carter, Dark, & Singh, 1998; Ritter, 1984, 1991). Firms that are younger will have fewer years of published financial data and are less likely to have been assessed by financial analysts (Rasheed, Datta, & Chinta, 1997). As argued by Ritter (1984), a positive relationship exists between the levels of underpricing and the ex-ante uncertainty on the firm value. Older firms are more established and have more information made available to the public, thus older firms generate less ex-ante uncertainty and the expected underpricing on the first day is lower. These conjectures are empirically supported by Su and Fleisher (1999), Loughran and Ritter (2004) and Chanine (2008), i.e., a negative

relationship exist between firm age and underpricing. Likewise, Engelen (2010) has also documented that age has a negatively significant relationship with an IPO's initial returns. Similar results were documented by Megginson and Weiss (1991), Mikkelson, Partch, and Shah (1997) and Ritter (1998). The possible causes might be that, the older non high-tech companies have stable and persistent income, thus there isn't a need to underprice their stocks to attract the investors. This may not be the case for the younger high-tech companies; they may neither have past revenue records nor earn any profits, and their stocks are not attractive to the large institutional investors, so underpricing the stocks seems to be their only option, (Karlis, 2000). In a recent study in Bangladesh, Islam, (2010) examined the underpricing levels in IPOs and the determining factors at the stock exchange in Dhaka (DSE). The main trends in the underpricing levels and overpricing were carried out on an annual basis and according to the various industries. The regression analysis revealed that firm age did not have a prominent effect on the underpricing levels of IPOs in DSE.

Minimal research had been undertaken in terms of financial variables and its impact on the initial returns and its volatility. Chan et al. (2004) suggested that the IPO shares are significantly undervalued compared to the entire market based on price-earnings ratios and book to market ratios. The author added that the initial returns on the first trading day are a reflection of pricing discrepancy and they suggests that investors are not overconfident in bidding up the stock prices on the first day of trading. They also argued that their results are inconsistent with the asymmetric information models of IPO pricing and provide support for behavioral theories based on investor overconfidence. Beatty et al., (2000) examined the relationship between IPO stock values and information available from financial statements. They found that accounting book value, earnings and revenue and several other firm and market characteristics seem to explain a large portion of IPOs' offer prices. Drawing from the above literature, the following framework is conceptualized.

Conceptual Framework

Figure 1: Impact of Signaling Variables, Firm Characteristics and Financial Indicators on IPOs' Initial Returns and Its Volatility
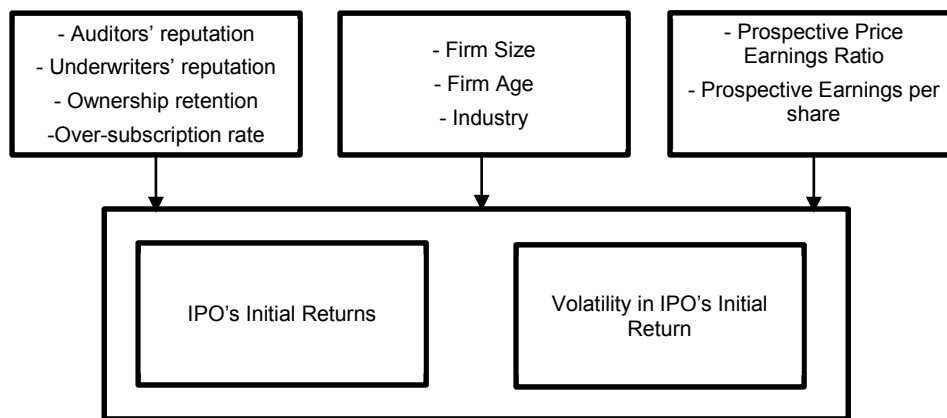
METHODOLOGY

Data for this study was collected from various sources, which includes Bloomberg, Datastream, ThomsonOne.com, EMIS and CEIC. The following variables were identified and collected for the period 2008 – 2012; offer price, first day closing price, auditor, and underwriter, date of incorporation, date of floating, market capitalization (size), industry, price - earnings ratio and earnings per share.

Hierarchical regression was performed on all the three blocks of variables. Subsequently, a step-wise regression was undertaken to further test on the significance of the relationship amongst the abovementioned variables. Both the hierarchical and step-wise regression was performed on the initial returns and volatility of initial returns of IPOs. The calculation of the IPO's initial return volatility is based on Lowry's (2010) model, whereby the variance on the error of the first regression is assumed to be related the same independent variables from regression (1) as shown below. The advantage of using this approach is that it allows detailed analysis on the influence of each characteristic on the variability in initial returns.

$$R_{it} = \beta_0 + \beta_1 \text{Retn}_{it} + \beta_2 \text{AudR}_{it} + \beta_3 \text{UWriterR}_{it} + \beta_4 \text{Size}_{it} + \beta_5 \text{Age}_{it} + \beta_6 \text{Industry}_{it} + \beta_7 \text{EPS}_{it} + \beta_8 \text{DY}_{it} + \varepsilon_i \quad (1)$$

$$\text{Log}\left(\sigma^2(\varepsilon_i)\right) = \beta_0 + \beta_1 \text{Retn}_{it} + \beta_2 \text{AudR}_{it} + \beta_3 \text{UWriterR}_{it} + \beta_4 \text{Size}_{it} + \beta_5 \text{Age}_{it} + \beta_6 \text{Industry}_{it} + B_7 \text{EPS}_{it} + \beta_8 \text{DY}_{it} + \varepsilon_i \quad (2)$$

Whereby:

IR_{it} = initial returns of company i at year t
$Retn_{it}$ = ownership retention of company i at year t
$AudR_{it}$ = auditors' reputation of company i at year t
$Size_{it}$ = size of company i at year t
Age_{it} = age of company i at year t
$Industry_{it}$ = industry of company i at year t
EPS_{it} = earnings per share of company i at year t
DY_{it} = dividend yield of company i at year t

Along with Ibbotson and Jaffe (1975) and Ibbotson, Sindelar and Ritter (1988, 1994), the measurement for initial return (IR) is:

$$IR_i = (PC_i - PO) \div PO_i$$

PCi and POi are respectively the average closing price of trading on the first day and the offer price of firmi.

Ownership retention refers to the original owners retained in the company during the IPO process against the total number of shares issued to the public. It is calculated as below;

Total number of shares issued – total number of shares retained by owners) / Total number of shares issued x 100%.

As for Auditor's reputation, it is identified based on the Big-4 and non-Big-4. If the auditors employed by the companies are one of the Big-4 audit firms, a dummy variable of 1 will be used and 0 otherwise. Underwriter's reputation will be identified based the market capitalization of the companies underwritten by the investment bank for any particular year. Age of the company refers to the difference between the date of incorporation of the company as a private limited company and the date it was listed as a public company. The size of the company will be calculated based on the number of shares issued by the company multiplied by the final offer price of the company; Size = Offer price x number of shares issued.

Both the financial information on the prospective earnings per share (EPS) & prospective Dividend Yield is extracted directly from the company prospectus.

ANALYSIS AND DISCUSSION

Prior to undertaking the hierarchical and stepwise regression, a descriptive analysis is performed and the results are discussed below.

Descriptive Statistics

Table 1 is the summary of the descriptive statistics for the signaling variables, firm characteristics and the financial variables. It reveals the outcomes for the mean, standard deviation, minimum, maximum, and kurtosis from year 2008 to 2012 for the listed IPOs on the Bursa Malaysia.

Table1: Descriptive Statistics

	Minimum	Maximum	Mean	Std. Deviation
LNIR	-1.227	1.290	0.0753	0.322
UwR	0.1	51.8	9.906	13.552
AUD	0	1	0.46	0.5
ORetn	-0.304	0.3179	0.048	0.100
OSubs	0.00	1.49	0.33	0.465
EPS	6.07	19.02	11.65	4.75
DY	0.13	0.35	0.21	0.082
FS	20.57M	41.6B	1.05B	4.72B
FA	3	43	10.81	6.709
Observations	228	228	228	228

LN_IR – Initial returns, AuD – Reputation of Auditors, UwR – Reputation of Underwriters, OSubs – Over-subscription Rate EPS – Earnings per Share, DY – Dividend Yield, FA – Firm Age, FS – Firm Size.

Hierarchical Regression on the Initial Returns of IPOs

Table 2 shows the adjusted R^2 for Models 1 - 3. The signaling variables comprises of ownership retention, auditors' reputation, underwriters' reputation and over-subscription rate. Prospective earnings per share and dividend yield represent the financial variables, whilst the firm characteristic is represented by firm size, firm age and industry. The dependent variable used is in this study is IPOs' initial returns. The results designate a $p<0.05$ for Model 1, indicating that the signaling variables in general has a significant relationship with the dependent variable, i.e., the initial return of IPOs. As for model 2 and 3, it shows no significance ($p>0.05$). The next step in the analysis is to determine which of the variables representing the signaling variables, firm characteristics and the financial variables are significant.

Table 2: Hierarchical Regression Results for IPOs' Initial Returns

Model	Adjusted R^2	Significance
1	22.2%	0.000***
2	21.8%	0.505
3	21.3%	0.510

*Table 2 shows the adjusted R² for all models. Model 1 refers to the signaling variables, whilst Models 2 and 3 comprises of financial variables and firm characteristic respectively. *** indicates significance at the 1% level. The dependent variable used is IPOs' initial returns.*

Stepwise Regression on the Relationship between the Signaling Variables, Firm Characteristics and the Financial Variables and the Initial Returns of IPOs

The following section analyses the results of the stepwise regression to further test on the significance of the relationship between initial returns and the respective signaling variables, i.e., ownership retention, auditors' reputation, underwriters' reputation and over-subscription rate. Table 3 demonstrates the findings of the stepwise regression. It is noted that only over-subscription rate (appearing in Model 1 of the

hierarchical regression) has a statistically significant relationship with IPOs' initial returns. The rest of the variables indicate no significance when regressed against the initial returns of IPOs. Over-subscription rate refers to a company's share being over-subscribed, i.e., the application for these shares are greater than the number of shares issued for sale by the company going public. Over-subscription signals to potential investors in the secondary market on the credibility of the company that is going public. A company's IPO is over-subscribed when potential investors feel that the company has future prospects in maximizing shareholders' wealth in terms of an increase in the share price in the secondary market or potential future dividends. These are the conceivable reasons for the positive relationship between over-subscription and initial returns of IPOs.

Table 3: Results of the Stepwise Regression for IPOs' Initial Returns

Variables	Coefficient	t-stats	Significance
(Constant)		-0.132	0.895
Ownership Retention	-0.098	-1.124	0.263
Auditors Reputation	0.061	0.675	0.501
Underwriters Reputation	-0.052	-0.598	0.551
Over-subscription rate	*0.485*	*5.451*	*0.000****
Prospective EPS	0.078	0.850	0.397
Prospective dividend yield	-0.024	-0.273	0.786
Firm Size	0.025	0.255	0.800
Firm Age	0.099	1.105	0.272

Table 3 shows the coefficient and the significance on the relationship between the signaling variables, financial variables and firm characteristics. *** indicates significance at the 1% level. The dependent variable used is IPOs' initial returns.

The following section looks into the relationship between signaling variables, financial variables and firm characteristics on the volatility of IPOs' initial returns.

<u>Hierarchical Regression on the Volatility of Initial Returns of IPOs</u>

Table 4 illustrates the results for the R2 for the financial indicators, encompassing prospective earnings per share and dividend yield. The results show a p-value < 0.05, indicating that model 2 has a significant relationship with the dependent variable, i.e., the volatility of IPOs' initial return. This is an interesting finding as the results differ from the earlier section when the hierarchical regression was performed against the initial returns. Model 1 which refers to the signaling variables comprising of ownership retention, auditors' reputation and underwriters' reputation and over-subscription rate and model 3 which refers to the firm characteristics (firm size, firm age and industry) shows no significance. Both the models designate a p-value > 0.05. To examine further on the relationship of the respective variables against the volatility of IPOs' initial returns, a stepwise regression is performed and the results are shown in the next section.

Table 4: Hierarchical Regression Results for the Volatility IPOs' Initial Returns

Model	Adjusted R^2	Significance
1	2.0%	0.443
2	*4.2%*	*0.034***
3	2.6%	0.865

Table 4 shows the adjusted R^2 for all models. Model 1 refers to the signaling variables, whilst Models 2 and 3 comprises of financial variables and firm characteristic respectively. ** indicates significance at the 5% level. The dependent variable used is volatility of IPOs' initial returns.

<u>Stepwise Regression on the Relationship between the Signaling Variables, Firm Characteristics and the
Financial Variables on the Volatility of IPOS' Initial Returns</u>

Model 2 comprises of prospective earnings per share and dividend yield. Prospective dividend yield refers
to the dividend forecast by the company that is going public and it is the yield investors are expected to
earn on their investment in the IPOs. The result of this study shows a negative relationship between the
prospective dividend yield and the volatility of IPOs' initial returns. The negative relationship indicates that
the higher the dividend yield, the lower the volatility in initial returns. Prospective dividend seems to play
a role in creating investors' confidence in a company, thus minimizing any major fluctuation in the demand
for the IPOs when it enters into the secondary market. This ultimately reduces the fluctuation or volatility
in the IPOs' initial returns. As for the rest of the variables, no significance is documented.

Table 5: Results of the Stepwise Regression for Volatility of IPOs

Variables	Std Coefficient	t-stats	Significance
(Constant)		0.713	0.478
Ownership Retention	0.125	1.292	0.199
Auditors Reputation	0.076	0.780	0.437
Underwriters Reputation	0.008	0.078	0.938
Over-subscription rate	-0.132	-1.337	0.184
Prospective EPS	0.059	0.583	0.561
Prospective dividend yield	*-0.242*	*-2.449*	*-0.016****
Firm Size	-0.010	-0.088	0.930
Firm Age	0.054	0.538	0.592

*Table 5 shows the coefficient and the significance on the relationship between the signaling variables, financial variables and firm
characteristics. *** indicates significance at the 1% level. The dependent variable used is volatility of IPOs' initial returns.*

CONCLUSION

The purpose of this study is identify the significance of signaling variables (auditors/underwriters'
reputation, ownership retention & over-subscription rate), firm characteristics (firm size, age & industry)
and financial indicators (price-earnings ratio & earnings per share) on IPOs' initial return and volatility of
initial returns. Two main test were performed; hierarchical analysis and stepwise regressions. A total of one
hundred and forty eight companies that went public from 2008 – 2012 is used in this study. Hierarchical
and stepwise regression is adopted as the variables were classified into three main categories, i.e., signaling
variables, financial variables and firm characteristics.

The above-mentioned variables were regressed against two independent variables; IPOs' initial returns and
IPOs' volatility of initial returns. When the independent variables were regressed against the initial return
of IPOs, it is noted that the over-subscription rate has a significant impact on the initial returns. It is
conjectured that over-subscription sends a signal to potential investors on the future prospects of the
company. This excites investors and increases their confidence level on the IPOs (part of behavioral aspect
of finance), resulting in an increased demand for the IPOs on the first day of trading in the secondary
market. This increased demand causes the first day's closing price to increase, subsequently a high initial
return ensues.

Interestingly, the results differ when regressed against the volatility of IPOs' initial returns, whereby the
financial variable, i.e., prospective dividend yield stated in the prospectus seems to have a significant
negative relationship with the volatility of initial returns. It is conjectured that high prospective dividend
yield minimizes the fluctuation in IPOs' initial returns. This would be a contribution to the Malaysian
literature since no study has been undertaken on the volatility of IPOs and it is interesting to note that
prospective dividend yield has an impact on it. In conclusion, the empirical results dictate that IPOs' initial
returns and volatility of initial returns in Malaysia do not seem to be affected largely by endogenous factors
(except for the results on the prospective dividend yield).

Limitation of this study includes data availability as some of the company's prospectuses are not available and certain information had to be hand-collected which is extremely time-consuming. Nevertheless, IPOs warrant future research, predominantly examining the roles of exogenous factors such as political connection, regulatory changes and other macro variables' impact on the IPOs' initial returns and the volatility of initial returns in Malaysia. It is also envisioned that a bigger dataset could be used, which may take into account governance factors such as roles of board of directors on IPO's initial return and its volatility. Cross-country analysis would also be a major contribution to the literature as differences in governance and regulatory framework may impact the IPOs' initial returns and volatility.

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EARNINGS MANAGEMENT AND ANALYST COVERAGE CHANGES AROUND IFRS IMPLEMENTATION: EVIDENCE FROM FRANCE

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ABSTRACT

Using a sample of French companies listed on the stock index CAC ALL TRADABLE, this paper analyzes the relation among analyst coverage and earnings management. We find that after the introduction of International Financial Reporting Standards (IFRS) and over a period from 2005 till 2011, analysts' coverage and experience reduce the level of earning management.

INTRODUCTION

Further to recent financial scandals (Enron, World com, Parmalate, Sociéte Générale...) mainly due to high information asymmetry present in the financial market, therefore the demand for publication of reliable and transparent information by investors increased, leading to a considerable increase of analysts' role in the financial market. The literature review shows the importance of financial analysts' forecasts in reducing the information asymmetry. (Yu, 2008, Shi, Zhang & Guo, 2014). The literature also shows that the presence of financial market analysts' significantly affects managerial behaviour. The first stream of research considers analysts as external monitor against opportunistic actions of managers, helping to reduce earnings management. (Yu, 2008, Call, 2008, Cang, Chu & Lin, 2014).
The second stream shows that analysts', through forecasts, put tremendous pressure on managers in order to match or exceed these forecasts, which increases earnings management (Degeorge, Patel & Zeckauser, 1999). In addition, there are several factors that may affect the analysts' role as external monitor of managers, such as pressures experienced by analysts' themselves (Yu, 2008), or poor accounting quality. (Hodgdon, Tondkar, Harless & Adhikari, 2008). Using discretionary accruals as a proxy for earnings management, we examine the impact of analysts' coverage and experience on the earnings management for a sample of French companies listed on the stock index CAC ALL TRADABLE.

We concentrate on France because in 2003, it adopted, like all European countries, the financial security law (Law Mer) that secures financial transactions and restore confidence in the financial market by regulating the function of financial analysts'. With respect to financial analyzes, the imposition of surveillance was decided by the government, so these analyzes would be as accurate and as objective as possible. Similarly, in 2005, French companies have adopted international accounting standards (IAS / IFRS). Several authors have shown that increasing transparency in financial reporting, IFRS facilitates the detection of earnings management. Also, previous literature shows that earnings management is higher in code-law countries, with low investor protection rights, such as France, compared to common law countries. (Zéghal, Chtourou & Mnif, 2011)

Our empirical results show that analyst's presence and experience help to reduce earnings management in French companies. The remainder of this paper is organized as follows. Section 2 provides theoretical background and hypothesis for the study. In Section 3, we describe our methodology and explain the research design. Our empirical results are discussed in Section 4. Section 5 details our conclusions and presents the implications and limitations of our analysis.

LITERATURE REVIEW

Pressure Effect of Analyst Coverage

Through their presences in the financial market, analysts' exert pressure on managers and contribute to increase earnings management. Indeed, managers wishing to achieve forecasts issued by analysts manage their results upward. (Habib & Hosain, 2008). The purpose of achieving analyst forecasts can be explained by the importance attached by investors, seen the accuracy and objectivity of these forecasts which are considered when assessing the business. (Brown & Higgins, 2005). As well, companies with similar results to analysts' forecasts are valued in the financial market and may experience increase in shares price (Bartov, Givoly & Hayn, 2002). Matsumoto (2002) argues that firms listed on the financial market and affiliated with investors should not publish negative results unexpected. It should be noted that little direct evidence has been documented regarding the pressure effect.

Monitoring Effect of Analyst Coverage

Several authors highlighted a significant negative relationship between the presence of analysts' and opportunistic earnings management. (Lobo, Song & Stanford, 2012). Along with their financial and accounting expertise and high level of business knowledge, analysts' are able to detect manipulations in the financial statements which discourage managers to manage earnings. Dyck, Morse & Zingales (2006) argue that analysts' are among the most expeditious controllers to detect fraud. They sense twice as much fraud as auditors of companies. Sun (2009) show that by the presence of several analysts', managers tend to reduce earnings management. They find this association stronger in environments where information asymmetry is widespread and where information published by companies is the basis of decision making. Degeorge, Ding, Jeanjean & Stolowy (2013) find that financial analysts are more effective monitors in high- financial development countries. Yu (2008) concluded that, higher is the number of analysts' monitoring a company, more it tends to reduce earnings management.

The author explains this by the fact that a high number of analysts' reduced digits volatility and improves the functioning of the company followed; which motivates managers to reduce earnings management. Research also shows that analysts' avoid companies that frequently resort to earnings management; therefore they contribute to reduce this practice since firms monitored by few analysts' are undervalued in the financial market. (Lang, Lins & Miller, 2004). To let analyst fully practise his role of external monitor against opportunistic actions of managers, the literature has identified many factors. It comes for example to analyst experience, having necessary experience, the analyst will be able to identify more precisely accounting and financial characteristics of the companies and important sources of information allowing him to easier detect earnings management. It comes also to the affiliation in brokerage houses analysts' belonging to prestigious brokerage houses make better quality analyzes than those who are affiliated in any brokerage houses. (Yu, 2008). It comes also the quality of accounting applied and laws regulating analyst profession. According to Hunton, Libby & Mazza (2006) greater transparency in reporting requirements facilitates the detection of earnings management, and companies or managers will be punished for earnings management if earnings management is easier to detect. Given that French companies apply international accounting standards since 2005, which are supposed to improve the quality and financial reporting transparency, earnings management is more easily detectable by analysts'. (Jiao, Koning, Mertens & Roosenboom, 2012). Barneto (2005) state that fair value should simplify the

financial analyzes of the company, most posts are evaluated on basis of cash flows discounted, evaluation company will be directly integrated into IAS / IFRS accounts.

However, analysts' are under pressure from various sources, which may affect their results in detecting and limiting earnings management. (Yu, 2008). These factors are, for example, the informational dependence. To easily detect earnings management, analysts' need private company information and given that this information is held by managers, analysts' are obliged to maintain good relations with them, making disclosure of earnings management detected difficult. (Chang, Dasgupta & Hilary, 2006, Yu, 2008). Membership in brokerage houses that manage accounts of client firms can also influence how analysts' react toward earnings management. (Dechow, Hutton & Sloan, 2000). The remuneration of financial analysts' employed in companies can also alter the way these analysts' detect earnings management. Thus our hypotheses are stated as follows:

H1: Analyst's coverage is negatively related to earning management
H2: The experience of financial analyst is negatively related to earnings management.

DATA AND METHODOLOGY

The sample of this research consists of French companies listed on the index CAC ALL TRADABLE. These companies are observed over a period of 7 years starting from 2005 until 2011. This population consisted of 1750 observations firms-years. We excluded companies operating in the financial sector (245). These companies are governed by specific regulations and by financial characteristics different from those governing non-financial companies. To perform our analysis, we have elected a constant sample over the entire period of study, which would mean excluding companies that have been introduced in the index CAC ALL TRADABLE after 2005 and those that were removed before 2011 (105). We have also companies whose financial data were not available during the period of our study (336). We also excluded companies which financial year not ending by December 31 (154). Our final sample consists of 910 observations firms-years. Table 1 and Table 2 describe the sample selection and sample industries' distribution, respectively.

Table 1: Sample Selection Process

Initial Number of Observations	1750
Companies with financial nature	(245)
Companies introduced after 2005 and removed before 2011	(105)
Missing data in Worldscope and Datastream	(336)
Companies whose financial year not ending by 31/12	(154)
Total of Samples	910

This table shows the number of observations used in the analysis

Table 2: Industries Distribution

Industries	Number of Observations by Industry	% of The Sample
Industry	300	33%
Trade and Consumer Goods	210	23%
Health care	80	9%
Services	125	13%
Real estate and buildings	90	10%
Technology	105	12%
Total	910	100%

This table describes sample industries' distribution used in the analysis

The data relating to Companies in our sample is collected from Worldscope and Datastream database (Thomson Reuters) 2012, annual reports of each company and AMF reports (Financial Markets Authority).

Dependant Variable: Discretionary Accruals

We focus on discretionary accruals as the proxy of earnings management. (Cang & al, 2014, Yu, 2008). Various models have been adopted to measure discretionary accruals (Dechow, Sloan, & Sweeney, 1995, Jones, 1991, Kothari, Leone & Wasley, 2005). Following previous studies, in the present we adopted modified version of the Jones model (Yu, 2008).
The modified version of the Jones model (Dechow& al, 1995) is the following:

$$TA_{it}/A_{it-1} = \beta_1 (1/A_{it-1}) + \beta_2 (\Delta (REV-AR)_{it}/A_{it-1}) + \beta_3 (PPE_{it}/A_{it-1}) + \varepsilon_{it} \qquad (1)$$

Where TA_{it} is the total accruals for company i in year t computed as the difference between net income before extraordinary items and cash flow from operations, REV_{it} is the change in revenues for company i between year t and t−1, AR_{it} is the change in accounts receivable for company i between year t and t−1, PPE_{it} is the gross property, plant, and equipment for company i in year t. (All variables are deflated by lagged total assets).

The discretionary accruals from the modified Jones (1991) model were defined as the residuals from estimating previous model:

$$DA_{it} = TA_{it}/A_{it-1} - \partial_1 (1/A_{it-1}) + \partial_2 (\Delta (REV-CC)_{it}/A_{it-1}) + \partial_3 (PPE_{it}/A_{it-1}) \qquad (2)$$

In this study, we examine absolute value of discretionary accruals | DA |. We focus on the absolute value of discretionary accruals because it is presented in the previous literature as a magnitude measure of managerial discretion. (Zéghal & al, 2011, Yu, 2008). The purpose of this study is to perceive if the number of financial analysts' affect the level of earnings management.

Control Variables

In all models we included several control variables suggested by previous research, and which have an impact on earning management. The variable "SIZE" is introduced since the literature review shows that firm size affects the level of discretionary accruals. According to hypothesis of political costs sustained by Watts & Zimmerman (1986), big size companies tend to record larger accruals to minimize political costs. In contrast, other studies show that the big size of company leads to less important accruals compared to small companies. (Bedard, Chtourou & Courteau, 2004). According to these studies the big size companies have more efficient systems of internal control, which provide more reliable information and make them further monitored by market and financial analysts', makes earnings management difficult to achieve. On this research, the size of the firm is measured by the logarithm of the market capitalization of the firm. We included variable "ROA" as variable measuring the performance of the company since previous studies show that the level of company performance affects the level of discretionary accruals (Moehrle, 2002). We expect a negative relationship between the absolute value of discretionary accruals and ROA. "Debt level" of a company affects the level of discretionary accruals. According to previous literature companies heavily indebted have stronger reasons to manage upward their accounting earnings to not to violate covenants of debt contracts.

They can manage the results down to force negotiations in case of financial difficulties. In the present research, we suggest that in line with earnings management, highly indebted firms manage more earnings. We use total debt ratio as a measure of the debt level (Dechow & al, 2000). We introduce growth rate of assets, and cash flow volatility, since the literature review shows that they affect the level of discretionary accruals. We expect a positive relationship between the absolute value of discretionary accruals and growth rate of assets, and between the absolute value of discretionary accruals cash flow volatility. (Cang

& al, 2014). We have included the variable "percentage of institutional investors" since these investors are discerning and influential partners, ensuring the proper management of firms. Bushee (1998) suggests that institutional ownership has a "monitoring" role which pushes managers to make decisions that do not affect the company and helps to provide value for shareholders. A negative relationship is therefore expected between the percentage of institutional investors and the absolute value of discretionary accruals. The control variables description and measurement are summarized in Table 3.

Table 3: Control Variables Description

Variables	Measure
Size	Log market capitalization: Stock price at end of period multiplied by the number of shares outstanding for the same period
ROA	Return on assets: net income to total assets.
LEV	Total debt to total assets
VOLCF	Cash flow volatilities: standard deviations of cash flow of a firm in the entire sample period, scaled by lagged assets.
GROWTH	Growth rate of assets
INV-OWN	Percentage of shares held by institutional investors

This table describes the control variables and their measures used in the analysis

RESULTS AND DISCUSSION

Effect of Analyst Coverage on Earnings Management

To test our first research hypothesis, we apply a regression that presents absolute value of discretionary accruals as dependent variable and number of financial analysts' as independent variable with control variables. As Lobo & al, (2012), we measure A.coverage by the Logarithm of the number of analysts with annual earnings forecasts or recommendations.We selected the following model (3): (Yu, 2008, Cang & al, 2014)

$$\left| DA_{it} \right| = \beta_0 + \beta_1 \, A.coverage_{it} + \beta_2 \, SIZE_{it} + \beta_3 \, ROA_{it} + \beta_4 \, LEV_{it} + \beta_5 \, VOLCF_{it} + \beta_6 \, GROWTH_{it}$$
$$+ \beta_7 \, INV\text{-}own_{it} + \varepsilon_{it} \tag{3}$$

Where $\left| DA \right|$ is the absolute value of discretionary accruals, A.coverage is the Logarithm of the number of analysts with annual earnings forecasts or recommendations, SIZE is the natural logarithm of market capitalization, ROA is return on assets estimated as net income to total assets, LEV is the leverage ratio estimated as total debt to total assets, VOLCF is measured by standard deviations of cash flow of a firm in the entire sample period scaled by lagged assets, growth is growth rate of assets, Inv-own is the percentage of shares held by institutional investors. Table 4 reports descriptive statistics of the variables for the full sample. We checked the normality of variables. We used for this purpose Skewness and Kurtosis tests. The results of these tests show that variables don't follow the normal distribution. According table 4, the mean of analysts' coverage is 8.36. The mean market value is €1,667 Million (mean log of market value equals 2.247).

Table 4: Descriptive Statistics

Variable	Mean	Median	Standard Deviation	N
│DA│	0.047	0.021	0.062	910
A.coverage	8.36	5	3.740	910
SIZE	2.247	2.115	1.894	910
ROA	0.036	0.028	0.053	910
LEV	0.042	0.013	0.182	910
VOLCF	0.051	0.038	0.067	910
GROWTH	0.101	0.160	0.102	910
INV-OWN	18.590	18	10.591	910

This table shows the descriptive Statistics of variables used in model (3) for the full sample. │DA│ is the absolute value of discretionary accruals. A.coverage is the Logarithm of the number of analysts with annual earnings forecasts or recommendations , SIZE is the natural logarithm of market capitalization, ROA is return on Assets estimated as net income to lagged total assets, LEV is the leverage ratio estimated as total debt to total assets, VOLCF is measured by standard deviations of cash flow of a firm in the entire sample period scaled by lagged assets, growth is growth rate of assets, Inv-own is the percentage of shares held by institutional investors. Variables don't follow the normal distribution. Data are for the period 2005 until 2011.

Table 5 reports the correlations of absolute value of discretionary accruals with analyst coverage and control variables. To apply the regression models, we need to verify the absence of multicollinearity between variables. The correlation matrix allows us to identify the potential problem of multicollinearity between variables. Correlation matrices in this study have coefficients ($\rho < 0.8$), this indicate an absence of problem of multicollinearity between variables. So we can include all variables of models in the statistical regression. On a univariate basis, we note that the variable │DAC│ is negatively related to the variable A.coverage, and the correlation is statistically significant at the 1 per cent level. This indicates that analysts' coverage tends to reduce levels of earnings management. Analyst practise role of external monitor against opportunistic actions of managers. We will check this first result by the regression analysis. Regarding control variables, the signs of correlations confirm our predictions. The correlations between the variable A.coverage and other variables: SIZE (ρ =0.062), ROA (ρ=0.043), GROWTH (ρ=0.079) and VOLCF (ρ= -0.063) are consistent with those of previous studies indicating that companies followed by a high number of financial analysts' are of big sizes and record high performances and low volatility, the presence of financial analysts' improves firms' performance. (Yu, 2008)

Table 5: Correlation Matrix

	│DAC│	A.Coverage	SIZE	ROA	LEV	VOLCF	GROWTH	INV-OWN
│DAC│	1.000							
A.coverage	- 0.032***	1.000						
SIZE	-0.012*	0.062***	1.000					
ROA	-0 .011**	0.043***	0.110*	1.000				
LEV	0.017***	-0 .115	0.152**	0.056	1.000			
VOLCF	0.048**	-0.063***	0.066***	0.0084***	0.101***	1.000		
GROWTH	0.088***	0.079***	0.125***	0.234***	0.503*	0.168***	1.000	
INV-OWN	-0.028***	0.146***	0.096**	0.103**	0.069**	-0.141***	0.098***	1.0000

This table reports the correlations of absolute value of discretionary accruals with the others variables used in model (3). │DA│ is the absolute value of discretionary accruals. A.coverage is the Logarithm of the number of analysts with annual earnings forecasts or recommendations, SIZE is the natural logarithm of market capitalization, ROA is return on Assets estimated as net income to lagged total assets, LEV is the leverage ratio estimated as total debt to total assets, VOLCF is measured by standard deviations of cash flow of a firm in the entire sample period scaled by lagged assets, growth is growth rate of assets, Inv-own is the percentage of shares held by institutional investors. Data are for the period 2005 until 2011. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively

Table 6 presents the results of estimating Eq. (3) using a pooled sample over the 2005–2011 period. We can conclude that the model tested is generally significant; R² has a value 33%, which are in line with prior studies. (Degeorge & al, 2013, Cang & al, 2014). We reject the null hypothesis stating that all coefficients are zero, P (F) <0.05. The X² test shows a probability less than 5 per cent, which allows us to retain the fixed effects estimator. According to this table, there is a significant negative relationship between the variable A.coverage and the absolute value of discretionary accruals at the 1 per cent level. This indicates that a higher level of coverage is associated with a lower level of earnings management.

This result confirms our first hypothesis and is consistent with previous studies (Yu, 2008, Cang & al. 2014, Degeorge & al.2013). Regarding control variables, the variable ROA is negatively and significantly related to the absolute value of discretionary accruals (1%). This means that poor performance leads to opportunistic earnings management. (Degeorge et al. 1999).

The variable SIZE has a negative and significant relationship with the absolute value of discretionary accruals at the 5 per cent level. This indicates that when the firm size increases, the earnings management decreases. This result is explained by the fact that big size companies are monitored by financial analysts' and other stakeholders, who play the role of external monitors limiting earnings management. (Yu, 2008).

The variable INV-OWN is negatively and significantly related to the absolute value of discretionary accruals. This result shows that institutional investors closely monitor opportunistic actions of managers, which reduces the recourse to earnings management. The variables VOLCF and GROWTH are positively and significantly related to the absolute value of discretionary accruals. (Yu ,2008, Cang & al. 2014).

Table 6: Regression Results: the Effect of Analyst Coverage on Earnings Management

Variables	Coefficient (P-Value)	Expected Sign	Found Sign
A.coverage	-0.011 (0.000)***	-	-
SIZE	-0.083 (0.045)**	+/-	-
ROA	-0.021 (0.000)***	-	-
LEV	0.045 (0.890)	+	+
VOLCF	0.523 (0.000)***	+	+
GROWTH	0.018 (0.005)***	+	+
INV-OWN	-0.052 (0.005)***	-	-
Constant	0.222 (0.000)***		
N	910		
Year and Firm fixed effect	yes		
Adj.-R²	0.33		
F-stat	18.517***		

This table shows regression results based on model (3).
$\left| DA_{it} \right| = \beta_0 + \beta_1 A.coverage_{it} + \beta_2 SIZ_{it} + \beta_3 RO_{it} + \beta_4 LEV_{it} + \beta_5 VOLCF_{it} + \beta_6 GROWTH_{it} + \beta_7 INV\text{-}own_{it} + \varepsilon_{it}$
$\left| DA \right|$ *is the absolute value of discretionary accruals. A.coverage is the Logarithm of the number of analysts with annual earnings forecasts or recommendations , SIZE is the natural logarithm of market capitalization, ROA is return on Assets estimated as net income to lagged total assets, LEV is the leverage ratio estimated as total debt to total assets, VOLCF is measured by standard deviations of cash flow of a firm in the entire sample period scaled by lagged assets, growth is growth rate of assets, Inv-own is the percentage of shares held by institutional investors. The time period is from 2005 to 2011.We report p-values in parentheses below the coefficients. The model has been estimated including year fixed effects. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

Effect of Analysts' Experience on Earning Management

To test our second research hypothesis, we apply a regression that presents absolute value of discretionary accruals as dependent variable and experience of analysts as an independent variable with the level of analyst coverage. Analysts'experience is measured by the average number of years that an analyst has followed a given company. (Yu, 2008).

We selected the following model (4): (Yu, 2008)

$$\left| DA_{it} \right| = \beta_0 + \beta_1\,A.coverage_{it} + \beta_2\,A.experience_{it} + \beta_3\,SIZE_{it} + \beta_4\,ROA_{it} + \beta_5\,LEV_{it} + \beta_6\,VOLCF_{it}$$
$$+ \beta_7\,GROWTH_{it} + \beta_8\,INV\text{-}own_{it} + \varepsilon_{it} \tag{4}$$

Where $\left| DA \right|$ is the absolute value of discretionary accruals. A.coverage is the Logarithm of the number of analysts with annual earnings forecasts or recommendations, A.experience is the number of years that analyst has followed a given company , SIZE is the natural logarithm of market capitalization, ROA is return on Assets estimated as net income to total assets, LEV is the leverage ratio estimated as total debt to total assets, VOLCF is measured by standard deviations of cash flow of a firm in the entire sample period scaled by lagged assets, growth is growth rate of assets, Inv-own is the percentage of shares held by institutional investors. According table 7 (relative to the Descriptive statistic of analysts' experience with firms), an average, firm in the sample is followed by analysts with 4.05 years of experience with the firms.

Table 7: Descriptive Statistic of Analysts' Experience with Firms

Variable	Mean	Median	Standard Deviation	N
Analysts' experience With firms	4.05	3	2.14	910

This table shows Descriptive statistic of variable analysts' experience with firms used in model (4) for the full sample. Data are for the period 2005 until 2011.

Table 8 presents the results of estimating Eq. (4) using a pooled sample over the 2005–2011 period. We can conclude that the model tested is generally significant; R² has a value 21.128%, which are in line with prior studies. (Yu, 2008). We reject the null hypothesis stating that all coefficients are zero, P (F) < 0.05. The X² test shows a probability less than 5%, which allows us to retain the fixed effects estimator. According to this table, there is a significant negative relationship between the variable A. experience and the absolute value of discretionary accruals at the 1 per cent level. This indicates that firms with more experienced analysts have a lower level of earning management. This result confirms our second hypothesis and is consistent with Yu (2008) study.

Table 8: Regression Results-the Effect of Analyst' Experience on Earnings Management

Variables	Coefficient (P-Value)	Expected Sign	Found Sign
A.experience	-1.102 (0.000)***	-	-
A.coverage	-0.035 (0.000)***	-	-
SIZE	-0.092 (0.018)**	+/-	-
ROA	-0.105 (0.000)***	-	-
LEV	0.023 (0.509)	+	+
VOLCF	0.356 (0.005)***	+	+
GROWTH	0.020 (0.005)***	+	+
INV-OWN	-0.025 (0.000)***	-	-
Constant	0.0153 (0.000)***		
N Year and Firm fixed effect R² F-stat	910 Yes 0.21128 16.705***		

This table shows regression results based on model (4).

$\left| DA_{it} \right| = \beta_0 + \beta_1 A.coverage_{it} + \beta_2 A.experience_{it} + \beta_3 SIZE_{it} + \beta_4 ROA_{it} + \beta_5 LEV_{it} + \beta_6 VOLCF_{it} + \beta_7 GROWTH_{it} + \beta_8 INV\text{-}own_{it} + \varepsilon_{it}$

$\left| DA \right|$ is the absolute value of discretionary accruals. A.coverage is the Logarithm of the number of analysts with annual earnings forecasts or recommendations, A.experience is the number of years that analyst has followed a given company , SIZE is the natural logarithm of market capitalization, ROA is return on Assets estimated as net income to total assets, LEV is the leverage ratio estimated as total debt to total assets, VOLCF is measured by standard deviations of cash flow of a firm in the entire sample period scaled by lagged assets, growth is growth rate of assets, Inv-own is the percentage of shares held by institutional investors. The time period is from 2005 to 2011.We report p-values in parentheses below the coefficients. The model has been estimated including year fixed effects. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.

CONCLUDING COMMENTS

In this paper, we examine how analysts' coverage and experience affect earning management of 130 French companies listed on the stock index CAC ALL TRADABLE over a period of 7 years starting from 2005 until 2011. We concentrate on France because in 2003, it adopted, the financial security law (Law Mer) that regulates the function of financial analysts' and in 2005, it adopted international accounting standards (IAS / IFRS) that increases transparency in financial reporting and therefore facilitates the detection of earnings management. Using discretionary accruals as a proxy for earnings management, we find that after the introduction of IFRS standards and over a period from 2005 till 2011, analysts' coverage and experience reduce the level of earning management in French companies. Analysts practise a role of external monitor against opportunistic actions of managers. To the best of our knowledge, no previous study has investigated the impact of financial analysts' coverage and experience on earning management in the French context, and particularly after the adoption of IFRS. Our study may be of interest for numerous parties, investors seeking access to the French stock market, leaders seeking to know the impact of financial analysts' presence, brokerage firms… Our study focuses only on accounting-based earnings management. In future research we should to examine whether our results extend to real earnings management or frauds.

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DETERMINANTS OF EARNINGS OPACITY: INDONESIA EVIDENCE

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ABSTRACT

The opacity index of Indonesia ranks 35 of 48 countries in the world (Milken Institute, 2009) and 32 of 34 countries (Bhattacharya et al., 2003). It indicates that earnings quality of Indonesian public companies is low. The factors affecting earnings opacity of Indonesian public firms remains a question. This study investigates whether: (1) firms with concentrated ownership have higher earnings opacity compared to those of dispersed ownership, (2) firms audited by Big Four accounting firms have lower earnings opacity relative to those audited by non-big four firms, (3) financial firms have higher earnings opacity compared to non-financial firms, and (4) smaller firms have lower earnings opacity compared to larger firms. The sample for the study consist of all firms listed on the Indonesia Stock Exchange in 2008-2010. This study used independent sample t-test and regression analysis to test the hypotheses. Research findings suggest that: (1) smaller firms tend have greater earnings opacity than larger firms and it is used to maintain their private information from competitors, (2) firms with higher concentrated ownership tend to have lower earnings opacity. This finding suggests that a single majority ownership plays an important role in monitoring the transparency of information.

JEL: G30

KEYWORDS: Earnings Opacity, Concentrated Ownership, Smaller Firms, Larger Firms, Financial Firms, Big Four, Non Big Four

INTRODUCTION

Reported earnings can become opaque due to at least 3 factors: managerial motivation, accounting standard, and compliance with accounting standards. Firms' earnings opacity may result from an incident where managers are motivated to manipulate earnings. This is particularly due to flexibility in managing accounting standards. In addition, accounting standards do not specifically manage the accounting principles for several business activities and do not comply with the disciplines. Firms' earning can also be unclear due to factors not related to manager manipulation. However, this is because of accounting standards that do not transparently reflect the underlying business activities. In some instances, management does not have interest or cannot overcome the inefficiency of this standard by voluntarily providing informative earnings report (Belkaoui, 2005).

Earnings opacity measures how little information there is in a firm's earning number about its true, but unobservable economic performance (Bhattacharya et al., 2003). The Indonesian Opacity index ranks 35 out of 48 countries (Milken Institute, 2009). The Indonesian *earnings opacity* ranks 32 of 34 countries (Battacharya et al., 2003). This indicates that in Indonesia the quality of firms' earnings is still weak. Previous studies show that family ownership affects the earnings opacity index and earnings of family firms can be more opaque than non-family firms (Anderson et al., 2006 and 2009). However, factors influencing opacity remain questionable. This study extends previous studies on the determinant of earnings opacity in different legal systems. Previous references, indicate weak corporate governance and law protection for

investor rights are the main causes of low informative earnings. In weak legal territories, management uses accounting information to protect proprietary information from competition or to cover conflicts of interest with other investors (Fan and Wong, 2002; Leuz et al. 2003). Previous research (Anderson et al., 2006 and 2009) proves that although in a country where the protection level for investors are strong (e.g. United States), shareholders play an important role in affecting earnings opacity. Whether or not the majority of shareholders in Indonesia play important role remains questionable. This study investigates whether: 1) firms with concentrated ownership have higher earnings opacity than firms with dispersed ownership, (2) firms audited by Big four accounting firms have lower earnings opacity than those audited by other firms, (3) financial firms have higher earnings opacity than non-financial firms, and (4) smaller firms have lower earnings opacity than larger firms.

This study is significant for several reasons: 1) opaque earnings prove that company earnings do not reflect economic real earnings. Therefore, it will affect the decision making processes of investors particularly in the form of higher transaction costs. Earnings are a good instrument to measure the company's operational performance. Earnings information measures business success or failure in pursuing operational goals. Thus, qualified earnings information is necessary to make precise decision for internal and external divisions of the company, 2) good understanding of factors influencing earnings opacity can help regulators improve the available regulation concerning the quality of financial reports. Specifically for the board of Indonesian accounting standard setter to evaluate Financial Accounting Standards No. 1. This paper is organized as follows: Section1 provides the introduction to the research, Section 2 provides a literature review, Section 3 shows the research methodology, Section 4 documents research result and discussion, and Section 5 provides conclusions.

LITERATURE REVIEW

The information quality of a country is determined by the high and low level of legal protection for investors and opacity of the information environment. Higher legal protection means higher value relevance of accounting information. Cahan et al. (2008) proves the relation between earnings quality and value relevance is higher in a country with high protection for investors and less opacity for the information environment.

The information environment of a country is also affected by political aspects, corruption level, legal regulation, and investor protection level (Belkaoui and AlNajjar, 2006; Belkaoui, 2008; Fan et al., 2010). Politically connected firms have both costs and benefits, thus this condition increases the tendency for higher corruption levels. In a country with low enforcement corruption, the quality of earnings is accordingly lowered. Thus, the accounting of earnings is less able to measure real economic performance. Fan et a.l (2010) prove that earnings information of networked firms significantly increases against their matching firms after the public exposure of scandals. Belkaoui and AlNajjar (2006) identify factors influencing earnings opacity within the international context. Internationally, earnings opacity are negatively related with the level of economic freedom and quality of life, and positively related with legal regulation, economic growth, and corruption level. Belkaoui (2005) also shows the stock market wealth effect is negatively influenced by earnings opacity and earnings opacity is positively related to the economic growth. Belkaoui (2004) shows that investor protection positively influences earnings opacity and that common law countries have low earnings opacity. Overall, this shows that earnings opacity varies among countries. What about countries with the same legal system? Do company characteristics determine earnings opacity? This study presumes that ownership structure, audit quality, industry types, and company size affect earnings opacity.

Ownership Structure and Earnings Opacity

Newer research indicates that legal protection of a country plays an important role in maintaining the rights of minority shareholders. Legal systems protect investors by conferring their rights to discipline majority shareholders. Legal systems enforce the contracts designed to limit the ability of select shareholders to obtain private benefits. (La Porta et al., 1998; La Porta et al., 2000; Claessens et al., 2002). Baik et al. (2007) examine the relation between share ownership by managers and company information environment. Managerial entrenchment results in information opacity and has less intention to announce earnings forecast to anticipate bad news.

Previous studies (Anderson et al., 2006; Anderson et al., 2009) that examine the relation between concentrated ownership prove the information environment of family firms is more opaque than the non-family firms. The earnings opacity of family firms is shown to have a negative influence on firm performance. This indicates that quality disclosure becomes an important consideration for investors. Family in firms can play the role of monitor agent so it exploits the opacity to obtain private earnings. Therefore, in firms owned by concentrated ownership, majority shareholders will make use of their position to control the firm, including their financial reports. It is not clear whether the majority of shareholders will purposefully create earnings opacity. Earnings opacity may cause the majority of shareholders to use their voting rights to utilize earnings opacity to obtain private benefits.

H1: Earnings of firms with concentrated ownership are more opaque than those of dispersed ownership.

Auditor Quality and Earnings Opacity

Several studies find that auditor quality can limit management discretion and the opportunistic behavior of the management with superior knowledge (Balsam *et al.,* 2003; Francis and Wang, 2006). Other studies show that firms which are audited by domestic auditors have higher discretionary accruals because they do not comprehensively understand the modern risk-based approach in auditing. Moreover, audit fees are higher than for firms that have higher earnings opacity (Gosh, 2010). Meanwhile, Belkaoui and AlNajjar (2006) show that earnings opacity in firm's decreases along with increases in disclosure, the number of auditors, and accounting standard adoption. Therefore, this research presumes the higher auditor quality, the more they understand the audit risks that they face. As a result, earnings opacity will be lower. Based on this argument the hypothesis is stated as follows:

H2: Earnings of firms audited by Big four accounting firms are less opaque than earnings of firms audited by Non-Big four firms.

Industry and Earnings Opacity

Several studies show a relation between financial sector and opacity. Berger et al. (1999) examine how bank market competition, information opacity, and shock sensitivity have changed over the last three decades by examining credit persistency at the firm level. The research results show the different processes that underlie the persistency of performance distribution, impede competition, and information opacity include the persistency determinant. Decreasing geographic regulation, however, has little impact on the competition level, and the persistency is still influenced by macroeconomic shocks. Wagner (2009) states that crises have resulted in increased opacity levels in banks. The research clarifies that financial improvement, decreasing the bank asset opacity, can create an impact. The bank becomes less transparent and its activities are inefficient. This is due to the fact that, according to the bank manager, opacity is difficult to handle and it is also not easy to discipline it. Along with financial improvement, bank managers substitute their assets with less transparent activities even though it has lower profitability (Wagner, 2009). Financial sectors are the most regulated, so this research presumes that financial firms will exploit their

earnings to protect them from regulator monitoring. The next hypothesis is:

H3: Earnings in financial firms are more opaque than earnings in non-financial firms

Firms Size and Earnings Opacity

Company's size may affect earnings opacity. Beasley et al. (2000) report that deceitful firms in technology, health-care, and financial services have less internal audit support and are accompanied by weak corporate governance mechanisms. Therefore, larger firms tend to design and maintain internal monitoring systems more effectively and sophisticatedly than smaller firms to decrease earnings manipulation by the company's management. In addition, larger firms usually have sophisticated internal monitoring systems and more internal auditors than smaller firms. Effective internal monitoring systems function to control the less accurate financial information to public. Larger firms generally have more experience and therefore have better control of the company's operation and business environment than smaller firms. Larger firms also usually maintain their credibility in the business community and social responsibility. Larger firms have more expertise and experience in controlling the financial information credibility that is revealed. Linsley and Shrives (2005) confirmed that larger firms usually opt for not revealing information of risks or risk management, because this is viewed as sensitive from a commercial point of view. Smaller firms tend to become close so information access from the external parties towards smaller firms is so low that the opacity level becomes high. Hence, the cost of engaging in earnings opacity will be higher for larger firms than smaller firms. Therefore, their concern about reputation may prevent large firms from reporting opaque earnings. This indicates that smaller firms commonly have higher earnings opacity. Hence the next hypothesis is:

H4: Earnings of small firms are more opaque than earnings of larger firms.

METHODOLOGY

The research sample includes 397 firms listed on the Indonesian Stock Exchange from 2008-2010 that issued yearly financial reports per December 31st. This research uses data pooling resulting in total observations of 1,191. We omitted 186 observations hence the final sample includes 1,005 observations. Yearly financial reports were obtained from the Indonesian Stock Exchange. Meanwhile, trading volume and bid ask spread data were collected from Bloomberg.

Independent variables in this study are concentrated ownership (MAJOROWN), auditor quality (AUD), Industry (IND), and firm size (LSIZE). Hence the dependent variable is earnings opacity (OPACITY). Concentrated ownership is measured using the highest percentage of company shares owned by personal, government or institutional shareholders. Auditor quality is measured using a dummy variable, 1 if firm audited by big four, 0 otherwise. Industry is measured using a dummy variable, 1 if it is a financial firm, 0 otherwise. Firm size is proxied with natural log of total assets.

Earnings opacity is the earnings reported by firms that fail to provide information on the real economic earnings distribution (Bhattacharya et al., 2003). Earnings opacity is measured by an earnings opacity index established from two main elements of earnings opacity namely, internal and external earnings opacity. Internal earnings opacity is measured by earnings aggressiveness, income smoothing, and the number of footnotes. External earnings opacity is measured by bid-ask spread and trading volume. From those five measurement tools, an earnings opacity index is established. This study categorizes all earnings opacity proxy into scales. The most opaque firms are graded 10 and the least opaque is graded 1. All five categories are added and scaled by a factor of 50 (the possible total value) to make index ranging from 0.1 to 1. Higher index levels imply higher the earnings opacity. This index a gives relatively robust measure of opacity. This measurement is a modification from the opacity index from Anderson et al. (2009) and Bhattacharya et al.

(2003). The following are the measurements from internal and external earnings opacity.

Internal earnings opacity is measured using earning aggressiveness, income smoothing and disclosure level through notes on financial report in income statement. Earnings aggressiveness (Bhattacharya et al., 2003) is calculated using scaled accruals. Scaled accruals are defined as:

$$ACC_{it} = (\Delta CA_{it} - \Delta CL_{it} - \Delta CASH_{it} + \Delta STD_{it} + \Delta DEP_{it} + \Delta\,TP_{it})\,/\,TAk_{\,t\text{-}1} \qquad (1)$$

Where:

ACC_{it}	= scaled accrual company i period t
ΔCA_{it}	= total change of assets company i period t
ΔCL_{it}:	= change of current debt company i period t
$\Delta CASH_{it}$	= change of cash of company i period t
ΔSTD_{it}	= change of long-term debt proportion included in short-term debt company i period t
DEP_{it}	= depreciation and amortization cost company i period t
ΔTP_{it}	= change of taxable income company i period t
$TAk_{it\text{-}1}$	= total asset company i period t-1

Income smoothing, which is calculated using the correlation change in the accrual and cash flow from operation (Leuz et al., 2003), is as follows:

$$PL_{\,it} = \rho[\Delta Acc,\,\Delta CFO] \qquad (2)$$

Where:

$PL_{\,it}$	= income smoothing of company i period t
$\Delta Acc_{\,it}$	= accrual change of company i period t
$\Delta CFO_{\,it}$	= change of operational current cash of company i period t
P	= correlation level

Disclosure level through notes on financial reports in the income statement (this modified from that of Akhigbe and Martin, 2005), is calculated by dividing the number of notes on the income statement over total of footnotes in income statement. The lower the proportion level, the higher the earnings opacity.

External earnings opacity is developed from trading volume and bid-ask spreads. Volume of share trading, is a proxy of asymmetric information and uncertainty (Leuz and Verrecchia, 2000; Anderson et al., 2006), which is calculated by the natural log of average volume of daily share trading during the fiscal year. Bid ask spread (Anderson et al., 2006) is the proxy of asymmetric information among investors. Bid ask spread is defined as follows:

Bid Ask Spread= (bid price-ask price)/average bid and ask price (3)

The calculation for bid-ask spread is carried out by counting the average of all trades for each company every Wednesdays of the third week. The result is calculated to find the mean during the year based on the 12 observations. Due to many observations related to the share trade data, this research limits the analysis to a typical trade day of each month. Monthly data are then calculated for its mean every year. This study chooses the third Wednesday in each month to eliminate loss of data because of holidays and to minimize the weekly effects.

Analysis Methods

This study uses independent sample t- test to test the hypotheses. Also, this study uses multiple regression analysis with dummy variable as the additional analysis to test hypotheses. The regression model is:

$$OPACITY_{it} = \alpha + \beta_1 MAJOROWN_{it} + \beta_2 AUD_{it} + \beta_3 IND_{it} + \beta_4 LSIZE_{it} + e \qquad (4)$$

Where:

OPACITY = Earnings opacity index
MAJOROWN = Majority ownership
AUD = Auditor quality (dummy, 1 if firm audited by Big four, 0 otherwise)
IND = Industry (dummy, 1 if financial firm, 0 otherwise)
LSIZE = Ln Total Asset

RESULT AND DISCUSSION

Descriptive Statistics

This research uses data pooling with a total of 1,005 observations from 2008-2010. Table 1 shows descriptive statistics consisting of the mean and standard deviation for each variable. Firm's size (LSIZE) has the highest standard deviation, whereas opacity index (OPACITY) has the lowest standard deviation.

Table 1: Descriptive Statistics

Variable	N	Mean	Std. Deviation
Ownership (MAJOROWN)	1005	0.474	0.499
Auditor (AUD)	1005	0.220	0.415
Industry (IND)	1005	0.113	0.317
Size (LSIZE)	1005	19.952	1.271
Opacity Index (OPACITY)	1005	0.206	0.073

This table shows summary statistics for full observations (N=1005). Ownership (MAJOROWN) is the highest percentage of companies share that owned by personal, government or institutional shareholder. Auditor (AUD) is dummy variable, 1 if firm audited by big four, 0 otherwise. Industry (IND) is dummy variable, 1 if financial firm, 0 otherwise. Size (LSIZE) is natural log of total assets. Opacity index (OPACITY) is an index developed by internal and external opacity.

Independent Sample t-test

Hypotheses 1, 2, 3 and 4 are tested using the independent sample t-test: (1) Hypothesis 1: samples are categorized into two: firms with single majority ownership and firms that do not have single majority ownership. A company has concentrated ownership if there is single majority owner that directly own 50% or more shares (Schiehll and Santos, 2004). If the majority of shareholders in the company are less than 50%, the company is categorized into dispersed ownership (non-single majority ownership). (2) Hypothesis 2: samples are categorized into two groups: firms audited by Big Four and non-Big Four. (3) Hypothesis 3: samples are categorized into two groups: financial company group and non-financial company group. (4) Hypothesis 4: samples are categorized into two: larger and smaller firms. Smaller firms are those the natural log of total assets are lower than median of all firms the natural log of total assets and larger firms are those that the natural log of total assets are upper than median of all firms the natural log of total assets. A t-test on the opacity index was conducted for each group pair. The result of the independent sample t-test is presented in Table 2:

Table 2 shows the independent sample t- test result. Panel A shows the mean for earnings opacity index of firms with concentrated ownership (those that have single majority ownership) is significantly lower than

the earnings opacity index of firms with dispersed ownership with p-value 0.017. This means that hypothesis 1 in this study is not supported because firms with concentrated ownership have a lower earnings opacity index. This also indicates that the existence of majority shareholders in a company can prevent from discretion actions taken by management to manage the earnings and change the disclosure function in the company.

Panel B shows, although not significant, the mean for earnings opacity index of the firms audited by Big four auditor is lower than the firms audited by non-Big four. This means that hypothesis 2 is not supported. It also proves that qualified auditor existence has not been able to reduce earnings opacity levels, or auditors have not been able to detect management discretion in using the earnings opacity for their private benefit.

Table 2: Result of Independent Sample t- test

Sub Sample	Mean	F	P value
Panel A:			
Single majority	0.553	14.543	0.017*
Non single majority	0.621		
Panel B:			
Big Four	0.428	3.126	0.232
Non Big four	0.554		
Panel C:			
Financial Firms	0.612	1.578	0.148
Non Financial Forms	0.506		
Panel D:			
Smaller Firms	0.619	6.016	0.034*
Larger firms	0.247		

This table shows the result of indepedent sample t-test for all sample groups. Panel A shows the mean for earnings opacity index of firms with single majority ownership is significantly lower than the earnings opacity index of firms with dispersed ownership with p-value 0.01. Panel B shows there is no difference of the mean for earnings opacity index of the firms audited by Big four auditor and the firms audited by non-Big four. Panel C shows there is no difference of the mean for earnings opacity index of financial firms and non-financial firms. Panel D shows the mean of earnings opacity index in smaller firms is significantly higher than larger firms with p-value 0.034. *Statistically significant at the 5 percent level

Panel C shows the mean of earnings opacity index in financial industries is higher than non-financial industries although not significant. It means that hypothesis 3 in this study is not supported. This indicates that both financial and non-financial firms do not have different motivation in reporting firm earnings. Even though financial firms are high regulated firms, they are not motivated to use earnings opacity to cover the real condition of the firms from tight monitoring of the regulator.

Panel D shows the mean of earnings opacity index in small firms is significantly higher than larger firms with p-value 0.034. It means that hypothesis 4 in this research is not supported. It indicates that small firms tend to use earning opacity to protect their firms from unbeneficial competitors.

Regression Analysis

The result of regression analysis using dummy variable is presented in Table 3. Based on Table 3, the MAJOROWN variable has coefficient of -1.369 but is not significant. This implies that the more concentrated ownership in the firms, the lower the earnings opacity level. The dummy variable AUD has coefficient of 0.036 but is not significant. This implies the earnings opacity level among firms audited by Big 4 auditors is not significantly different from that of non Big Four. The dummy variable IND has the coefficient of 0.116 and is not significant. This indicates the earnings opacity level between financial firms is not different from that of non-financial firms. The coefficient variable of LSIZE is negative 0.023 and is significant. This suggests the larger the size of firms, the smaller the earnings opacity level. This also indicates that the larger the size of the firms, the more transparent the earnings of the firms.

CONCLUSION

This study addresses questions of the determinants of earnings opacity. Specifically we investigate whether: 1) firms with concentrated ownership have higher earnings opacity than firms with dispersed ownership, (2) firms audited by the Big four have lower earnings opacity than those audited by non-Big four, (3) financial firms have higher earnings opacity than non-financial firms, (4) smaller firms have a lower earnings opacity compared to larger firms. This study uses data pooling with 1,005 observations and uses independent sample t-testing and regression analysis to test the hypotheses

In general, this study shows that smaller firms tend to have higher earnings opacity levels than larger firms. This is because smaller firms make efforts to use their earnings opacity to keep company information from competitors. This condition is consistent with the arguments of Fan and Wong (2002) who stated that managers may prefer to choose a more opaque information environment to protect private information of the firm and specific human capital.

Table 3: Regression Analysis Result

Variable	Coefficient	t-Statistic
MAJOROWN	-1.369	-1.680
AUD	0.036	1.291
IND	0.116	0.098
LSIZE	-0.023	1.932*
R-squared	0.037	

This table shows regression result for equation 4. Equation 4 contains 4 independent variables, which are MAJOROWN (the highest percentage of companies share that owned by personal, government or institutional shareholder), AUD (dummy variable, 1 if firm audited by big four, 0 otherwise,IND (dummy variable, 1 if financial firm, 0 otherwise) and LSIZE (natural log of total asset). The dependent variable is OPACITY(an index developed by internal and external opaciy). *Statistically significant at the 5 percent level.

The results show that firms with concentrated ownership are more transparent or have lower earnings opacity level than firms with dispersed ownership. The result is not consistent with that of Anderson et al. (2006) and Anderson et al. (2009). This shows that the existence of majority shareholder in a company can change the governance function in the company so that it can limit the tendency of the management to use the earnings opacity to obtain private benefits. This study demonstrates the existence of controlling shareholders plays an important role in firms with concentrated ownership including in the financial report. The existence of majority shareholders is able control monitoring function in firms so that the firms do not need to make extensive disclosures.

This study has two limitations: (1) The sample time frame might cause inconclusive result since the year 2008 is the global financial crisis period that had a significant impact on the performance of the capital market in Indonesia; (2) This study uses immediate ownership to measure the ownership structure. Future research could use ultimate ownership to trace the controlling shareholder. Future research also could observe the determinants of earnings opacity of state owned enterprises (SOE's) in Indonesia, and whether their level of earnings opacity higher than non SOE's. This might be particularly interesting because the SOE's in Indonesia are highly politically connected.

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DETERMINANTS OF MANDATORY CORPORATE GOVERNANCE: EVIDENCE FROM AN EMERGING MARKET

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ABSTRACT

This study investigates whether listed companies in Jordan comply with mandatory governance rules and explores factors that affect the governance compliance level. A checklist was designed to construct a governance index for each of 128 Jordanian listed companies that disclose the necessary data to calculate the variables under study. The results indicate that on average Jordanian listed companies comply with mandatory governance rules. This compliance depends on some crucial variables. Company size, profitability, age as a listed company on the ASE, size of the auditor and type of industry significantly affect the compliance level.

INTRODUCTION

The agency problem, as a result of the separation of ownership and management in modern organizations, drove the demand for corporate governance. Lin and Hwang (2010) note the need for corporate governance as a mechanism to align the interests of management with those of shareholders/investors. There is no consensus about the definition of corporate governance among the experts. The OECD (2004) defined corporate governance as a set of mechanisms by which organizations are directed and controlled, which means that such mechanisms may be adopted internally, like firm policies and regulations, or externally, such as governance regulations issued and implemented by governments or market regulators. In the Middle East, corporate governance procedures and regulations have been in focus for two decades. Miteva (2005) argued the OECD started to focus on the Middle East and North Africa (MENA) countries through initiatives that aim to modernize the practices and procedures of corporate governance and to improve the policies and the environment for investment.

All companies listed on the Amman Stock Exchange (ASE) work under supervision of the Jordan Securities Commission (JSC), which is considered the market regulator. In late 2008, the JSC issued a corporate governance guide as a result of the market demand for such a regulation that considers stakeholders' rights. This guide was published in early 2009 by the JSC, and 2010 was announced as the implementation year for all listed companies. This guide is considered the first powerful regulation in Jordan regarding corporate governance and is divided into four main sections: board of directors, stockholders' meetings, stockholders' rights, and disclosure and transparency, which include mandatory governance mechanisms. Black et al. (2012) stated that optimal governance always differs between emerging markets and developed countries. Furthermore, the differences between emerging countries of the MENA region in adopting and implementing governance procedures have been evidenced (Euromoney,

2007; Fawzy, 2004). Bhuiyan and Biswas (2007) mentioned that significant differences in governance practices and disclosure have been noted among developing countries. Samaha et al. (2012) stated that non-compliance with governance regulations is a phenomenon in developing countries and particularly in MENA countries, indicating the need to investigate governance practices and compliance with governance regulations in developing countries in general and in the MENA region in particular. Previous studies have found that governance practices and compliance are related to many variables, including firm characteristics such as firm value (Ammann et al., 2011; Bebchuk et al., 2009; Cremers & Nair, 2005), firm size (Black et al., 2006, 2012), firm profitability (Durnev & Kim, 2005), and firm growth (Bennedsen et al., 2012; Doidge et al., 2004), which indicates that governance level and governance practices do not differ among firms in the same country. The current study explores the level of governance compliance in Jordan (a member country of the MENA) as the growing economy is attracting new investment. Another objective of this study is to determine the level of governance in Jordanian listed companies using the firms' characteristics and auditor size. This area of research is still unexplored in the Jordanian market, which adopted and implemented the governance code (guide) less than four years ago. The results of the current study provide guidance and valuable information to investors, stockholders, and regulators regarding governance implementation and the factors that determine the compliance level with the governance code, and it will also enhance the improvements in the regulations, particularly when considering the mandatory adoption of governance regulations. The rest of the paper proceeds as follows; a review of related literature and development of the study's hypotheses is in section 2. In section 3, a description of methodology and the sample was presented, while sections 4 discuss the empirical results. The paper closes with a summary in section 5.

LITERATURE REVIEW

Corporate governance has attracted a great deal of attention in the recent literature, which has discussed its different dimensions and policy issues in relation to developed market economies. Emerging and developing countries have also benefitted from these efforts. In corporate finance, the agency problem usually refers to a conflict of interest between a company's management and its stockholders. The manager, acting as the agent for the shareholders, or principals, is supposed to protect the interests of the stockholders. In developing countries, corporate governance still needs more research in the area of implementation and its determinants (Baydoun et al., 2013). Recent research in developing countries and particularly in the MENA region has reported mixed results about governance practices and their implications. For example, Al-Saidi et al. (2014) found that board size, non-executive directors, and role duality have no impact on governance disclosure in Kuwait. Samaha et al. (2012) found a significant association between the same variables and corporate governance disclosure in Egypt. The variations of these results are also supported by a study conducted by Al-Malkawi et al. (2014). This study compared corporate governance in the five countries of the MENA region and found that the governance practices and implications are significantly different among the countries. It is observed from the above discussion that the theory of corporate governance is not as refined as in the developed world. Therefore, more efforts are required to strengthen the governance concept, governance practices, and governance determinants.

In Jordan, corporate governance took place for the first time through governmental regulations that forced companies to adopt specific governance practices in 2003. The first governance code was issued by the Jordanian Central Bank in 2003 and aimed to identify a general framework for governance in Jordanian banks. However, it was not mandatory for banks to adopt the content of this guide. In 2007, the Jordanian Central Bank issued a mandatory governance guide that was compulsory for all Jordanian banks to adopt. Still, other companies were not required to adopt these governance practices. In late 2008, the JSC issued a governance guide that includes mandatory governance practices for all the companies listed on the ASE and assigned 2010 as the year of implementation. The guide includes detailed practices that all the listed companies have to adopt. Those practices have been articulated based on governance best practices around the world and based on the market needs to protect stakeholders' rights (JSC, 2014). Keeping all the above

in view, we aimed to investigate whether Jordanian listed companies comply with the governance guide. We also examine whether the compliance level matches the needs and expectations of Jordanian companies. Most literature has discussed determinants and policy issues related to the practices of corporate governance and its improvements, especially in the emerging market. Most of these studies found a significant correlation between voluntary governance and other variables (related to the ownership structure) that may affect the implementation and disclosure of governance (e.g. Black et al., 2012; Gazali & Weetman, 2006; Samaha & Dahawy, 2010; Samaha et al., 2012). Interestingly, these studies were not able to analyze firm characteristics as main variables.

Previous studies found a significant positive association between firm size and voluntary disclosure (Alsaeed, 2006; Firth, 1979). However, it is a well-established fact that large firms have more resources to disclose more information and also may need more governance practices to respond to their complex operations. Agency costs also increase due to the increase in financial resources and lower ownership concentration (Black et al., 2012). Ettredge et al. (2011) examined a sample of US companies and found firm size to be one of the determinants of voluntary disclosure. Al-Janadi et al. (2013) addressed the importance of firm characteristics and found a significant effect of firm size on voluntary disclosure for Saudi listed companies. Samaha et al. (2012) achieved the same results when they studied the determinants of corporate governance disclosure in Egypt.

As mentioned earlier, large firms may have more governance practices due to the complexity of their operation and tend to have more voluntary disclosure due to their large resources. It is also argued that firms with no profitability cannot disclose voluntary information like profitable firms because of the limited financial resources available. Marston and Polei (2004) argued that managers of profitable firms are more likely to disclose more information in order to increase the stakeholders' confidence in increasing their compensation, which meets the suggestion of the agency theory. Ahmed and Courtis (1999) stated that the association between profitability and voluntary disclosure is not clear due to the mixture of results. Samaha et al. (2012) found no significant relationship between firms' profitability and governance disclosure in Egypt, while Black et al. (2012) found a positive significant correlation between firms' profitability and governance practices that predicts the market value for high-profitability firms in emerging countries. Auditors perform their role as an independent agency that provides assurance about the fairness of financial statements, reducing the information asymmetry (Beatty, 1989) and lowering the effects of the agency problem between managers and stockholders (Jensen & Meckling, 1976).

Al-Ajmi (2009) clearly mentioned that audit quality plays a notable role in corporate governance. Zureigat (2010) found that auditor characteristics and audit firm size are important factors that affect the market reaction to auditor reports in Jordan. In addition, a number of studies have concluded that audit quality is a function of auditor characteristics (Carcello et al., 1992; DeAngelo, 1981; Hmedat, 2002; Zureigat, 2011), which indicates the importance of such a variable in governing firms. DeAngelo (1981) stated that big auditors tend to focus on more information disclosure in order to reduce their legal liability. These arguments were supported through empirical evidence in developed countries (Ettredge et al., 2011) as well as in developing countries (Al-Janadi et al., 2013). It is interesting to note that no evidence exists in Jordan.

DATA AND METHODOLOGY

At the end of 2013, the total number of Jordanian listed companies, which were formally listed and traded during the year 2013, was 128. It is mandatory for all listed companies to adopt the governance guide that was implemented in 2010 in Jordan. The current study considered all listed companies as its population, and the sample consisted of 109 listed companies. Those that disclosed the data needed to calculate the variables at the end of 2012.

Dependent Variable: Governance Practices

The JSC, through the governance guide, requires all listed companies to disclose all governance procedures that have been adopted based on that guide in the annual reports for the year ending in 2012 and also to disclose which governance factors have not been adopted. A content analysis was undertaken for all companies listed on the ASE to identify the adopted governance practices for each company. A unified checklist was developed, based on governance practices listed in the governance guide, to capture governance practices that are implemented in each company. An unweighted compliance index was constructed for each company based on the checklist. To achieve these aims, the following hypothesis was formulated and tested during the course of the study:

H1: Jordanian listed companies do not comply with the governance guide that has been issued by the JSC.

Independent Variable: (Firm Size, Profitability, and Audit Firm Size)

The current study followed previous studies in measuring firm size based on total assets (Al-Janadi et al., 2013; Black et al., 2012; Samaha et al., 2012; Zureigta, 2011). The natural logarithm for total assets at the end of 2012 was used. Return on equity (ROE) was used as a proxy for profitability, which was calculated as net income divided by total equity (Samaha et al., 2012); the ROE was measured for companies at the end of 2012. The second and third hypothesis was developed as follows:

H2: There is no effect of company size on firms' compliance with the governance practices listed in the governance guide.

H3: There is no effect of companies' profitability on their compliance with the governance practices listed in the governance guide.

Auditor size was determined according to whether the firm is one of the Big 4 or non-Big 4 audit firms (DeAngelo, 1981; Zureigat, 2011). A classification of auditors who were hired for each company was made to identify companies that hired Big 4 or non-Big 4 auditors for the year ended 2012. The value one was assigned to Big 4 audit firms and zero otherwise. Based on that, the fourth hypothesis was formulated as follows:

H4: There is no effect of auditor size on firms' compliance with the governance practices listed in the governance guide.

Control Variables

The current study focused on firm characteristics as independent variables to be regressed to the level of governance compliance, while other factors may affect the dependent variable (level of governance compliance). Such factors may control the expected relationship between dependent and independent variables. The study used the type of industry (sector), following Samaha et al. (2012), and the age of the listed company on the ASE, following Black et al. (2012).

Model

The study examined the effect of some firm-related characteristics on the level of governance compliance in Jordanian listed companies. A multiple regression model was developed to estimate the expected relationship between dependent and independent variables as follows:

$$GC = \alpha + \beta 1 LnFZ + \beta 2 FP + \beta 3 AZ + \beta 4 S + \beta 5 A \tag{1}$$

Where:

GC: Governance compliance level, which was measured using the unweighted compliance index calculated based on the governance checklist.

Ln FZ: Natural logarithm for firm size, which was measured using the total assets.

FP: Firm profitability, which was measured using the return on equity (ROE).

AZ: Auditor size, which was determined as 1 if the hired auditor for company X is one of the Big 4 audit firms and 0 otherwise.

S: Sector, which reflects the sector (type of industry) to which the company belongs, for which the financial sector was labeled 1, the service sector was labeled 2, and the industrial sector was labeled 3.

A: Age, which reflects the length of time for which company X has been listed on the ASE. All of the above variables were calculated for each company as of the end of 2012.

RESULTS

Data were collected from the publications and website of the ASE as of the end of 2012. Table 1 shows the total number of listed companies having the relevant data. Some 63 companies out of the total are financial companies, 29 are service companies, and 36 are industrial companies. The industry classification (financial, service, and industrial) was used as published by the ASE.

Table 1: Number and Frequencies of Companies (Sector Classification)

	Frequency	Percentage	Valid Percentage	Cumulative Percentage
Financial	63	49.2	49.2	49.2
Services	29	22.7	22.7	71.9
Industry	36	28.1	28.1	100
Total	128	100	100	

This table presents number and frequencies of companies based on a sector classification. Some 63 companies out of the total are financial companies, 29 are service companies, and 36 are industrial companies

Table 2 presents descriptive statistics for the variables under study. The governance compliance index in Jordanian listed companies recorded an average of 80%, and the minimum value for this index is 58%. The highest-scoring Jordanian company has complied with 90% of the governance rules. Those companies have mixed profitability where the ROE (firm profitability) varies between -7.54 and 11.34 with a mean of 3.51. This indicates that Jordanian listed companies do not produce competitive profitability, which may be explained by the characteristics of the Jordanian economic environment as an emerging market that is still working on producing more regulations to control the freedom of the capital. This issue is evidenced when noticing the age values that represent the age of the firm as a listed firm on the ASE, which was established only 36 years ago. The average age for the sample companies is just 13.69 years. This fact indicates that the listed companies' culture is still new and not comprehensive in the Jordanian environment; it needs more time and regulation to protect the interest of the stakeholders after gaining more experience.

The reflection of the above results can also be seen in Table 3, which presents the frequencies of the auditor size variable. This variable presents the size of the audit firms that were hired by Jordanian listed companies as of the end of 2012. Table 3 shows that only 53% of the Jordanian listed companies hire Big 4 auditors.

Table 2: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std Deviation
Governance Compliance	128	0.58	0.9	0.8	0.07
Ln. Firm Size	128	11.58	20.45	15.68	2.02
Firm Profitability	128	-7.54	11.34	3.51	2.54
Age	128	1	36	13.69	8.96

This table presents the descriptive statistics for dependent (Governance Compliance) and independent variables that are related to firm's characteristics (Firm Size and Firm Profitability). Also Firm Age is described.

Testing of the Hypotheses

The first hypothesis explores whether Jordanian listed companies comply with the governance rules issued by the JSC in its governance guide. This hypothesis cannot be tested using a T test, such as the one-sample T test, because there is no valid test value for the calculated compliance index. The compliance index produces values that present a percentage of the company's compliance. Those values, as presented in Table 2, are between 58% and 90% in the sampled companies. To this end, we notice that all the Jordanian listed companies comply with the governance rules as the minimum value for the compliance index is 58% and the mean value for the compliance index is 80%, indicating that Jordanian listed companies comply with the governance guide issued by the JSC. To investigate the rest of the study hypotheses, a multiple regression analysis was conducted based on the study model.

Table 3: Descriptive Statistics for Auditor Size

	Frequency	Percentage %	Valid Percentage %	Cumulative Percentage %
Non Big 4	60	46.9	46.9	46.9
Big 4	68	53.1	53.1	100
Total	128	100	100	

This table provides descriptive statistics for Auditor's Size. The table provide descriptive about how auditors that provides the audit service to the Jordanian listed companies and shows that Big 4 auditors are having the biggest market share.

To run the regression, a multi-collinearity test was performed to determine whether a high correlation between independent variables exists or not; the results indicate that the collinearity problem does not exist because the tolerance values are above 0.20 and the VIF values are less than 5. The results of the ANOVA test and values of the adjusted R square are presented in Table 4, which indicates that the independent variables explain only 40% of the changes in the dependent variable, but the F value, which is 18.147 at the significance level equal to 0, clearly shows that the model is acceptable and well designed. The results of the multiple regression are presented in Table 4, which explains the directions of the relationship between the dependent variable (governance compliance) and the other independent and control variables.

Table 4: ANOVA and Multiple Regression Results

Multiple Regression	B	Std Error	T	Sig.
(Constant)	0.811	0.044	18.377	0.00
Ln. Firm Size	0.00	0.003	-0.169	0.866
Firm Profitability	0.005	0.002	2.483**	0.014
Auditor Size	0.067	0.011	6.143***	0.00
Sector	-0.031	0.006	-4.921***	0.00
Age	0	0.001	-0.256	0.798
F	**Sig.**	**Adjusted R Square**		
18.147***	0.00	0.403		

This table provides the results of ANOVA and multiple regression model, which explains the directions of the relationship between the dependent variable (governance compliance) and the other independent and control variables. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.

The second hypothesis explores the effect of company size on governance compliance in Jordanian listed companies. The regression results indicate that company size does not affect governance compliance, where

the T value is -0.169 at the significance level of 0.888. Such a result shows that there are no differences between big and small companies in the governance compliance level in the Jordanian context. This result opposes that of Black et al. (2012) and Samaha et al. (2012), but it can be rational in the Jordanian context when considering ASE characteristics especially in a new stock market. The third hypothesis investigates the effect of Jordanian listed companies' profitability on their governance level. The regression results show the t value for this variable is 2.483 at the 0.014 significance level, which indicates a significant effect of companies' profitability on governance compliance. The result of this hypothesis is supported by Samaha et al.'s (2012) results. Such a result means that profitability is considered an incentive for Jordanian companies to comply more with the governance rules as listed in the governance guide in Jordan, and it can also be explained by the characteristics of the ASE which still an emerging market that considers profits as driver for investor's decisions.

The second and third hypotheses investigate the effect of internal variables (size and profitability) on governance compliance, whereas the fourth hypothesis aims to investigate the effect of auditor size (Big 4 or non-Big 4) on the governance level. The regression results show a T value of 6.143 at the 0.00 significance level, which indicates that auditor size positively affects the level of companies' compliance with the governance rules listed in the Jordanian governance guide. This result is in line with the author's prediction and aligned with Al-Janadi et al.'s (2013) results. Such results mean that auditors in Jordan play a governance role and that Big 4 auditors are more effective in this role. Furthermore, this result presents new evidence on the quality of Big 4 auditors.

Regarding the control variables, Table 4 shows that the industry type (sector) positively affects the compliance level in Jordanian listed companies. The T value is -4.921 at the 0.00 significance level, which indicates that the financial sector complies more than the other sectors with the governance rules. However, the age of the company as a listed company on the ASE does not affect the compliance level.

To add clarity about the results presented in Table 4, a simple linear regression has been run to determine the robustness of the results. For each independent variable (Firm Size, Firm Profitability, and Auditor Size) a simple regression was run. The results of those regressions are presented in Table 5 which asserts that company size doesn't affect governance compliance at Jordanian listed companies. The T value is 1.17 but is not significant. At the same time, profitability is found to have a positive effect on governance compliance in Jordanian listed companies where big companies have more compliance to governance guidelines. This effect is significant at the 10% level as mentioned in Table 5. Also, the result of the simple regression regarding the effect of auditor size is the same result that has been indicated through the multiple regression where T value is 6.86 at zero significance level which indicates that auditor size significantly affect the governance compliance where big 4 audit firms are associated with more compliance to governance guidelines in Jordan.

Table 5: Results of Simple Regression

	B	Std. Error	T	Sig
Ln. Firm Size	0.004	0.003	1.170	0.244
Firm Profitability	0.005	0.003	1.811*	0.073
Auditor Size	0.078	0.011	6.860***	0.000

*This table presents the results of simple regression models. Those regressions were run to capture the relation between the dependent variable (Governance Compliance), and each independent variable separately. ***, ** and * indicate significance at the 1, 5 and 10 percent levels respectively.*

CONCLUDING COMMENTS

Corporate governance has become the norm during the past two decades due to its importance in controlling companies' actions toward their stakeholders. Governmental agencies and regulators have devoted more

attention to governance practices and started initiating governance rules and guides to push companies to adopt governance practices. In Jordan, one of the emerging markets in the MENA region, the JSC issued a governance guide that lists the mandatory governance practices that all listed companies have to adopt. This guide was first implemented in 2010. The guide was adopted due to the shortage of governance culture in the region Al-Ajmi (2009). The current study aimed to investigate whether Jordanian listed companies are complying with the governance rules listed in the governance guide and to explore factors that may affect the compliance level. A checklist was developed based on the governance guide components to construct an unweighted governance index for Jordanian listed companies. Both multiple and simple regression models were tested to capture the relation between dependent variable (governance Compliance) and independent variables (firm size, profitability, and auditor size). The results indicate that Jordanian companies comply with this guide and are implementing its components. The results of the multiple and simple regressions indicate that companies' size and age as a listed company on the ASE do not affect the governance compliance level, whereas auditor size, profitability, and industry type positively affect the governance level.

Such results show no effect of companies' related variables (size and age as a listed company) on the governance level can be explained by the nature of the ASE as a new stock market in an emerging country. The fact that both auditor size (Big 4) and the industry (sector) positively affect the governance level can be explained by considering both as external factors. This means that Jordanian listed companies consider external factors more than internal ones, which indicates the power of the rules and regulations in Jordan as an emerging market. In addition, these results indicate that Big 4 auditors perform the governance role more than non-Big 4 auditors as quality auditors. Future research in this area to have more comprehensive results is needed when considering that this paper focused on mandatory governance practices. Further analysis for both mandatory and non-mandatory governance practices will be valuable to provide a clear view for governance compliance especially in emerging markets.

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