



Impact of Sustainability Reporting Level on Audit Report Lag: An Empirical Study in Saudi Arabia

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Abstract

As sustainability reporting becomes increasingly important, companies worldwide are putting more effort into reporting the impacts of their operations on governance, economics, society, and the environment. At the same time, auditors are under pressure to mitigate audit report lag, which indicates the quality and reliability of financial reporting. This study explores the association between sustainability reporting levels and audit report latency of Saudi non-financial firms. With two distinct measures for the dependent and independent variables extracted from previous research, we have built up a comprehensive dataset from 140 non-financial firms in Saudi Arabia. The hypothesis was tested through a regression analysis. The finding demonstrates that there is a significant negative correlation between sustainability reporting levels and audit report lag, which means that increasing sustainability disclosures improves financial reporting substantially. This study is the first attempt in the Saudi Arabian environment. The nation's 2030 Vision emphasizes the importance of fostering an efficient capital market framework and increasing international investor trust. The findings provide vital information for the Capital Markets Authority, policymakers, and stakeholders to make informed decisions.

Keywords: Sustainability Reporting, Audit Report Lag, Regression Analysis, Non-Financial Firms.

Introduction

In the past few years, sustainability has grown increasingly essential as a successful strategy to address social and environmental concerns. Indeed, the sustainability of corporate business practices has received increasing attention as a criterion for firm performance and investment decisions. Consequently, companies, especially publicly listed companies, have made efforts to align themselves with sustainability principles (Gulluscio et al., 2020; Ludwig & Sassen, 2022). While the term sustainability has various definitions, the most widely accepted definition is “[the ability to] meet the needs of the present without compromising the ability of future generations to meet their own needs (Glavic & Lukman, 2007: 1884).”

As a result of this growing importance, stakeholders increasingly demand transparency from companies to disclose the effect of their activities on the sustainability pillars and their efforts to attain sustainable development. This demand has led to sustainability reporting, which reflects a firm's level of sustainability reporting (Huang & Watson, 2015).

* This article was submitted in December 2024, accepted for publishing in March 2025, and published online in March 2025.
DOI: 10.21608/aja.2025.341395.1760.



As a result, sustainability disclosure has grown significantly during the last decade as firms have recognized it as the effective means for communicating their short- and long-term strategies to stakeholders (Amran, Lee, & Devi, 2014; Githaiga & Kosgei, 2022; Alsheikh, 2024). At the same time, corporate reporting helps to effectively communicate financial information about the company to various stakeholders (Al-Ajmi, 2008). This information must be delivered in a timely manner to allow decision makers to make informed decisions (Ahmad & Kamarudin, 2003; Dong, Robinson & Xu, 2018) and remain relevant and useful (Abdillah et al., 2019; Apadore & Noor, 2013). Consequently, one of the objectives of capital markets is to ensure the timeliness of financial reporting (Aldoseri, Hassan & Melegy, 2021).

Stakeholders assess the speed with which financial information is disclosed by examining the company's ARL. The ARL is period between end of the company's fiscal year and publication of audit reports (Ashton et al., 1987; Hassan, 2016; Alsheikh & Alsheikh, 2023). Typically, the ARL acts as an indicator for providing critical financial information to investors and other interested parties (Abdillah et al., 2019).

Some studies have focused on exploring the relationship between these two factors due to the importance of sustainability reporting level as well as audit report timeliness (Al-Shaer, 2020; Oh & Jeon, 2022; Qasem et al., 2023; Wang & Wang, 2023; Al-Absi et al., 2024). The Saudi Capital Market Authority in Saudi Arabia has made every effort to ensure that corporate sustainability is reported at high-level (Alsheikh, 2024). However, very few studies have looked at how CSR affects ARL in Saudi Arabia (Qasem et al., 2023 and Al-Absi et al., 2024). Thus, this relationship requires more investigation, with an emphasis on the sustainability factors (e.g., governance, economic, societal, and environmental) that help ensure the company's future success and continued existence. In this context, the present study addresses the effect of sustainability reporting level on audit report lag.

The present study fills a research gap by presenting new empirical evidence from Saudi companies to determine whether SRLs affect ARL and is arguably a pioneering study, as it sheds light on a crucial correlation between the various facets of Saudi companies' reporting practices. Furthermore, various factors within the Saudi market and business environment emphasize the importance of investigating this topic. It was noted that Saudi Arabia is taking steps to adopt and promote various initiatives aimed at achieving sustainable development for the benefit of future generations (Alotaibi, 2020). Furthermore, recognizing its importance, the Saudi Stock Exchange has introduced sustainability reporting requirements to assist listed companies in meeting various ESG requirements (Alsheikh, 2024). This further emphasizes the importance of assessing the impact of SRL. Moreover, with increased foreign investment in the country and increased attention from analysts of markets, the rapidity of financial disclosure has become critical for businesses and their stakeholders (Elneel & AlMulhim, 2022; Gamra et al., 2022).

To perform this study, researchers selected a sample from 140 listed non-financial firms in Saudi Arabia, which encompassed 654 firm-year observations. The data was collected over a period of five years, from 2018 to 2022, and analyzed to examine SRL's relationship to ARL. A linear regression test found that sustainability reporting levels have a significant negative correlation with ARL. This means that when the level of sustainability reporting rises, the time taken to release audit reports lowers.

These results suggest that companies that prioritize transparency in their sustainability reporting are more likely to be motivated by a desire to increase their credibility and address accountability issues by minimizing audit reporting delays. Therefore, this finding is consistent with the theories of agency and legitimacy. This discovery advances the corporate governance literature, particularly with regard to length of time it takes companies to publish their audit reports. As a result, the present research is among the first to investigate the influence of SRL on ARL of Saudi non-financial firms.

Prior Literature and Hypothesis Development

Sustainability reporting is disclosure of non-financial information about the impact of companies' activities and operations on sustainable development, encompassing governance, economic, social, and environmental aspects (Kumar, 2022). With rise of this reporting type, previous studies have attempted to examine its influence on the practices and performance of different companies. Most studies evaluating effect of sustainability disclosure focused on effect of this parameter on company performance. For example, Burhan & Rahmanti (2012) found that the extent of sustainability reporting, especially social reporting, in Indonesian companies have a positive impact on their profitability. The same relationship was also found by Reddy & Gordon (2010), DeKlerk & DeVilliers (2012), Khaveh et al. (2012), and Whetman (2017) in Australia, New Zealand, South Africa, Singapore, and the USA, respectively. On the other hand, Detre & Gunderson (2011) found that SRL is inversely related to share value of US agricultural firms and Garg (2015) found that, in the short term, SRL of Indian firms negatively affected firm performance represented by ROA and Tobin's Q. Similarly, Nguyen (2020) found that sustainability disclosure level had a significant and negative influence on enterprise value in Germany.

Another line of research examined the influence of sustainability disclosure on earnings management and found mixed results. In particular, Yoon, Kim, and Lee (2019) and Nguyen (2022) found that as the level of sustainability reporting increased, earnings management practices decreased in Korea and East Asia, respectively; however, Ningsih et al. (2023) found the opposite result when examining this relationship in Indonesia; and Karina and Soenarno (2022) discovered no significant impact of SRL on earnings management in three Far Eastern countries. Finally, Anggraini and Tanjung (2019) examined the impact of SRL on reporting quality and discovered a significant positive correlation. Additionally, there has been a debate concerning the relationship between ARL and CSR. Qasem et al. (2023) and Al-Absi et al. (2024) found that high level of CSR helps to reduce ARL for companies in Saudi Arabia (KSA) and the Gulf countries, respectively.

As one of the key dimensions to measure financial report quality, ARL has had many research studies. Several aspects of these can be divided into four main categories. First, ARL was found to be influenced by corporate governance attributes such as the number of board members, board composition, and audit committee attributes (Bhuiyan & D'Costa, 2020; Bin Kusin & Bin Kadri, 2020; Ogoun et al, 2020; Raweh et al., 2019; Gacheru, 2018; Oussii & Taktak, 2018; Ahmed & Che-Ahmed, 2016; Al Daoud et al., 2014). Second, audit engagement attributes impact ARL (Muttiara et al., 2018; Rusmin & Evans, 2017). Third, firm attributes such as firm size, profit, and risk level have been shown to influence ARL (Ahmed & Che-Ahmed, 2016; Muttiara et al., 2018; Natonis & Tjahjadi, 2019; Sudradjat & Mai et al., 2022). Finally, CSR reporting influence ARL (Qasem et al., 2023; Al-Absi et al., 2024).

In the past, scholars have used agency theory to explain the link between a firm's level of environmental or social performance disclosure and the quality of its financial reports. Based on this theory, conflicting interests might occur because there is an information asymmetry between managers and stakeholders (Ika & Ghazali, 2012). Consequently, a higher degree of SRL means that a firm has a strong control, which compels managers to disclose more about their firm's activities and even confines the management's motivations for manipulating financial statements (Dimitropoulos, 2020; Wang & Wang, 2023). According to Buertey et al. (2020) and Al-Shaer (2020), a high level of SRL also implies more efficient corporate governance control which helps to reduce the agency problem and protect shareholders' interests. Moreover, Yoon et al. (2019) argued that the managers of companies that report on their efforts to meet the ethical requirements of their company's stakeholders are highly motivated to provide more transparent financial information and engage in high-quality financial reporting. In addition, according to legitimacy theory, companies tend to reveal more information about social and environmental effects of their operations in order to gain legitimacy among their various stakeholders (Kumala & Siregar, 2021). After gaining this legit-

imacy, managers work harder to maintain it through high-quality financial reporting, which helps to ensure that the audit report can be published on time. Accordingly, legitimacy theory has also been used to support the argument that higher levels of SRL lead to lower ARL as companies seek legitimacy through both sustainability reporting and high-quality financial reporting (Muttakin, Khan & Azim, 2015).

On the contrary, based on stakeholder theory, managers are only interested to reveal more environmental and social information about their companies due to stakeholder pressure. As a result, they may use this increased level of reporting to disguise some financial impacts and mislead stakeholders with manipulated financial reports (Kim, Udawatte & Yin, 2019).

In light of the aforementioned theories, Qasem et al. (2023) and Al-Absi et al. (2024) found there are negative significant relationships between CSR and ARL in Saudi and GCC companies, respectively. In addition, Wang & Wang (2023) showed that after the introduction of mandatory CSR disclosure in China, the time taken to prepare audit reports decreased by 6%. In other words, as the level of CSR reporting increased, ARL decreased. Similarly, Oh & Jeon (2022) concluded that in South Korea, the more active companies are in terms of sustainable corporate management, the shorter the lag in preparing audit reports. In addition, Al-Shaer (2020) concluded that for companies with high-quality sustainability reporting in the UK, the quality of their earnings is significantly higher, which reduces the auditor's effort in reviewing financial reporting. Finally, Kumala and Siregar (2021) discovered negative association between the extent of CSR reporting of Indonesian companies and earnings management. Muttakin et al. (2015) discovered that a higher level of corporate social responsibility (CSR) reporting among Bangladeshi companies leads to a lower quality of earnings reporting. Lamptey, Park and Bonaparte (2023) found a positive correlation between the CSR activities of the "100 Best Corporate Citizens" companies and their ARL. Based on the previous explanations and taking into account agency and legitimacy theories, it can be hypothesized that:

H_1 : *There is an inverse correlation between sustainability reporting level and audit report lag.*

Research Design

To achieve the objectives of the present research, we collected and analyzed an extensive dataset of financial and non-financial information from 140 Saudi non-financial firms. This dataset included a total of 654 firm-year observations. The financial data was obtained from several databases. The non-financial data, on the other hand, was compiled manually from the companies' annual reports (i.e. content analysis).

The dependent variable is ARL for Saudi listed non-financial firms. ARL is the number of days between the fiscal year end date and audit report release date. This definition has been frequently used in previous research examining the factors affecting ARL (Jha & Chen, 2015; Shin et al., 2017; Alsheikh & Alsheikh, 2023).

In this study, level of sustainability reporting for Saudi non-financial firms was chosen as an independent variable. As explained earlier, sustainability reporting focuses on information about how companies' various activities and operations affect sustainable development, including governance, economic, social, and environmental aspects (Loh, Thomas & Wang, 2017; Kumar, 2022; Alsheikh, 2024). Therefore, we measured sustainability reporting using the Sustainability Reporting Level Index (SRL), which considers all four disclosure aspects of sustainability reporting. To calculate a numerical value for the SRL index, each item was assigned a value of 1 or 0. The company then divided total number of points actually reported by maximum number of points reported, as shown below:

$$SRL = \frac{\sum \text{Actual SRL items disclosed}}{\sum \text{Maximum SRL items}} \quad (1)$$

Following previous research, this study controlled for some variables. Board size (BSize) was measured as total number of board members (Alsmady, 2018; Chalu, 2021; Afenya et al., 2022; Alkebsee et al., 2022). Board female directors (BFDir) represented proportion of female directors on board

(Bin Kusin & Bin Kadri, 2020). Audit committee size (ACSize) was defined as total number of audit committee members (Sudradjat & Mai, 2022; Afenya et al., 2022; Alkebsee et al., 2022). Audit committee member busyness (ACBusy): was calculated as the total number of audit committee members holding external directorships relative to total audit committee members (Hundal, 2016; Wan-Hussin et al., 2018; Alsheikh & Alsheikh, 2023).

In addition, Firm size (FSize) was determined as logarithm of total assets (Nouraldeen et al., 2021; Afenya et al., 2022). Profitability (ROA) was defined as net income in relation to total assets (Mutiara et al., 2018; Sudradjat et al., 2021). Debt-equity ratio (Lev) was determined as the total debt to total assets ratio (Habib, 2015; Shin et al., 2017). Moreover, we controlled for audit opinion (ARType), a dummy variable coded as 1 if company got a qualified audit opinion, including a going concern opinion, and 0 otherwise (Al Bhoor & Khamees, 2016; Samaha & Khelif, 2016; Shin et al., 2017; Alsheikh & Alsheikh, 2023). Audit quality (AQ) was also controlled and coded 1 if firm is audit by one of four major audit firms and 0 otherwise (Nelson & Shukeri, 2011; Rusmin & Evans, 2017; Shin et al., 2017).

A regression model has been developed to test the hypothesis of the research, which investigates the influence of sustainability reporting level on audit report lag.

$$ARL_i = \beta_0 + \beta_1 SRL_i + \beta_2 BSize_i + \beta_3 BFDir_i + \beta_4 ACSize_i + \beta_5 ACBusy_i + \beta_6 ARType_i + \beta_7 AQ_i + \beta_8 Size_i + \beta_9 ROA_i + \beta_{10} Lev_i + Year_i + \varepsilon_i \quad (2)$$

Results

Descriptive Statistics

In this research descriptive statistics were calculated for the variables under consideration, which are displayed in Table 1. The data displayed in the table shows the mean and S.D values for ARL for companies in our sample are 74.143 and 24.051, respectively. This shows that, on average, the companies in the sample took more than two months to issue their audit reports after end of the fiscal year. The large S.D value indicates that release date varied considerably between the different companies in our study, ranging from 16 days to 197 days.

The data shows that SRL's mean is 0.754 and S.D is 0.206. It indicates that in the sample of Saudi non-financial firms, sustainability reporting scores has a mean of 75.4% and a low S.D., suggesting that most values concentrate near this level. When compared to earlier study findings in the Saudi context, our sample exhibits significantly greater levels of sustainability reporting (Ebaid, 2022; Al-Duais et al., 2021; Alotaibi & Hussainey, 2016).

In terms of control variables, our sample had an average board size of 7.992, 1.6% female directors, a company size of 9.309, 2.3% profitability, and 50.6% leverage. These values differ on average from those of previous studies conducted in Saudi Arabia (Bamahros et al., 2022; Al-Duais, 2021). However, they are consistent with other studies conducted in Saudi non-financial firms (Alsheikh & Alsheikh, 2023; Alsheikh, 2024), which shows that each sample of Saudi companies is unique and that the characteristics of the companies differ depending on the sector and period in which the sample was drawn.

Correlation Analysis

Table 2 illustrations association between the study's variables and their significance levels. It is clear that the level of SRL together with all control variables (except Lev) are negatively associated with ARL at a significance level of 1%. Only the leverage ratio shows a positive association with ARL at a significance level of 1%. This result aligns with previous studies by Oh & Jeon (2022) and Wang & Wang (2023), who also observed a decrease in ARL with increasing sustainability reporting.

Table 1: Descriptive Statistics

Variable	N	Mean	S.D	Minimum	Maximum
ARL	654	74.143	24.051	16	197
SRL	654	0.754	0.206	0.25	1
BSize	654	7.992	1.574	3	11
BFDir	654	0.016	0.045	0	0.25
ACSize	654	3.476	0.697	2	5
ACBusy	654	0.622	0.285	0	1
ARType	654	0.087	0.282	0	1
AQ	654	0.447	0.498	0	1
FSize	654	9.309	0.759	7.380	12.367
ROA	654	0.023	0.256	-6.013	0.462
Lev	654	0.506	0.647	0.005	10

The outcomes of previous studies are consistent with our findings for board size (Al Daoud et al, 2014; Gacheru, 2018; Bin Kusin & Bin Kadri, 2020), female board members (Ahmed & Che-Ahmed, 2016; Gacheru, 2018), audit committee size (Nelson & Shukeri, 2011; Harindahyani, 2018; Sudradjat & Mai, 2022), busyness of AC members (Alsheikh & Alsheikh, 2023), audit opinion and audit quality (Nelson & Shukeri, 2011; Al Daoud et al., 2014; Ahmed & Che-Ahmed, 2016; Harindahyani, 2018; Bin Kusin & Bin Kadri, 2020; Alsheikh & Alsheikh, 2023), company size (Ahmed & Che-Ahmed, 2016; Mutiara et al., 2018; Sudradjat et al., 2021), and the profitability of the company (Chan, Luo & Mo, 2016; Rusmin & Evans, 2017). Our findings related to leverage are consistent with previous studies conducted in Saudi Arabian firms (Alsheikh & Alsheikh, 2023).

Table 2: Pearson Correlation Matrix

Variable	ARL	SRL	BSize	BFDir	ACSize	ACBusy	ARType	AQ	FSize	ROA	Lev
ARL	1										
SRL	-0.285***	1									
BSize	-0.150***	0.311***	1								
BFDir	-0.099***	0.054	0.138***	1							
ACSize	-0.147***	0.277***	0.398***	-0.016	1						
ACBusy	-0.134***	0.174***	0.043	-0.009	0.058	1					
ARType	0.367***	-0.171***	-0.030	0.010	-0.056	-0.022	1				
AQ	-0.202***	0.307***	0.256***	0.040	0.200***	0.099***	-0.202***	1			
FSize	-0.316***	0.529***	0.512***	0.033	0.447***	0.190***	-0.213***	0.511***	1		
ROA	-0.135***	0.212***	0.070*	0.071*	-0.011	0.009	-0.095**	0.078**	0.087**	1	
Lev	0.333***	-0.046	-0.008	0.051	-0.036	-0.068*	0.119***	-0.033	-0.099***	-0.017	1

As can be seen from the preceding matrix, there is no reason to be concerned about multicollinearity, as a highest correlation is 0.529, which is less than maximum threshold for this indicator (Field, 2009). However, we performed a VIF test to check that the regression model is reliable. As shown in Table 3, the highest VIF is 2.32, which is well below the recommended value and the thresholds of 5 and 10 (Craney & Surles, 2002).

Regression Model

The researchers used linear regression analysis in this study to evaluate the hypothesis and the correlation between SRL and ARL, as shown in Table 4. This method has been used extensively in the literature (Harindahyani, 2018; Nour et al., 2020) to examine comparable relationships. The table shows that adjusted R-squared value is 31.6%. This indicates the study's model can explain 31.6% of the variation in ARL. As expected, the study found a notable and adverse effect of SRL on the ARL of Saudi non-financial firms, with statistical significance at the 1% level. This finding supports the idea that companies that prioritize reporting on their governance, economic, social, and environmental impacts are also likely to prioritize the preparation of accurate and timely financial reports. This helps to clarify issues of agency and gain legitimate status. This finding is consistent with both agency and legitimacy theory and is in line with previous study by Qasem et al. (2023) in Saudi Arabia and Al-Absi et al. (2024) in the GCC.

Table 3: Variance Inflation Factors

Variable	VIF	1/VIF
FSize	2.32	0.431
BSize	1.48	0.674
SRL	1.42	0.702
AQ	1.42	0.706
ACSize	1.34	0.748
ROA	1.26	0.791
ARType	1.14	0.877
ACBusy	1.06	0.944
BFDir	1.06	0.945
Lev	1.03	0.972
Mean		1.35
VIF		

Table 4: Regression Test

Variables	Expected Sign	ARL
SRL	-	-17.877***
BSize	-	0.029
AQ	-	-51.167***
BFDir	-	-2.80
ACSize	-	-1.000
ACBusy	-	-0.82
ARType	+	-5.099*
Lev	-	-1.71
Mean		21.131***
VIF		4.72
Constant		92.853***
Year Effect		16.09
No. of Observations		Yes
R ²		654
Adjusted R ²		33%
		31.6%

Note: * and *** indicate 10% and 1% significance levels, respectively.

Robustness Tests

To validate the outcomes of the original model, an extra test was run with an alternate measure for audit report lag (ARL2). ARL2 represents the logarithm of ARL, which was employed in earlier research such as Afenya et al. (2022) and Alsheikh & Alsheikh (2023). Table 5 supports the primary test outcomes, revealing a substantial negative association between the degree of sustainability disclosure by Saudi non-financial enterprises and their ARL.

Moreover, to check the outcomes of the primary test, we utilized an alternate metric for SRL. Prior research has employed this alternative metric (SRL2), which is derived as log of SRL (Alsheikh, 2024). The outcomes from Table 5 reinstate the outcomes of the primary test. The outcomes display a distinct and significant association between the sustainability disclosure and ARL. Specifically, SRL2 exhibits its significant negative effect on ARL and ARL2.

Conclusion

The research studied the influence of sustainability reporting level on ARL of Saudi non-financial firms from 2018 to 2022. In addition, this study used two measures of ARL and SRL to test our hypothesis and assess the reliability of the original model. Subsequently, the regression analysis and robustness tests showed an increase in the amount of sustainability reporting is correlated with a decrease in the delay in publishing the audit report for 140 Saudi non-financial firms during the 5-year period of our study. These findings support the argument that companies that prioritize reporting on their governance, economic, social, and environmental impacts are also likely to prioritize the timely production of high-quality reports. This helps to reduce agency problems and gain legitimacy, which is consistent with our hypothesis.

This research adds to the existing literature by investigating the correlation between audit reporting lag and sustainability reporting in context of Saudi Arabia. It is the first of its kind to test this association with a focus on sustainability elements that contribute to sustainable business practices, thus providing valuable insights. Furthermore, agency and legitimacy theories were utilized in the study to suggest links between variables, contributing to extensive body of literature on these theories. The research highlights the importance of increased sustainability reporting to decrease audit reporting lag and ensure timely delivery of financial information to investors. This in turn strengthens investor confidence in companies. In addition, the strong correlation between the SRL variable and shorter audit report lag period underscores the importance of following regulatory initiatives on sustainability reporting.

However, due to the pioneering nature of this study in this area, there were some limitations that offer potential opportunities for future research. First, the ownership structures of Saudi companies are quite different in that some are family-owned, which may affect the relationship between the SRL and the ARL. Therefore, investors and regulators can gain a better understanding of the nature of this relationship by examining moderating impact of ownership structure on relationship between SRL and ARL. There is potential for further research by expanding the sample of the study to include financial and non-financial firms. This is because financial firms are subject to specific reporting regulations that can provide valuable insights into the Saudi capital market as a whole.

Table 5: Robustness Tests

Variables	Expected Sign	Dependent Variable		
		ARL2	ARL	ARL2
SRL	-	-0.185*** -2.87		
SRL2	-		-32.843*** -3.81	-0.317*** -3.40
BSize	-	0.008 0.97	0.149 0.25	0.010 1.14
BFDDir	-	-0.692*** -2.61	-61.598*** -3.51	-0.836*** -3.25
ACSize	-	-0.025 -1.29	-0.619 -0.52	-0.020 -1.04
ACBusy	-	-0.056 -1.23	-4.217 -1.43	-0.046 -1.02
ARType	+	0.212*** 5.40	22.703*** 5.31	0.237*** 6.24
AQ	-	0.006 0.22	-1.264 -0.77	-0.010 -0.35
FSize	-	-0.062** -2.34	-3.359** -2.01	-0.072*** -2.88
ROA	-	-0.497*** -3.95	-6.623** -2.00	-0.097** -2.05
Lev	+	0.056** 2.19	10.444* 1.76	0.058** 2.48
Constant		4.566*** 55.91	92.851*** 16.66	4.566*** 56.89
Year Effect	Yes	Yes	Yes	
No. of Observations		654	654	654
R ²		22.3%	32.7%	21.3%
Adjusted R ²		20.6%	31.2%	19.6%

Note: * and *** indicate 10% and 1% significance levels, respectively.

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