MARKET DISCIPLINE AND DEPOSIT INSURANCE: EVIDENCE FROM SOME MIDDLE EASTERN BANKS

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Abstract

Financial intermediaries (banks) and market (stock markets) can play an important role in economic growth. They facilitate a more efficient mobilization of savings, spread risk, and provide liquidity. Given the high costs of banking crises, regulators have always sought the means that promote greater levels of prudence in the behaviour of banks. Indeed Pillar 3 of the Basel Accord relies on enhancing bank disclosure to strengthen market discipline. In other words, Basel II introduces mechanisms to ensure effective governance in financial institutions.

The primary objectives of this research are to provide answers to two questions. First, do depositors discipline Jordanian, Kuwaiti, Omani, and Saudi banks? Second, the fact that the Kuwaiti and Saudi deposits are 100 percent insured explicitly and implicitly respectively, while the Jordanian and Omani deposits are insured up to $14,000 and $50,000 respectively, does this difference in the deposit insurance design have any bearing on market discipline.

Based on a sample of listed Jordanian, Kuwaiti, Omani, and Saudi banks during the time period 1997 – 2006, the overall results clearly indicate the absence of market discipline in Kuwait, Oman, and Saudi Arabia. In other words, market discipline is at work only in Jordan.

Keywords: Net Interest Margin, Deposit Growth, Market Discipline, Jordan, Kuwait, Oman, Saudi Arabia.

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1. Introduction

It is common knowledge that financial intermediaries (banks) and markets (stock markets) play an important role in economic growth. They facilitate a more efficient mobilization of savings, spread risk, and provide liquidity. In other words, by providing these services, financial development (which involves the establishment and expansion of institutions, instruments and markets) can promote a more efficient allocation of scarce economic resources[13].

Notwithstanding the economic importance of financial intermediaries, the fact that the costs of any bank failure are much greater than that of other businesses[14], banking research has examined the performance of banks in terms of many issues. These include the determinants of bank (accounting) performance, bank lending channel, bank competition, bank efficiency, impact of foreign bank entry on the performance of local banks, the determinants of net interest margin, bank discipline, and others.

To avoid banking crises, regulators have always sought to determine the means that promote greater prudence levels in the behavior of banks. Market discipline, on the other hand, relies on private sector agents (equity holders and deposit holders) in disciplining banks. For example, as banks undertake greater risk levels, depositors, for example, may "penalize" (discipline) riskier banks by requiring higher interest rates and or by withdrawing their deposits. Indeed, it is useful to note that one of the main differences between the Basel Capital Accord (1988) and the New Basel Capital Accord (2004) is the introduction of market discipline as one of the pillars on which financial regulation is based. This pillar (Pillar 3) focuses on regulation that requires accurate information disclosure and market discipline of banks. In other words, Basel II introduces mechanisms to ensure effective governance in financial institutions.

[13] For good surveys of the financial development and economic growth literature, see Levine (2004), FitzGerald (2006), Capasso (2006) and Papaioannou (2007).

[14] The budgetary costs of bank crises are large. They range from 3 percent of GDP to more than 55 percent of GDP (Caprio and Klingebiel, 2003).

Notwithstanding the arguments about the corporate governance of banks[15], the fact that market discipline and a good corporate governance play the role of restraining bank risk taking, it is useful to note that there are many potential benefits from promoting and enhancing market discipline in a country's banking sector. For example, by punishing bank excessive risk-taking, market discipline reduces moral hazard incentives. In addition, market discipline may improve the efficiency of banks by "forcing" less efficient banks to become either more efficient or exit the industry (Berger, 1991). Finally, when combined with inside information about banks gained by supervisory procedures, bank discipline can increase the efficacy of the overall supervisory process (Flannery, 1998).

Against the above brief account, the primary objectives of this research are to provide answers to the following two questions:

1- Do depositors discipline Jordanian, Kuwaiti, Omani, and Saudi banks?

2- The fact that the Kuwaiti and Saudi deposits are 100 percent insured explicitly and implicitly respectively, while the Jordanian and Omani deposits are insured up to $14,000 and $50,000 respectively, does this difference in the deposit insurance design have any bearing on market discipline.

The importance of this research stems from a number of factors. First, the size of the banking systems in Jordan, Kuwait, Oman, and Saudi Arabia is large. For example, the 2005 figures indicate that total bank assets as a proportion of Gross Domestic Product (GDP) was equal to 234 percent, 92 percent, 59 percent, and 209 percent in Jordan, Kuwait, Oman, and Saudi Arabia respectively. On average, these ratios are much higher than, for example, the 91 percent in the Philippines, 26 percent in Romania, 117 percent in Thailand, 67 in Turkey and the 101 percent in Indonesia (Barth et al., 2004). Second, some of these countries have experienced bankruptcy cases. For example, by the time of its crash (1989), Petra was the third largest bank in Jordan and the "poverty stricken Jordanian government was forced to pay $200m to depositors who would otherwise have lost their savings, and to avert a possible collapse of the country's entire banking system" (Leigh and Whitaker, 2002, The Guardian). Such cases raise the importance of market discipline and its existence. Third, the fact that the Kuwaiti and Saudi deposits are 100 percent insured explicitly and implicitly respectively, and Jordanian and Omani deposits are insured up to $14,000 and $50,000 respectively, the results of this research should provide some insights into the impact of deposit insurance on market discipline.

In addition to the above-mentioned factors, it is worth noting that the issue of bank discipline in the Arab region has not been investigated. Indeed, the available literature contains a number of papers which examine Arab banks in terms of other issues including the impact of financial development on economic growth, determinants of financial development, determinants of bank performance, bank efficiency, and bank competition. These include Darrat et al. (2002), Isik et al. (2004), Maghyereh (2004), Moustain (2004), Murinde and Yaseen (2004), Omet and Fayyoumi (2004), Omet and Al-Zubi (2005), Ben-Khedhir et al. (2005), Tarawneh (2006), Al-Muharrami et al. (2006), Al-Karasneh and Bolbol (2006) and others.

The rest of the paper is organized as follows. Section II provides a brief review of the international literature about the issue of market discipline. In section III, we discuss the data and methodology and the results. Finally, section V summarizes and concludes the paper.

2. The Issue of Market Discipline: A Literature Review

In all countries, banks are supervised and regulated in order to control their liquidity and insolvency risk. Indeed, bank regulation is justified by the desire to maintain a safe and sound financial system (Hall and Miles, 1991)[16]. Moreover, as argued by Fama (1980) and Baltensperger and Demine (1991), bank regulation is warranted due to the fact that banks promote a more efficient mechanism for the allocation of funds by resolving the asymmetric information problem that exist between borrowers and lenders[17].

The regulatory action of monetary authorities relies on the identification and "correction" of problems that might lead to financial failures[18]. Market discipline, on the other hand, relies on private sector agents (equity holders and depositors) in the

[15] The literature on the corporate governance of banks contains two opposing views. The first view argues that due to the fact that banks are special, the common mechanisms of corporate governance are not equally valid in banking and this legitimates the regulatory authorities to influence if not dominate the corporate governance of banks. The second view argues that the same core corporate control mechanisms that influence the governance of non-financial firms also influence bank operations. In other words, the regulatory goal of preventing excessive risk-taking should be better pursued through the introduction of incentives for appropriate behaviour by bank shareholders, debtholders and depositors. For a good review of this debate, see Polo, 2007.

[16] For some, it is less clear why the market mechanism should not work for banks as it does for other corporates (Marquand, 1987; Goodhart, 1987; Benston and Kaufman, 1996).

[17] This issue (information asymmetry) might result in two basic problems; moral hazard and adverse selection.

[18] Financial regulation takes many forms including the lender of the last resort, deposit insurance, interest rate constraints and restrictions on entry and branching, and capital adequacy requirements.

production of information that is useful for the monetary authorities. For example, depositors may "penalize" riskier banks by requiring higher interest rates and or by withdrawing their deposits. "Market discipline is a regulatory mechanism that delegates the monitoring and disciplining task not only to the national and international regulator but also to the market participants whose wealth is affected by the banks' conduct. Consequently, the continuous 'curse' of disciplining measures by these market participants creates strong incentives for management to run their banks in a safe and sound way" (De Ceuster and Masschelein, 2003).

Relative to the above-mentioned sources of promoting greater levels of bank prudence (regulatory actions and market discipline), it is useful to note that Pillar 3 of the Basel Accord relies on enhancing bank disclosure to strengthen market discipline. Indeed, the New Basel Accord shifts the burden of bank supervision away from supervisors to markets. In his speech before the Conference on Reforming Bank Capital Standards, Meyer (1999) stated that market discipline is an "attractive tool for encouraging safety and soundness in a rapidly evolving environment. Market discipline is inherently flexible and adaptive with respect to innovations, since market participants have incentives to change the ways that they evaluate risks as innovations are adopted".

The issue of market discipline has generated a lot of research interest. While it is extremely difficult to review this large and growing literature in this paper, it is useful to point out that the literature examines the issue of bank discipline in terms of four types of issues. These issues include the contemporaneous relationship between bank risk levels and subordinated debt yields[19], whether or not depositors withdraw deposits from, or require high deposit interest from riskier banks[20], stock prices impounding bank information[21], and the relationship between bank risk and capital[22].

To investigate the issue of market discipline and whether depositors respond to increases in bank risk levels, "ideally one should estimate a simultaneous equations model specifying demand and supply equations. In practice, however, this is very difficult, since it is hard to find exogenous variables that strongly affect either the supply or the demand equation. Hence, the empirical literature has tried to infer whether market discipline is present using reduced-form equations for the equilibrium interest rates and/or deposits" (Ioannidou and Dreu, 2006). In other words, most of the empirical literature regresses the growth rate of bank deposits or total interest expenses paid on deposits to total deposits on a vector of bank risk characteristics and typically, these characteristics include the ratio of shareholders equity to total assets (capital adequacy), ratio of loan-loss provisions to total loans or total loans to total assets (asset quality), ratio of non-interest expenses to total assets (management quality), ratio of return on assets (earnings capability), and the ratio of cash to total assets (bank liquidity).

3. The Data, Methodology and Analysys

To investigate the issue of market discipline, all listed Jordanian banks (17), Kuwaiti banks (8), Omani banks (6), and all listed Saudi banks (9) are considered for inclusion in the analysis. However, based on the availability of all the relevant data during the period 1997-2006, our sample of banks include a total of 12 Jordanian banks, 7 Kuwaiti banks, 7 Saudi banks, and a total of 4 Omani banks. In other words, it can be argued that our sample of banks is a good representation of all local banks in the four countries.

As our earlier discussion implies, depositors can exercise market discipline on banks by withdrawing their deposits (quantity variable) from riskier banks and or by requiring higher interest rates (price level). This research adopts both the quantity and price approaches. The specification of our empirical models takes the following reduced form equations:

$$\Delta Deposits_{i,t} = \alpha_1 + \beta_1 BankRisk_{i,t} + \gamma_1 Control_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$DepositRate_{i,t} = \alpha_2 + \beta_2 BankRisk_{i,t} + \gamma_2 Control_{i,t} \ \eta_{i,t} \quad (2)$$

where i = 1, …, N and t = 1, …., T, and N is the number of banks and T is the number of observations per bank.

The dependent variables $\Delta Deposits_{i,t}$ and $DepositRate_{i,t}$ are the growth rate of deposits in bank i (the first difference of the log of bank deposits) at time t and total interest expenses paid on deposits to total deposits respectively.

The independent variables include $BankRisk_{i,t}$ is a vector of bank risk characteristics and these include the ratio of shareholders equity to total assets (capital adequacy), total loans to total assets (asset quality), ratio of non-interest expenses to total assets (management quality), ratio of return on assets (earnings capability), and the ratio of cash to total assets (bank liquidity). $Control_{i,t}$ is a vector of control variable (bank size measured by the natural logarithm of total assets). A negative estimate for β_1 and a positive estimate for β_2 indicate the existence of market discipline.

In addition to the above, we add to models 1 and 2 a dummy variable to take into account the presence or otherwise of deposit insurance. In other words, we also estimate the following models:

[19] See, for example, Morgan and Stiroh (2001), Jagtiani et al. (2002), Krishnan et al. (2003) and Iannotta (2007).

[20] See, for example, Billet et al. (1998), Hall et al. (2002), McDill and Maechler (2003), Imai (2006), Ioannidou and de Dreu (2006), Murata and Hori (2006), and Thiratanapong (2007).

[21] See, for example, Jordan et al. (2000).

[22] See, for example, Flannery and Rangan (2003).

$\Delta Deposits_{i,t} = \alpha_1 + \beta_1 BankRisk_{i,t} + \gamma_1 Control_{i,t} + \delta_1 D_t + \varepsilon_{i,t}$ (3)

$DepositRate_{i,t} = \alpha_2 + \beta_2 BankRisk_{i,t} + \gamma_2 Control_{i,t} + \delta_2 D_t + \eta_{i,t}$ (4)

where D_t is a dummy variable that takes the value of one when there is 100 percent deposit insurance (Saudi and Kuwait banks) and zero otherwise (Jordanian and Omani banks). In these cases, a positive estimate for δ_1 and a negative estimate for δ_2 would imply that the existence of 100 percent deposit insurance reduces market discipline.

In Tables 1 and 2 we report some basic descriptive statistics for all the dependent and independent variables. The most interesting observations are the ratios of cash and certificates of deposits to total assets (liquidity), credit to total assets (credit), and bank size (size). For example, the overall mean value of cash and certificates of deposits to total assets (liquidity) is equal to 22.4 percent (Table 1). However, if we look at Table 2, we can see that Jordanian banks hold relatively much higher liquidity (43.4 percent). Indeed, the liquidity ratios in the Kuwaiti, Omani, and Saudi banks are equal to 7.4 percent, 4.9 percent, and 9.9 percent respectively. Similarly, while the overall mean value of credit to total assets (credit) is equal to 45.6 percent (Table 1), this ratio is equal to 39.9 percent in Jordan, 48.9 percent in Kuwait, 72.6 percent in Oman, and 46.2 percent in Saudi Arabia (Table 2). In other words, Jordanian banks provide less credit than their counterparts in the Gulf countries. Finally, and as expected, the size of banks reflects some great variations. Indeed, it is the Saudi Arabia which boasts the largest banks in terms of the dollar size of total assets (Table 2).

[Insert Table 1 here]

[Insert Table 2 here]

The estimation method that we use is Period Seemingly Unrelated Regression (SUR) – Pooled Estimated Generalized Least Squares (EGLS). This method corrects for both arbitrary period serial correlation and period heteroskedasticity between the residuals for a given cross-section. In estimating this specification (Period SUR), the method uses residuals obtained from first stage estimates to form an estimate of the error covariance matrix. In the second stage, a feasible GLS specification is estimated. The standard error and covariances are calculated with (panel-corrected) cross section weights (PCSE) to obtain robust estimate of the cross-section residual (contemporaneous) covariance matrix[23].

The basic results are reported in Table 3. Based on the results of this Table, we can make the following observations. First, the ratio of total loans to total assets (credit), which is used as a proxy measure of asset quality, has positive and significant coefficient. The positive impact of credit on the deposit growth indicates that depositors are willing to supply more funds to banks with lower levels of asset quality. This result is in sharp contrast to the international evidence and obviously contradicts the presence of market discipline. Second, the capital ratio (capital) enters with a negative and insignificant. This observation implies that depositors are not willing to supply deposits to better–capitalized banks. Third, the ratio of non-interest expenses to total assets (expense) suggests that depositors are not less willing to supply funds to less efficient banks. Again, this result is in sharp contrast to the international evidence and contradicts the presence of market discipline. Fourth, the results suggest that banks with higher earnings capability (profit) has the largest coefficient and consistently significant. In other words, depositors are willing to supply funds (deposits) to more profitable banks. Fifth, the ratio of cash and certificates of deposits to total assets (liquidity) has a positive and insignificant sign. This implies that banks with higher liquidity do not witness higher growth rates in their deposits. Finally, the deposit insurance system (Dummy) variable enters with an insignificant sign and this indicates that the difference in the deposit insurance system that prevails in Jordan and Oman and in Kuwait and Saudi Arabia does not have any impact on market discipline[24].

Based on the above account of the basic estimation results, we can state that market discipline is not at work in the Jordanian, Omani, Kuwaiti, and Saudi banking sectors.

[Insert Table 3 here]

To shed some further light on the above results, we re-estimate equation 3 for Jordanian banks only and for the Gulf banks. The results of this analysis are presented in Table 4 below.

[Insert Table 4 here]

Based on these results (Table 4), one can conclude that only Jordanian depositors discipline banks. In more specific terms, one can see that the coefficients of capital, expense, profit, liquidity, and size are significant and have the expected signs. For example, the positive coefficient of capital (+0.145) implies that depositors are willing to supply funds (deposits) to better-capitalized banks. Similarly, the ratio of non-interest expenses to total assets (expense) enters with a negative sign and this indicates that depositors are willing to supply funds to more efficient banks. In addition, it is interesting to note that the coefficient of liquidity enters negative and significant. Clearly, this

[23] Estimating the panel regression with lagged values of the dependent variables resulted in very similar results. In other words, the reported results are not likely to suffer from serious simultaneity bias problems.

[24] The estimation of model 2 (the price level) produced similar results.

observation implies that more liquid (less risky) banks attract higher growth rates in their respective deposits. Finally, the results indicate that more profitable banks (the coefficient of profit is equal to +0.307) attract higher growth rates in their deposits.

4. A Summary and Conclusions

Given the economic importance of financial intermediaries (banks) and the fact that the economic costs of bank failures are greater than those of other types of businesses, it is not surprising that banking research has examined a myriad of issues concerning their performance including market discipline.

Market discipline relies on private sector agents (equity holders and debt holders) in the production of information that is useful for bank supervisors in recognizing potential banking problems and in implementing remedial measures. In other words, as banks undertake greater risk levels, depositors, for example, may "penalize" (discipline) riskier banks by requiring higher interest rates or by withdrawing their deposits.

The primary objectives of this research are to provide answers to two basic questions. First, do depositors discipline Jordanian, Kuwaiti, Omani, and Saudi banks? Second, the fact that the Kuwaiti and Saudi deposits are 100 percent insured explicitly and implicitly respectively, while the Jordanian and Omani deposits are insured up to $14,000 and $50,000 respectively, does this difference in the deposit insurance design have any bearing on market discipline?

It is useful to provide answers to the above-mentioned questions for a number of reasons. For example, it can be argued that the fact that the size of banks in the Jordanian, Omani, Kuwaiti, and Saudi economies is large, it is important to investigate the issue of market discipline in this environment. In addition, the fact that the deposit insurance system in these four countries is different, this provides us with an opportunity to investigate the impact, if any, of deposit insurance on market discipline.

Based on a total of 30 banks and the time period 1998 – 2006, the results indicate the absence of a link between bank fundamentals and the supply of deposits. In addition, the evidence clearly shows that the difference between the deposit insurance system that prevails in Jordan and Oman and Kuwait and Saudi Arabia has no significant impact on market discipline. However, when we estimated separately, the results indicate a strong link between bank fundamentals and the supply of deposits in the Jordanian case. In other words, based on the presented evidence, we can argue that in Jordan only, depositors discipline banks. This conclusion may be due to many reasons. However, it can be argued that the absence of 100 percent deposit insurance like those which prevail in the Kuwaiti and Saudi banking systems might be one reason.

Market discipline and traditional banking supervision complement each other. For example, when combined with inside information about banks gained by supervisory procedures, bank discipline can increase the efficacy of the overall supervisory process. Similarly, market discipline may improve the efficiency of banks by "forcing" less efficient banks to become more efficient. Finally, by punishing bank excessive risk-taking, market discipline reduces moral hazard incentives. Based on these benefits of market discipline and the empirical results, one can make a case for enhancing market discipline in the Jordanian banking sector[25].

Moreover, as far as the Gulf banking sectors are concerned, one can argue that it is essential for the regulatory authorities (Central Banks and Stock Exchange Commissions) to work on the conditions (prerequisites) which must prevail in order to make market discipline effective[26]. Finally, the fact that market discipline and good corporate governance play the role of restraining bank risk taking behaviour, it is useful to adopt corporate governance principles in the Arab banking sectors.

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[26] As expected, the prevailing 100 percent deposit insurance should be changed. In addition, cases like the 1992 write-off about $1.2 billion in consumer loans in Kuwait is not conducive to market discipline. For a recent paper which examines the determinants of deposit-insurance adoption and design, see Demiguc-Kunt et al. (2007).

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Appendices

Table 1
Basic Descriptive Statistics (Sample of all Banks)

Deposit is the growth rate of bank deposits in bank (the first difference of the log of bank deposits), interest is interest expenses paid on deposits to total deposits, credit is total loans to total assets (asset quality), capital is ratio of shareholders equity to total assets (capital adequacy), expense is the ratio of non-interest expenses to total assets (management quality), profit is the ratio of return on assets (earnings capability), liquidity is the ratio of cash and certificates of deposits to total assets (bank liquidity) and size is the natural log of bank dollar total assets.

Variable	Mean	Median	Minimum	Maximum	Std. Deviation
Deposit	0.048	0.039	-0.137	0.297	0.059
Interest	0.047	0.044	0.011	0.119	0.024
Credit	0.456	0.446	0.192	0.832	0.140
Capital	0.062	0.052	0.006	0.299	0.040
Expense	0.021	0.018	0.001	0.126	0.012
Profit	0.018	0.018	-0.070	0.062	0.013
Liquidity	0.224	0.149	0.0050	0.768	0.197
Size	9.679	9.428	7.882	11.622	0.935

Table 2
Basic Individual Country Statistics (Mean Values)

Deposit is the growth rate of bank deposits in bank (the first difference of the log of bank deposits), interest is interest expenses paid on deposits to total deposits, credit is total loans to total assets (asset quality), capital is ratio of shareholders equity to total assets (capital adequacy), expense is the ratio of non-interest expenses to total assets (management quality), profit is the ratio of return on assets (earnings capability), liquidity is the ratio of cash and certificates of deposits to total assets (bank liquidity) and size is the natural log of bank dollar total assets.

Variable	Jordan	Kuwait	Oman	Saudi Arabia
Deposit	0.048	0.041	0.053	0.055
Interest	0.048	0.058	0.043	0.037
Credit	0.399	0.489	0.726	0.462
Capital	0.068	0.054	0.072	0.050
Expense	0.026	0.011	0.029	0.015
Profit	0.015	0.019	0.015	0.023
Liquidity	0.434	0.074	0.049	0.099
Size	8.987	9.751	9.299	11.179

Table 3
The Basic Econometric (Overall Sample) Results

The dependent variable is the growth rate of bank deposits in bank (the first difference of the log of bank deposits). Credit is total loans to total assets (asset quality), capital is ratio of shareholders equity to total assets (capital adequacy), expense is the ratio of non-interest expenses to total assets (management quality), profit is the ratio of return on assets (earnings capability), liquidity is the ratio of cash and certificates of deposits to total assets (bank liquidity) and size is the natural log of bank dollar total assets.

Variable	Coefficient	Coefficient
Credit	0.080 (3.055*)	0.080 (2.533*)
Capital	-0.012 (-0.129)	-0.011 (-0.124)
Expense	-0.237 (-0.627)	-0.241 (-0.633)
Profit	0.765 (2.362*)	0.767 (2.385*)
Liquidity	0.012 (0.587)	0.012 (0.401)
Size	-0.001 (-0.038)	-0.001 (-0.026)
Dummy	-----	0.001 (0.546)
Adj. R^2	0.337	0.337
F-statistic	28.184*	23.638*
D-W Statistic	1.996	1.966

Table 4

The Basic Econometric (Jordanian and Gulf) Results

The dependent variable is the growth rate of bank deposits in bank (the first difference of the log of bank deposits). Credit is total loans to total assets (asset quality), capital is ratio of shareholders equity to total assets (capital adequacy), expense is the ratio of non-interest expenses to total assets (management quality), profit is the ratio of return on assets (earnings capability), liquidity is the ratio of cash and certificates of deposits to total assets (bank liquidity) and size is the natural log of bank dollar total assets.

	Jordanian Banks	**Gulf Banks**
Variable	**Coefficient**	**Coefficient**
Credit	0.183 (7.685*)	0.100 (4.064*)
Capital	0.145 (2.596*)	-0.397 (-2.855*)
Expense	-0.775 (-3.050*)	-0.283 (-0.639)
Profit	0.307 (1.411)	0.110 (0.263)
Liquidity	-0.141 (-5.380*)	0.073 (1.407)
Size	0.004 (2.455*)	0.001 (1.059)
Adj. R^2	0.824	0.487
F-statistic	101.638*	31.381
D-W Statistic	1.953	1.995