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Abstract

Previous research has established (i) that a country's financial sector influence future economic growth and (ii) that stock market index returns affect future economic growth. We extend and tie together these two strands of the growth literature by analyzing the relationship between banking industry stock returns and future economic growth. Using dynamic panel techniques to analyze panel data from 18 developed and 18 emerging markets, we find a positive and significant relationship between bank stock returns and future GDP growth that is independent of the previously documented relationship between market index returns and economic growth. We also find that much of the informational content of bank stock returns is captured by country-specific and institutional characteristics, such as bank-accounting-disclosure standards, banking crises, enforcement of insider trading law and government ownership of banks.

JEL classification: G14; G15; and G21

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1. Introduction

Theories of finance and economic growth suggest that the financial functions provided by banks (and other financial intermediaries) are important in promoting economic growth. Empirical research strongly supports the view that banks promote economic growth at the firm, industry and country levels. Recent literature also highlights that not only is the aggregate size of financial intermediaries important for economic growth, but also that the institutional framework of the banking sector can significantly affect economic growth.[2] Asset-pricing theory suggests, and previous research has documented, that stock market returns predict future economic growth.[3] Starting from the proposition that a well-developed banking system fosters economic growth, we extend the literature on finance and growth by investigating whether bank stock returns contain information about future economic growth that is independent of the information contained by overall market returns. Because firm-bank relationships are mostly private, especially when privately held firms are involved, this information should be independent of the information contained in market returns, which only reflect publicly available information about public companies. This is an attractive approach because publicly traded banks are broadly representative of a country's banking sector, so that banking industry stock returns will broadly reflect the performance of a country's banking sector.

The existing literature does not measure the performance of bank functioning directly; instead, it relies primarily upon the aggregate size of bank credit as an indicator of financial development, where higher ratios of bank credit to GDP indicate better functioning of a country's banking sector. We argue that banking industry stock returns are a complimentary measure of financial development because they reflect the quality of bank credits, which is just

[2] See, for example, La Porta *et al*. (2002) and Cetorelli and Gambera (2001).
[3] See, for example, Fama (1981, 1990) and Schwert (1990).

as important as the size of bank credits. If bank credit is allocated to politically desirable but unprofitable projects, then the effect of bank credit on financial development and subsequent economic growth will be negative (La Porta *et al*. 2002). Previous researchers have documented that the markets for actively traded bank securities are efficient and and reflect information about the quality of bank loan portfolios (Bruner and Simms 1987; Cornell and Shapiro 1986). The efficiency of capital allocation and the performance of the projects funded with bank credit, i.e., the overall functioning of banks, will directly affect banks' future cash flows, which, in turn, will be reflected in banks' stock prices.

Because the functioning of banks is a significant determinant of economic growth, in an efficient market there should be a relationship between banking industry stock prices and future economic growth. Moreover, those country-specific and institutional characteristics that affect the functioning of banks and market efficiency also should influence this relationship. From this point of view, we examine the dynamic relationship between the stock prices of the banking industry and future economic growth.

We address this issue using dynamic panel estimations. We construct value-weighted excess returns for portfolios of banks listed on domestic stock exchanges in 36 markets, including 18 developed markets and 18 emerging markets. We then analyze the relationship between the continuous growth rates of real GDP and the lagged values of bank excess returns using panel GMM (Generalized-Method-of-Moments) techniques. We first examine all markets together and then examine developed markets and emerging markets separately.

In our panel studies, we also investigate the impact of country-specific and banking industry characteristics on the link between bank stock returns and growth. We construct variables for country-specific and institutional characteristics that are relevant to growth and

financial development, including the level of government ownership of banks, enforcement of insider trading law, systemic banking crises, regulation of bank accounting disclosure and financial development. We then interact these variables with bank stock returns to investigate the impact of those country-specific and institutional characteristics on growth through bank stock prices.

This study contributes to the literature on finance and growth in at least two important ways. First, we document a positive and significant link between bank stock returns and future economic growth that is independent of the previously documented relationship between overall market returns and growth. This link ties together the literature on banks and economic growth with that on stock markets and economic growth. The banking industry is special in that it is the primary source of credit to both public and private firms in all industries; this is why there is extensive literature documenting the importance of financial development, measured as the aggregate size of bank credits against GDP, in promoting economic growth for a large number of countries. We observe that, in an efficient capital market, bank stock returns reflect the expected future cash flows of banks, which, in turn, reflect the future performance of bank credits to both public and private firms. Therefore, bank stock returns should act as a good indicator of the overall performance of bank credit activities, especially where financial markets (both equity and debt) are not well developed. Not surprisingly, regardless of the sample or technique used, we find a positive and statistically significant relationship between the lagged values of bank excess returns and the continuous growth rates of GDP. We also find that the results are more prominent for emerging markets, where public debt markets are poorly developed or non-existent and banks are the main source of credits for private and public firms. This finding is consistent with Rajan

(1992), who finds that the importance of relationship banking is attenuated when firms have access to public debt markets.

Second, we investigate the impact of a series of country-specific and banking institutional characteristics on growth through banking stock prices, using a set of interaction variables between bank stock returns and country/institutional characteristics. We find that much of the information content of bank returns about future economic growth is captured by those country-specific and institutional characteristics, which is consistent with the findings of previous studies: The positive relationship between bank stock returns and economic growth is significantly strengthened by the enforcement of insider trading law, banking crises, bank disclosure regulations and financial development, but is weakened by government ownership of banks. Our results are robust in the presence of overall market returns, non-banking-sector returns, and the spread of government borrowings, and are consistent with the different measure of bank stock returns.

The remainder of this paper is organized as follows: In Section 2, we provide a brief review of the related literature and highlight our major contributions. In Section 3, we describe our data and methodology. In Section 4, we report the empirical results related to the link between bank stock returns and future economic growth as well as the influence of country-specific and institutional characteristics on this link, using dynamic panel GMM estimations. Section 5 reports a series of robustness tests, and Section 6 concludes.

2. Related literature

This paper is related to a few strands of literature, the details of literature review can be referred to the early version of this paper (Cole, *et al* 2007). In this section we focus on the contributions of our paper.

The first one is the literature on banks and economic growth. Starting with King and Levine (1993), numerous papers have established that a well-developed banking system promotes economic growth. And this positive effect of financial development on growth is found to be robust to different econometric methods, Levine (2005) provides an excellent review on the recent research in this area.

Our research builds upon existing empirical studies of financial development and economic growth but is substantially different from those studies. Previous research has extended the classical growth models by emphasizing the important role of bank credit in economic growth while controlling for factors traditionally thought to affect growth. These studies examine the steady-state finance and growth relationship and investigate whether the static level of financial development can promote long-run economic growth. In contrast, our work focuses on short-term economic growth, examining the dynamic relationship between banks and growth. Instead of arguing whether or how banks affect future economic growth which is the main issue of previous research, we examine whether the stock returns of banking industry contain information about future economic growth.

Our study also distinguishes itself from previous research by not only examining whether the stock returns of the banking industry can forecast future economic growth, but also going further to investigate whether those institutional characteristics which affect financial development and economic growth will also affect the predictive power of the banking stock returns. We interact our measure of bank excess returns with the following variables:

Banking crises: Empirical research has shown that a banking crisis imposes substantial costs on a country's economy (Hoggarth *et al*. 2002); however, no paper has examined how

[6] The information about the number of listed banks in the bank portfolio of each market, and the country-specific and banking institutional variables could be found at Cole, et al (2007).

banking crises affect economic growth through banking stock prices. Whereas Loayaz and Ranciere (2001) use traditional measures of financial development (*Private Credit* and *Liquid Liabilities*) to study how systemic banking crises affect long-run economic growth through financial development, we investigate how systemic banking crises affect short-run economic growth through bank stock returns. The crisis indicator variable they interact with financial development identifies countries that experienced a systemic banking crisis; the indicator variable in our interaction term identifies the period when a country was undergoing a systemic banking crisis. We are the first to document that the positive link between bank returns and economic growth is strengthened by systemic banking crises.

Bank accounting disclosure standards: Several papers on finance and growth emphasize the relevance of accounting disclosure standards to growth (Rajan and Zingales ,1998; Carlin and Mayer, 2003). Our work is different from previous research in two main respects. First, we construct a new index of accounting disclosure standards that is specific to banks using data from Barth, et al (2001) whereas previous research uses a much more generic measure of accounting disclosure. Barth, et al (2004) use their data to find that bank accounting standards forcing accurate information disclosure promote bank performance and stability; however, they don't link the bank disclosure standards to economic growth. Second, we examine how bank accounting disclosure standards affect GDP growth through the stock prices of the banking industry. We find that the bank accounting disclosure regulation magnifies the positive link between bank excess returns and growth, and that this effect is primarily induced by the data from emerging markets.

Insider trading law: The "law and finance" literature posits that the legal environment is a significant determinant of financial development and growth (La Porta, *et al* 1998, 2000).

Legal origin and other indicators of legal efficiency are often used as the instruments of financial development in the finance and growth literature to extract the exogenous component of financial development, and are found to boost growth of the levels of country (Beck, *et, al* 2000), industry (Beck and Levine 2002) and firm growth (Demirguc-Kunt and Maksimovic 1998). However, to our knowledge, no one has linked insider trading law to growth.

We argue that the enforcement of insider trading law is not only relevant to market efficiency but also to economic growth. Empirical research indicates that insider trading has a negative impact on market liquidity (Fishe and Robe 2004) but that enforcement of insider trading law can improve market liquidity (Bhattacharya and Daouk 2002); while market liquidity is a key indicator of stock market development in promoting growth. The cost of equity in a country does not change after the enactment of insider trading law but decreases significantly after the enforcement (Bhattacharya and Daouk 2002). This finding is important because one of the main objectives of the stock markets is to make it easier for companies to raise financing through equity, the reduction of equity cost will benefit companies traded in the stock exchanges and attract more companies to raise funds through IPOs. Therefore, the enforcement of insider trading law also indirectly boosts economic growth.

Government ownership of banks: We also investigate whether government ownership of banks affects the relationship between bank stock prices and economic growth. Previous empirical work suggests that government ownership of banks is negatively associated with bank development and economic growth (La Porta *et al*. 2002) and positively related to the level of bank non-performing loans (Barth *et al.* 2004). Government ownership of banks could negatively affect the quality of bank credit by funneling bank loans to inefficient but politically desirable projects (Sapienza 2004; Dinc 2005). We find that the positive relationship between

bank stock returns and economic growth weakens as the level of government bank ownership rises.

Financial development: Following the literature on financial development and growth, we construct the three traditional measures of financial development for each country: *private credit, liquid liabilities* and *commercial-central bank*. We find that greater financial development strengthens the relationship between bank stock returns and economic growth.

The second strand of literature is stock markets and economic growth. There are two avenues in this area, one focuses on the relationship of stock markets and long-term economic growth, which is in line with the study on banks and economic growth. The other one examines the relationship between stock market returns and short-term future economic growth, which is similar to our study. However, our paper extends this strand of literature in at least three respects.

First, previous studies of the relationship between stock returns and economic growth have mainly focused on the U.S. and other developed markets. Our research studies the relationship between economic growth and banking industry stock returns with the control of market index returns in a broader international setting that includes 18 emerging markets and 18 developed markets. This paper is the first empirical study that links bank stock returns with future economic growth. Banks have comparative advantages at assessing private firm information and monitoring managers. Banks make lending decisions based on this private information, and banks' lending decisions provide signals about the borrowers' creditworthness when the decisions become publicly available; therefore banks play an important, and perhaps unique, role as transmitters of information in capital markets (James 1987, Lummer and McConell 1989). The quality of bank loans can affect the firm values of both the borrowers

(Slovin *et al.* 1993, and Billett *et al.* 1995) and the lenders (Bharath *et al.* 2007). Therefore, in an efficient market, bank stock returns should contain additional information that is independent of the overall market index which consists of the publicly traded firms only. Second, the previous studies generally examine the relationship between stock market returns and growth for individual developed economies in a time-series analysis, whereas we examine not only whether bank returns can predict future economic growth but also whether the predictive power is affected by a series of country-specific and institutional characteristics in the panel estimations.Finally, our research improves upon the methodology used in these previous studies by utilizing GMM techniques.

3. Data and methodology

3.1 Data

Our data set includes information for 38 markets, and covers the period from 1973 to 2001. The selection of markets is based on the data availability on bank equity prices, quarterly GDP series and short-term interet rates. After a tedious selection process by checking data from different databases, we have 18 developed and 18 developing markets left in our data set, with the longest time series of 28 years for Australia, Canada, Italy, Japan, United Kingdom and United States, and shortest of 6 years for Poland,

We use quarterly stock prices and market capitalizations of individual banks to construct returns on a portfolio of banks for each market. The quarterly stock prices and market capitalizations of individual banks and the market price index for each country are extracted from Datastream International, adjusting for capital changes. The interest rates and GDP series are taken from International Financial Statistics (International Monetary Fund), Datastream International, OECD national account, complementally. Other data are derived and constructed from a variety of sources. Table 1 presents definitions of the main variables in our study along

with their sources. We divide the panel data into three sample groups: all markets, developed markets and emerging markets. To maximize the time-series content in our estimations, we use overlapping annual data with quarterly observations.

Summary descriptive statistics for the panel data are presented in Table 2, while deicriptive statistics for individual countries are not reported here but are available on request from the authors. For the full panel, the average GDP growth rate is 1.3% with a range of -9.0% to 9.2%, the average market excess return is -6.1% with a range of -90.2% to 57%, and the average bank excess return is −8.1% with a range of -207.3% to 63.3%. The extreme negative values for both market excess returns and bank excess returns result from the high short-term interest rates that were prevalent in some of these markets during the sample periods. The simple correlation between GDP growth rates and market excess returns is 0.359 for the sample of all markets, and 0.406 for developed markets and 0.470 for emerging markets. The simple correlation between the GDP growth rates and bank excess returns is 0.336 for developed markets, 0.403 for emerging markets and 0.295 for the full panel. Bank excess returns are highly correlated with market excess returns, with the simple correlation of 0.772, 0.781 and 0.744 for the sample of all markets, developed markets and emerging markets, respectively[6].

3.2 Methodology

To estimate the relationship between bank excess stock returns and economic growth, we begin with a fixed-effect dynamic model:

$$Y_{it} = \alpha_i + \lambda Y_{i(t-1)} + \beta' X_{i(t-1)} + \eta_i + \varepsilon_{it} \qquad (1)$$

The subscripts *i* and *t* denote country and time period, respectively; Y_i is the GDP growth rate for country *i*; X_i is a vector of explanatory variables for country *i*, in this case, market excess returns *Rm*, bank excess returns *Rb* and the interactions between *Rb* and the indicator variables for country and institutional characteristics; η_i is the unobservable country-specific fixed effect for country *i*; and ε_{it} is an error term.

Substantial problems arise in the estimation of such a model, however. In both the fixed and random effects settings, the difficulty is that the lagged dependent variable is correlated to the disturbance, even with the assumption that the disturbance is not itself autocorrelated. The least square dummy variable (LSDV) estimator is also known to produce biased coefficient estimates when applied to equations with lagged dependent variables and fixed effects in a data set with small time dimension (Nickell, 1981).

The general approach relies on instrumental variable estimators and, more recently, on a GMM estimator. Group effects can be swept from the fixed-effect model by taking the first differences in eq. (1). This model is still complicated because of the correlation between the lagged dependent variable and the disturbance. However, without the group effects, this problem can be easily solved by introducing proper instrumental variables. To address this correlation and the endogeneity problem, Arellano and Bond (1991) suggest using the lagged levels of the explanatory variables as instruments for their first differences. They also propose a two-step GMM estimator. The first-step estimation assumes the error terms to be independent and homoskedastic across countries and over time. The second-step estimation relaxes the assumption of independence and homoskedasticity by using the residuals obtained from the first step estimation to construct a consistent estimate of the variance-covariance matrix. Thus, when

[10] Tables and empirical results associated with these tests are not reported here, due to concerns about the length of the paper; however, they are available on request from the authors.

the error term ε_{it} is heteroskedastic, the two-step estimator is more efficient

Ahn and Schmidt (1995), among others, observe that this difference estimator neglects a lot of information and is therefore inefficient. For example, the instrument is uncorrelated with the differences of disturbances that are at least two periods subsequent. Therefore, a large amount of information has been culled not only from the familiar relationships among the levels of the variables but also from the implied relationships between the levels and the first differences.

Arellano and Bover (1995) suggest addressing these problems by using GMM to jointly estimate the original level regressions and the first-differenced regressions, where the lagged first-differenced variables are used as instruments in the level regressions, and the lagged level variables are used as instruments in the first-differenced regression. Simulations suggest that a system-GMM estimator can provide dramatic gains in precision and efficiency over the first-differenced GMM estimator (Blundell and Bond, 1998; Blundell, *et al* 2000).

We use both the traditional first-differenced GMM estimator (Arellano and Bond, 1991) and the more recent system-GMM estimator (Arellano and Bover, 1995) for dynamic panel data, which we denote as GMM-Dif and GMM-Sys, respectively. Although the GMM-Sys estimator can usefully overcome many of the disappointing features of the GMM-Dif estimator for the dynamic panel model, the GMM-Sys estimator is not necessarily superior to the GMM-Dif estimator in all circumstances. Blundell and Bond (1998) suggest that the gains of GMM-Sys relative to GMM-Dif occur under two circumstances: first, when the autoregressive parameter is close to unity; and, second, when the number of the time-series observations is moderately small. Simulations suggest that the problem of weak instruments for the GMM-Dif becomes serious when the value of the autoregressive parameter exceeds 0.8. The poor performance of GMM-Dif

improves with an increase of the number of time periods. Our data set includes 36 markets with the longest time period of 110 and the shortest of 21. The number of time periods is relatively larger, and the autoregressive parameter is relatively small (below 0.8). Hence, we present results based upon both methodologies.

For each methodology, we also choose to present the results from one-step estimations. Although the one-step estimator is asymptotically inefficient relative to the two-step estimator, simulations by Blundell and Bond (1998) suggest that asymptotic inferences based on the one-step estimators are more reliable and have the correct empirical level, while asymptotic inferences based on the two-step estimators can be seriously misleading, and tend to reject the null hypothesis too frequently. This tendency is exaggerated when the errors are non-normal or heteroskedastic. The main objective of this study is to examine whether bank stock prices contain information about future economic growth. We address this issue by looking at the significance of the coefficients of relevant variables rather than the magnitude of the relevant coefficients. Therefore, the one-step results are more reliable for this task.

For a given sample size of cross sections, using too many instruments may result in overfitting bias. Especially when the number of time periods is large relative to the number of cross sections, this overfitting will become very serious in the presence of endogenous regressors (Doornik *et al.* 2002). The Sargan tests show that our estimations also suffer this overindentification problem. Therefore, in order to minimize the overidentification problem, instead of using the whole history of lagged level series as instruments for the cross-sectional regressions, we use the level variables as instruments only up to three lags for the first-differenced regressions. In addition, the GMM results are consistent with those obtained using panel OLS fixed-effect regressions.

The assumption of no serial correlation in the error terms is essential for the consistency of GMM estimator. We run the tests based on estimates of the residuals in first difference. These tests are based on the standardized average residual autocovariances which are asymptocially normally distributed with zero means and unit variance. Failure to reject the null hypothesis of the tests that the error terms ε_{it} are not serially correlated, which is evidenced by significant negative first order serial correlation in differenced residuals (i.e. $\hat{\varepsilon}_{it} - \hat{\varepsilon}_{i,t-1}$), and no second order serial correlation in the first differenced residuals (Arellano and Bond 1991, Doornik et al 2002), gives support to our results.

Our panel data set is unbalanced, so we follow the recommendation of Arellano and Bond (1991) for handling missing observations. When a country has incomplete data, the rows of the instrument matrix corresponding to the missing equations are deleted, and the remaining missing values in the instrument matrix are replaced by zeros.

4. Empirical results

In this section, we test the ability of bank excess stock returns to predict economic growth in a panel analysis combining data for all 36 markets, and then examine whether this relationship is influenced by a series of country-specific characteristics. To address this issue, we interact bank excess returns with these country-specific variables. The signs on the coefficients of these interaction terms indicate whether these variables strengthen or weaken the ability of bank excess returns to forecast economic growth.

Panels A and B of Table 3 report the results for all markets using GMM-Dif and GMM-Sys technique, respectively. Panels A and B of Tables 4 present the GMM-Dif results for developed and emerging markets, respectively, while Panels A and B of Table 5 present the GMM-Sys results for developed and emerging markets, respectively. For comparison purposes,

results from the OLS fixed-effects estimations are presented in Appendix Tables 1 (All Markets) and 2 (Developed versus Emerging Markets), respectively.

The results from GMM-Sys and GMM-Dif are quite consistent, which supports Blundell and Bond (1998)'s suggestion that the performance of GMM-Dif improves with the number of time-series observations. In each table, specification 1 reports the results from a regression of growth rates on the lagged values of the growth rates and market excess returns while specification 2 reports those from a regression of growth rates on the lagged values of the growth rates and excess returns of banking industry**.** The coefficients for both *Rm* and *Rb* are positive and statistically significant at the 1% level for all three sample groups under all three estimation methods. However, the coefficient for *Rm* is persistently larger than that for *Rb*: *Rm* ranges from 0.021 to 0.023 while *Rb* ranges from 0.013 to 0.017.

When both variables enter the regression simultaneously, as reported in specification 3 of each table, the coefficient for *Rb* remains significant at the 5% level under all three estimation methods for the full sample and the emerging markets sample. In these specifications, the coefficient on *Rb* ranges from 0.004 to 0.008, implying that a one-standard deviation change in bank stock returns (20.9%) would increase economic growth by .004 x .209 = .0008 to .008 x .209 = .0017, or 8 to 17 basis points. Certainly, this is economically significant, as the average growth rate is 130 basis points. By comparison, the coefficient for *Rm* ranges from 0.014 to 0.020, implying that a one-standard deviation change in market returns (15.9%) would increase economic growth by .014 x .159 = .0022 to .020 x .159 = .0032, or 22 to 32 basis points . In other words, the effect of banking industry stock returns is between one third to one half the magnitude of the effect of market stock returns, after controlling for market returns.

We expect these results because bank stock returns reflect the market's expectation of the future cash flows for the banking industry, which include cash flows from loans to privately held as well as publicly held firms. Market returns should reflect only the market's expectations of future cash flows to publicly trade firms, neglecting expectations about cash flows to privately held firms.

For specification 2, the coefficient of bank excess returns is consistently larger in emerging markets than in developed markets across all three estimation procedures, ranging from 0.014 to 0.018 in emerging markets but 0.010 to 0.014 in developed markets. These results imply that banks are more important to economic growth in emerging markets than in developed markets, which is not surprising. In emerging markets, commercial banks are usually the main, if not the only source of credit for private firms, whereas, in developed markets, firms often can borrow in the corporate bond market and/or from other types of financial intermediaries. This conjecture is confirmed by the results of specification 3 where the market excess returns enter the regressions; the coefficient for bank excess returns loses the significance for the sample of developed markets, but remains positive and statistically significant at the 5% level for the sample of emerging markets, and the magnitude and significance level of the coefficient for *Rm* become much smaller compared with those in specification 1.

Specifications 4 – 9 of the Tables 3 – 5 present results from sequentially adding a single country-specific interaction variable to the specification 3. For specification 4, the coefficient of *Rb*Gov*—the interaction of bank excess returns with government ownership of banks—is negative, and statistically significant for the sample of all markets under GMM-Dif estimation and for all three sample groups under OLS panel estimation. This indicates that the link between bank excess returns and future economic growth is weakened by the greater government

ownership of banks. This result is consistent with the previous findings that higher *initial* government ownership of banks is associated with slower subsequent financial development and lower economic growth (La Porta *et al*. 2002) and that government ownership of banks distorts the financial allocation of resources (Sapiens 2004; Dinc 2005). We argue that government ownership of banks could also distort the investors' expectations of banks' future cash flows, which is reflected in the stock prices of the banking industry.

For specification 5, the coefficient of *Rb*Law*—the interaction term between bank excess returns and insider trading law dummy—is positive and statistically significant for all three sample groups under all three estimation methods. This result implies that enforcement of insider trading law strengthens the relationship between bank excess returns and future economic growth. It is consistent with our expectations because the enforcement of insider trading law is not only relevant to market efficiency but also to boosting economic growth by reducing the cost of equity and improving market liquidity.

For specification 6, the coefficient of *Rb*Cris*—the interaction of bank excess returns with the dummy indicator variable for banking crisis years—is positive and statistically significant, which is contrary to intuition. However, this result is consistent with related literature. Bekaert, et al (2005) show that growth is slower during crisis times, but is significantly faster during and after the last year of a crisis. The economy is negatively affected when the systemic banking crisis occurs, during and after which a series of financial reforms or regulations are likely to be introduced. Smith (2001) argues that the modern banking crises differ enormously from historical banking panics in terms of how bank lending and bank reserves are affected: bank lending to the private sector as a ratio of GDP rises dramatically and the bank reserves do not fall during the modern banking crises. He suggests that the negative impact of

banking crises on economic growth could be through M2, whose growth rate declines significantly during the banking crises. During the banking crises, failed banks were dropped from the banking sector, therefore, the overall earnings potential of banks actually improves; this may explain why the impact of the banking crises on the link between bank excess return and economic growth is positive. Ranciere *et al*. (2003) find that countries experiencing occasional crises have grown, on average, faster than countries with smooth credit conditions.

When we divide the sample into developed and emerging markets, we find that the coefficient for *Rb*Cris* is positive and significant at the 1% level for emerging markets, of which 10 out of 18 markets have experienced systemic banking crises during the sample periods, but is not significantly different from zero for developed markets. Hence, the result in Table 3 is driven by the subsample of developing markets.

For specification 7, the coefficient for *Rb*Acct*—the interaction of bank excess returns with the index of bank accounting disclosure standards—is positive and statistically significant, consistent with our expectations. However, the coefficient of bank excess returns *Rb* loses its significance under all three estimation methods. This suggests that the information of future economic growth contained in the bank excess returns is captured by the bank accounting disclosure standards.

The results for specification 7 of Table 3 appear to be driven by the data of emerging markets, as the coefficient of the accounting standards interaction term is not significantly different from zero for the subsample of developed markets. For the emerging markets subsample, shown in specification 7 of panels B in Tables 4 and 5, however, the coefficient of the accounting standards interaction term is positive and significant while the coefficient of Rb swings from positive and significant to negative but insignificant (p-value >0.12).

A possible explanation is that emerging stock markets are in transition, increasing in size, activity, or level of sophistication, the financial reports could be the primary channel for investors in the emerging markets to obtain information on bank performance and exert corporate governance, and then regulations on accounting disclosure become relatively more important. Another possible interpretation is consistent with related literature (Boyd and Smith, 1998): due to the scarcity of capital in emerging markets, the monitoring costs are lower relative to the cost of capital in developing markets than in developed markets. In emerging markets, investors have fewer channels for obtaining information about banks than in developed markets, where information about banks is available from a variety of sources; therefore, bank accounting disclosure regulations are relatively more important in emerging markets than in developed markets.

Specifications 8 - 10 report results when the interaction term of *Rb* and the three different measures of financial development enters the regressions, respectively. For the full sample, all three coefficients are positive and statistically significant under all three estimation methods. When we split the sample into developed and emerging markets subsamples, we find that the full-sample results also hold for the subsamples of developed and emerging markets. Interaction terms are positive and statistically significant for all three sample groups under each of the

methods. The results confirm our hypothesis that financial development strengthens the link between bank excess returns and economic growth: the more developed is the banking system, the more information about future economic growth is contained in the stock prices of the banking industry.

5. Robustness tests

We also test the robustness of the empirical results from a few angles[10]. First, instead of including market excess returns as an independent variable, we decompose market returns into banking sector returns and non-banking sector returns. We address this issue by replacing market excess returns with a new variable of non-banking sector returns, measured by subtracting banking sector returns from market returns, to all the regressions of the previous section of this paper. The results confirm the empirical results reported in section 4 of this paper.

Second, we include a new variable that measures the spread of government borrowing rates and U.S. T-Bills into the regressions for the sample of emerging markets reported in section 4. It is disputable to treat the short-term interest rates on government bonds as the risk-free rates, as we did in measuring excess returns, for most of the emerging markets. One may well argue that the empirical results related to the emerging countries that were reported in the previous section were mainly reflecting the information that high credit spreads on government debt are bad for subsequent GDP growth. We find that high credit spreads on government debt exerts a negative impact on future GDP growth rate, however, the inclusion of this variable does not change our main findings as reported in the previous section of this paper.

Third, we replace both market excess returns and bank excess returns with real market returns and real bank stock returns and rerun all the regressions of the previous section. Real stock return for each market is measured as the difference between stock return and the inflation rate. We find the results are consistent with our main findings in the previous section.

In summary, we find a positive and significant relationship between bank excess returns and future economic growth rates, even in the presence of market excess returns, and this relationship is also significantly strengthened by the enforcement of insider trading law, banking crises, bank accounting disclosure standards and financial development, but undermined by government ownership of banks. These results are robust in the presence of non-banking sector returns and the spread of government borrowings, and are consistent with the different measures of bank stock returns[11].

6. Conclusion

In this study, we extend the literature on financial development and economic growth by analyzing the dynamic relationship between banks and economic growth; more specifically, by examining whether banking industry stock returns contain information about future economic growth. Using GMM techniques for dynamic panel data to analyze 18 developed and 18 emerging markets, we find that stock returns of the banking industry can predict future economic growth and that this relationship is independent of the previously documented relationship between market stock returns and growth. We also find that much of predictive power of bank stock returns is captured by a series of country-specific and banking institutional characteristics, particularly by banking crises and the enforcement of insider trading law.

As the first research to link growth with lagged banking industry stock returns, we make at least two significant contributions to the literature of finance and growth. First, we provide for the first time, evidence of a positive and significant relationship between banking industry stock returns and future economic growth that is independent of the relationship between general

[11] We also test the robustness of our results to effects of the Asian banking crisis, which impacted several emerging market countries simultaneously. Given that emerging stock markets move closely together, this might induce a correlation between the error terms of countries. We test whether this affects our results for emerging markets by rerunning our regressions without data from the affected Asian countries. Our results are qualitatively unaffected by this exclusion.

market stock returns and future economic growth previously documented by Fama (1981, 1990) and Schwert (1990). Our findings thus tie together the literature on banks and economic growth with that of stock returns and economic growth.

Second, we analyze for the first time, how a series of country-specific and institutional characteristics affect growth through banking industry stock returns. In our panel estimations, we address this issue by introducing an interaction term between bank excess returns and the indicators of country-specific and banking institutional characteristics, which include government ownership of banks, the enforcement of insider trading law, systemic banking crises, bank accounting disclosure standards and financial development. We find that much of the information about future economic growth contained in bank excess stock returns is captured by these country-specific and institutional characteristics, i.e., the positive link between bank excess returns and future economic growth is strengthened significantly by the enforcement of insider trading law, banking crises, bank disclosure standards and financial development, but undermined by government ownership of banks.

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Table 1: Descriptions and Sources of the Variables

Variable	Descriptions and data sources
	Dependent variable
GDP growth rate (G)	$G =$ LOG(GDP_t / GDP_{t-1}) Subscript *t* denotes time period *t*. The GDP time series are constant prices and, except for the markets of Austria, Hong Kong, Greece, Indonesia, Malaysia, Peru, Philippines, Poland, Taiwan, Thailand and Turkey, all series are seasonally adjusted. (For Bangladesh and India, we use industrial production because a GDP series is not available.) The quarterly GDP series are taken from International Financial Statistics (IFS), Datastream International, and the OECD national account.
	Independent variable
Lagged market excess return (Rm)	$Rm = R_{mit} = \log(P_{mit} / P_{mi(t-1)}) - Rf_{it}$ Subscript *i* denotes country *i.* R_{mit} is the excess return on the market index in country *i* for period t (here t is quarter). P_{mit} is the market price index of country *i* at the end of period *t*. The excess return is calculated as the difference between the continuous return and the risk-free rate *Rf*. For the risk-free rate, we use either the three-month Treasury Bill rate, the call money market rate or the three-month deposit rate depending on the availability of data. The market price indices are extracted from Datastream International. The interest rates are from IFS, Datastream International and the OECD national account.
Lagged excess stock returns of the banking industry (Rb)	$Rb = R_{it} = \sum_{j \in i} w_{jit} R_{jit}$, *where* $w_{jit} = \frac{MC_{ji(t-1)}}{\sum_{j \in i} MC_{ji(t-1)}}$; $R_{jit} = \log(P_{jit} / P_{ji(t-1)}) - Rf_{it}$ Subscript *i* denotes country *i* and subscript *j* denotes the individual bank *j* in country *i.* R_{jit} is the excess return of bank *j* in country *i* for period *t* (here *t* is quarter). The excess return is calculated as the continuous stock return less the risk-free rate *Rf*. For the risk-free rate, we use the three-month Treasury Bill rate, call money market rate, three-month deposit rate, in superior turns, which depends on the availability of data. w_{jit} is the weight of bank *j* in the bank industry of country *i* for period *t*, where weights are based on market capitalization (MC). In other words, the weight of bank *j* in period *t* is the market capitalization of bank *j* at the end of period (*t-1*) divided by the total market capitalization of the banking sector at the end of period (*t-1*) and remains constant within period *t*. The quarterly stock prices and market capitalizations of individual banks are extracted from Datastream International, adjusting for capital changes. The interest rates are from IFS, Datastream International, and the OECD national account.
	Indicators of country and institutional characteristics
Government ownership of banks (Gov)	We construct this variable from table 1 of La Porta, et al (2002). The variable takes the value of one when a country's government ownership of banks is above the median of the sample group.
Insider trading law(Law)	This variable is constructed from Bhattacharya and Daouk (2002). The variable changes from zero to one from the year when the insider trading law was first enforced.

Banking crises(Cris)	We construct this variable from Caprio and Klingebiel (2003). Caprio and Klingebiel (2003) provide a dataset covering 117 systemic banking crises (defined as much or all of bank capital being exhausted) that have occurred in 93 countries since the late 1970s. We construct a dummy variable that takes on the value of one when a country is undergoing systemic banking sector crisis.
Bank accounting disclosure standards (Acct)	This variable is constructed from Barth, Caprio and Levine (2001) who provide a dataset on bank regulation and supervision around the world. We construct the index based on the following five questions: 1) whether the income statement includes accrued or unpaid interest or principal on nonperforming loans; 2) whether banks are required to produce consolidated financial statements, including nonbank financial affiliates or subsidiaries; 3) whether the off-balance sheet items are disclosed to the public; 4) whether banks' directors are legally liable for misleading or erroneous information; 5) whether the penalties have been enforced. We assign one to each question if the answer is yes, therefore, the maximum index for a country will be five if the answers for all question are yes, and the minimum index will be zero otherwise.
	Indicators of financial development
Private credit (Priv)	The value of the credit issued by the deposit-taking banks and other financial institutions to the private sector divided by GDP. The variable is constructed following the methodology of Beck, Levine and Loayza (2000) based on the data from International Financial Statistics. Private credit is calculated using the sum of line 22d and 42d, GDP is line 99b, and CPI comes from line 64. We calculate the annual *private credit* for each market and take the average over the sample period.
Liquid liabilities (LL)	The value of the liquid liabilities of the financial system (currency held outside the banking system plus demand and interest-bearing liabilities of banks and nonbank financial intermediaries) divided by GDP. The variable is constructed following the methodology of Beck, Levine and Loayza (2000) based on the data from International Financial Statistics. Liquid liabilities are calculated using liquid liabilities (line 551) or money plus quasi money (line 351) if liquid liabilities is not available. If neither of these two numbers is available, we use time and saving deposit (line 25). Data for GDP uses line 99b; data for CPI comes from line 64. We calculate the annual *liquid liabilities* for each market and take the average over the sample period.
Commercial--central bank (*CCB*)	The ratio of commercial banks' domestic assets divided by the total domestic assets of commercial banks and the central bank. The variable is constructed following the methodology of Beck, Levine and Loayza (2000) based on the data from International Financial Statistics. We use the lines 22a-d for the assets of deposit money banks, and line 12a-d for assets of central banks. We calculate the annual *commercial central bank* for each market and take the average over the sample period.

Table 2:
Summary Descriptive Statistics of Bank excess Returns & Economic Growth Rates

Growth is the real GDP growth rate while *Rm* and *Rb* are the lagged market excess return and bank excess return. The construction of variables refers to Table 1. Statistics for all variables are based on annual data with quarterly observations. There are 18 developed and 18 emerging markets respectively.

	All markets			**Developed markets**			**Emerging markets**		
	Growth	Rm	Rb	Growth	Rm	Rb	Growth	Rm	Rb
Descriptive Statistics									
Mean	0.013	-0.061	-0.081	0.011	-0.030	-0.039	0.018	-0.120	-0.163
Std. Dev.	0.015	0.159	0.209	0.010	0.114	0.133	0.022	0.210	0.290
Minimum	-0.090	-0.902	-2.073	-0.032	-0.453	-0.730	-0.090	-0.902	-2.073
Maximum	0.092	0.570	0.633	0.060	0.403	0.633	0.092	0.570	0.604
No. of observation	2067	2067	2067	1369	1369	1369	698	698	698
Correlations									
Growth	1			1			1		
Rm	0.359	1		0.406	1		0.470	1	
Rb	0.295	0.772	1	0.336	0.781	1	0.403	0.744	1

Table 3: Dynamic Panel GMM Estimations of Bank Returns, Institutional Characteristics and Growth for All Markets

GMM-Dif Estimations

	1	2	3	4	5	6	7	8	9	10
Constant	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	[0.001]	[0.000]	[0.001]	[0.000]	[0.036]	[0.004]	[0.000]	[0.001]	[0.001]	[0.002]
Lag(G)	0.708	0.734	0.761	0.641	0.668	0.636	0.671	0.689	0.682	0.690
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.023		0.018	0.023	0.026	0.019	0.017	0.019	0.020	0.020
	[0.000]		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rb		0.017	0.008	0.036	-0.011	0.004	-0.012	-0.003	-0.003	-0.094
		[0.000]	[0.012]	[0.018]	[0.01]	[0.197]	[0.234]	[0.534]	[0.664]	[0.005]
Rb*Gov				-0.011						
				[0.059]						
Rb*Law					0.024					
					[0.000]					
Rb*Cris						0.027				
						[0.000]				
Rb*Acct							0.005			
							[0.043]			
Rb*Priv								0.016		
								[0.006]		
Rb*LL									0.016	
									[0.042]	
Rb*CCB										0.108
										[0.002]
Countries	36	36	36	36	36	36	33	35	35	34
NOB	1995	1995	1995	1995	1995	1995	1869	1947	1947	1889
GMM-Sys Estimations										
Constant	0.004	0.004	0.004	0.005	0.004	0.005	0.005	0.005	0.005	0.005
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Lag(G)	0.755	0.785	0.761	0.720	0.745	0.734	0.763	0.732	0.736	0.740
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.022		0.017	0.018	0.021	0.015	0.015	0.018	0.018	0.019
	[0.000]		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rb		0.015	0.006	0.009	-0.009	0.003	-0.013	-0.003	-0.001	-0.078
		[0.000]	[0.018]	[0.018]	[0.01]	[0.201]	[0.148]	[0.505]	[0.77]	[0.011]
Rb*Gov				-0.006						
				[0.155]						
Rb*Law					0.017					
					[0.000]					
Rb*Cris						0.018				
						[0.000]				
Rb*Acct							0.005			
							[0.025]			
Rb*Priv								0.012		
								[0.012]		
Rb*LL									0.011	
									[0.065]	
Rb*CCB										0.089
										[0.006]
Countries	36	36	36	36	36	36	33	35	35	34
NOB	2031	2031	2031	2031	2031	2031	1902	1982	1982	1923

p-value in parentheses.

Table 4: Dynamic Panel GMM-Dif Estimations of Bank Returns, Institutional Characteristics and Growth for Developed and Emerging Markets

Developed markets

	1	2	3	4	5	6	7	8	9	10
Constant	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	[0.293]	[0.044]	[0.133]	[0.139]	[0.332]	[0.062]	[0.521]	[0.339]	[0.398]	[0.106]
Lag(G)	0.775	0.817	0.750	0.731	0.724	0.744	0.720	0.737	0.730	0.732
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.024		0.025	0.024	0.023	0.025	0.019	0.025	0.023	0.020
	[0.000]		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rb		0.014	-0.002	0.003	-0.005	-0.001	0.015	-0.015	-0.006	-0.098
		[0.000]	[0.541]	[0.418]	[0.272]	[0.630]	[0.171]	[0.001]	[0.112]	[0.000]
Rb*Gov				-0.008						
				[0.144]						
Rb*Law					0.008					
					[0.026]					
Rb*Cris						0.004				
						[0.339]				
Rb*Acct							-0.003			
							[0.245]			
Rb*Priv								0.015		
								[0.000]		
Rb*LL									0.006	
									[0.069]	
Rb*CCB										0.103
										[0.000]
Countries	18	18	18	18	18	18	33	18	18	17
NOB	1333	1333	1333	1333	1333	1333	1869	1333	1333	1275
Emerging markets										
Constant	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	[0.004]	[0.001]	[0.008]	[0.023]	[0.028]	[0.023]	[0.030]	[0.090]	[0.024]	[0.095]
Lag(G)	0.675	0.686	0.641	0.653	0.616	0.557	0.610	0.634	0.606	0.647
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.027		0.016	0.014	0.022	0.017	0.019	0.023	0.019	0.024
	[0.001]		[0.090]	[0.007]	[0.022]	[0.049]	[0.002]	[0.000]	[0.004]	[0.009]
Rb		0.018	0.008	0.016	-0.013	0.003	-0.024	-0.008	-0.010	-0.101
		[0.000]	[0.026]	[0.065]	[0.016]	[0.589]	[0.129]	[0.221]	[0.254]	[0.105]
Rb*Gov				-0.011						
				[0.196]						
Rb*Law					0.025					
					[0.000]					
Rb*Cris						0.034				
						[0.000]				
Rb*Acct							0.008			
							[0.059]			
Rb*Priv								0.020		
								[0.026]		
Rb*LL									0.030	
									[0.002]	
Rb*CCB										0.113
										[0.088]
Countries	18	18	18	18	18	18	17	17	17	17
NOB	662	662	662	662	662	662	636	614	614	614

p-value in parentheses.

Table 5: Dynamic Panel GMM-Sys Estimations of Bank Returns, Institutional Characteristics and Growth for Developed and Emerging Markets

Developed markets

	1	2	3	4	5	6	7	8	9	10
Constant	0.003	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Lag(G)	0.774	0.827	0.765	0.758	0.751	0.763	0.760	0.749	0.748	0.757
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.022		0.023	0.022	0.021	0.023	0.019	0.023	0.022	0.019
	[0.000]		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rb		0.013	-0.003	-0.001	-0.006	-0.003	-0.005	-0.015	-0.007	-0.088
		[0.000]	[0.330]	[0.817]	[0.114]	[0.367]	[0.484]	[0.002]	[0.109]	[0.000]
Rb*Gov				-0.003						
				[0.519]						
Rb*Law					0.008					
					[0.009]					
Rb*Cris						0.006				
						[0.117]				
Rb*Acct							0.001			
							[0.616]			
Rb*Priv								0.013		
								[0.001]		
Rb*LL									0.006	
									[0.067]	
Rb*CCB										0.091
										[0.000]
Countries	18	18	18	18	18	18	33	18	18	17
NOB	1351	1351	1351	1351	1351	1351	1902	1351	1351	1292
Emerging markets										
Constant	0.007	0.006	0.007	0.008	0.007	0.009	0.008	0.008	0.008	0.008
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Lag(G)	0.749	0.766	0.732	0.717	0.722	0.657	0.697	0.697	0.706	0.712
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.023		0.014	0.015	0.020	0.014	0.015	0.020	0.018	0.023
	[0.000]		[0.010]	[0.000]	[0.002]	[0.001]	[0.000]	[0.000]	[0.000]	[0.000]
Rb		0.015	0.007	0.010	-0.011	0.003	-0.016	-0.003	-0.005	-0.089
		[0.000]	[0.014]	[0.092]	[0.030]	[0.348]	[0.153]	[0.544]	[0.412]	[0.097]
Rb*Gov				-0.006						
				[0.372]						
Rb*Law					0.021					
					[0.000]					
Rb*Cris						0.025				
						[0.000]				
Rb*Acct							0.006			
							[0.033]			
Rb*Priv								0.013		
								[0.068]		
Rb*LL									0.020	
									[0.010]	
Rb*CCB										0.100
										[0.077]
Countries	18	18	18	18	18	18	17	17	17	17
NOB	680	680	680	680	680	680	653	631	631	631

p-value in parentheses.

Appendix Table 1:
OLS Fixed-Effect Panel Estimations of Bank Stock Returns, Institutional Characteristics and Growth for All Markets

	1	2	3	4	5	6	7	8	9	10
Lag(G)	0.703	0.731	0.701	0.700	0.691	0.670	0.697	0.695	0.695	0.692
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.021		0.018	0.017	0.021	0.017	0.017	0.019	0.019	0.019
	[0.000]		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rb		0.013	0.004	0.007	-0.007	0.001	-0.001	0.000	-0.001	-0.040
		[0.000]	[.011]	[.001]	[.001]	[.367]	[.917]	[.891]	[.677]	[.012]
Rb*gov				-0.004						
				[.043]						
Rb*law					0.013					
					[0.000]					
Rb*cris						0.017				
						[0.000]				
Rb*acct							0.001			
							[.316]			
Rb*priv								0.005		
								[.047]		
Rb*ll									0.008	
									[.011]	
Rb*ccb										0.047
										[.005]
R2	0.715	0.705	0.716	0.717	0.708	0.725	0.710	0.715	0.715	0.710
Adj-R2	0.710	0.699	0.711	0.711	0.702	0.719	0.705	0.710	0.710	0.704
Countries	36	36	36	36	36	36	33	35	35	34
No. of observations	2031	2031	2031	2031	2031	2031	1902	1982	1982	1923

Note: *p*-values are in parentheses.
Each regression also contains country dummy variables that are not reported

Appendix Table 2: OLS Fixed-Effect Panel Estimations of Bank Stock Returns, Institutional Characteristics and Growth for Developed and Emerging Markets

Developed markets

	1	2	3	4	5	6	7	8	9	10
Lag(G)	0.773	0.800	0.773	0.773	0.770	0.770	0.776	0.771	0.771	0.768
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.016		0.017	0.018	0.018	0.017	0.016	0.018	0.017	0.016
	[0.000]		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rb		0.010	-0.001	0.001	-0.005	-0.001	0.000	-0.008	-0.004	-0.057
		[0.000]	[.545]	[.740]	[.018]	[.428]	[.968]	[.007]	[.073]	[.015]
Rb*Gov				-0.005						
				[.013]						
Rb*Law					0.006					
					[.002]					
Rb*Cris						0.004				
						[.254]				
Rb*Acct							0.000			
							[.971]			
Rb*Priv								0.008		
								[.005]		
Rb*LL									0.005	
									[.039]	
Rb*CCB										0.060
										[.016]
R2	0.761	0.747	0.761	0.762	0.763	0.761	0.747	0.762	0.762	0.742
Adj-R2	0.757	0.743	0.757	0.758	0.759	0.757	0.743	0.759	0.758	0.738
Countries	18	18	18	18	18	18	16	18	18	17
NOB	1351	1351	1351	1351	1351	1351	1249	1351	1351	1292
Emerging markets										
lag(G)	0.664	0.696	0.660	0.655	0.646	0.615	0.653	0.643	0.647	0.644
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rm	0.026		0.020	0.019	0.024	0.017	0.020	0.023	0.024	0.025
	[0.000]		[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Rb		0.014	0.005	0.011	-0.008	0.002	-0.008	-0.001	-0.004	-0.073
		[0.000]	[.036]	[.010]	[.038]	[.338]	[.345]	[.812]	[.488]	[.011]
Rb*Gov				-0.007						
				[.100]						
Rb*Law					0.016					
					[.000]					
Rb*Cris						0.020				
						[0.000]				
Rb*Acct							0.004			
							[.105]			
Rb*Priv								0.010		
								[.045]		
Rb*LL									0.015	
									[.053]	
Rb*CCB										0.085
										[.006]
R^2	0.680	0.669	0.682	0.683	0.691	0.696	0.677	0.685	0.685	0.687
Adj-R^2	0.671	0.659	0.672	0.673	0.682	0.686	0.667	0.674	0.674	0.676
Countries	18	18	18	18	18	18	17	17	17	17
NOB	680	680	680	680	680	680	653	631	631	631

Note: *p*-values are in parentheses. Each regression also contains country dummy variables that are not reported