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Does Financial Development affect Growth?

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Abstract

This paper contributes to the literature on the relationship between financial development and economic growth in three ways: it utilises recently developed techniques for generalised methods of moments (GMM) one-step estimation with dynamic panel models, it focuses exclusively on a sample of developing countries and it uses as proxies for financial development variables which capture both banking sector and stock market effects. The results provide evidence, based on a panel of annual data for thirty developing countries, that while the stock market variables are positively and significantly related to growth, their presence results in the standard banking sector variables, credit to the private sector and liquid liabilities, having negative effects on growth.

1. Introduction

Since the pioneering work of McKinnon (1973) and Shaw (1973) suggesting a link between growth and financial development many attempts (e.g. King & Levine 1993a, Levine & Zervos, 1996, Beck *et al.*, 2000, Levine *et al.,* 2000, Tang, 2006, Zang & Kim, 2007) have been made at providing evidence for this link. However, Driffill (2003, p. 363) after reviewing the empirical evidence argues that the question of "whether finance plays a causal role or merely follows economic development remains an open one". Indeed, recent contributions to the literature show that results either in support or rejecting the role of finance are highly dependent on the model specification, the level of development (financial and/or economic) of a country, the choice of financial variables and the econometric technique used.

Favara (2003) concludes that the importance of private credit and liquid liabilities upon economic growth is highly dependent on the choice of estimation method. While Bhattacharya and Sivasubramaniam (2003) provide evidence of unidirectional effect of financial development upon economic growth in India, Dawson (2003) shows that financial development, approximated by the variable liquid liabilities, does not affect economic growth in a sample of transition economies in Central and Easter Europe.

Rioja & Valev (2004), for a sample of 74 countries at different stages of development , use generalised method of moments (GMM) estimation to conclude that evidence of an influence of financial development upon economic growth is highly dependent on the level of development of the financial sector of a particular country or group of countries: at low levels of financial development, the effect on growth is mixed, whereas at an intermediate level of financial development the effect is positive and strong . This positive effect weakens for countries at a very high level of financial development, although it does remain positive. Shan (2005) for a sample of 10 OECD countries and China finds, at best, weak support for the hypothesis that financial development (proxied by total credit) influences economic growth. Finally, Chang & Caudill (2005) provide mixed support to the hypothesis that financial development leads economic growth for Taiwan.

In this paper, we use annual panel data for 30 developing countries and utilise recently developed methods-of-moments techniques for dynamic models, which attempt to deal with the problems of biased and inconsistent estimates resulting from endogeneity and autocorrelation. To measure financial development we use two variables relating to the stock market - the traded value and market turnover - and three variables relating to the development of the banking system - domestic credit to the private sector as a percentage of GDP, the ratio of liquid liabilities to GDP (or M3/GDP), and the ratio of commercial bank assets to all (commercial plus central) bank assets. Following Rousseau & Wachtel (2000), the usual control variables are not included in the equations. However, they are used as instruments to correct problems of simultaneity and endogeneity of the explanatory variables.

Comment [KS1]:

The measurement of financial development is discussed in section 2, where the focus is on the roles of financial intermediaries and of the stock market. In section 3 the estimation method is set out. The empirical evidence is reported in section 4 and the conclusions are presented in section 5.

2. Measuring Financial Development

To align this paper with the extant literature and allow comparability with results from previous empirical work, we have selected the following variables, widely used in the literature, to capture the level of financial development: domestic credit to the private sector as a % of GDP, the ratio of liquid liabilities to GDP (or M3/GDP), the ratio of commercial bank assets to all (commercial plus central) bank assets for the banking sector and the turnover ratio and the ratio of value of shares traded to GDP for financial markets .

(a) Measures of Financial Intermediaries Development

The level of financial services is commonly measured by **domestic credit to the private sector as a % of GDP (CPS)** (e.g. King & Levine 1993a, Levine & Zervos, 1996, Beck *et al*., 2000 and Levine *et al.,* 2000). This distinguishes between the credit issued to the private sector and that to government and public enterprises. This variable should capture the ability of intermediaries (both privately owned and state-owned) to evaluate information and identify profitable investment projects. Higher levels of this ratio could be therefore interpreted as indicating lower transaction costs and higher levels of financial services and therefore greater financial intermediary development. However, it could be argued that given some of the characteristics of the financial systems in developing countries such as repeated and substantial interventions by the government leading to moral hazard problems, lack of a strong regulatory system, lax supervision, lack of skills in the banking personnel (De Gregorio & Guidotti, 1995 and Brownbridge & Kirkpatrick, 2000), a high value of credit to the private sector, in cases of over-lending or careless lending, could actually lead to a reduction in economic growth, due to its association with high, but less efficient, investment (De Gregorio & Guidotti, 1995).

To measure the overall size of the financial intermediary sector, the ratio of **liquid liabilities to GDP (LL)** (or M3/GDP) is used (e.g. Goldsmith 1969, King & Levine 1993a, Rousseau & Wachtel 2000, Rioja & Valev 2004, and Levine *et al.,* 2000). LL is the ratio of broad money to GDP. Broad money consists of currency held outside the bank system plus interest-bearing total deposit liabilities of banks and other financial institutions. However, the interpretation of this variable could be difficult because a low ratio could be the result either of under-development of the banking sector or equally, the result of a highly sophisticated financial sector that allows economic agents to reduce money balances held with the banking system and invest them in other products. Therefore care should be taken when interpreting this variable (see King & Levine, 1993b, Morisson, 2000, and De Gregorio & Guidotti, 1995). Also, this variable does not necessarily reflect the allocation of savings and so may not be an accurate indicator of the activities of financial intermediaries.

Finally, the ratio of **commercial bank assets to all (commercial plus central) bank assets (BA)** is used to measure the degree to which commercial banks versus the central bank allocate society's savings (e.g. Demirguc-Kunt & Levine 1996, Andres *et al.,* 1999, Levine *et al.,* 2000 and Rioja & Valev 2004). The intuition underlying this is that commercial banks are more likely to identify profitable investments, monitor managers' decisions, facilitate risk management and mobilise savings than central banks. Commercial banks are thought to be more effective than central banks in allocating savings to productive investment projects. Hence, an increase in this ratio indicates an expansion of the financial sector (Levine *et al.,* 2000).

(b) Measuring Stock Market Development

The most commonly used complementary measures of stock market size are the market turnover ratio (e.g. Demirguc-Kunt & Levine1996, Levine & Zervos 1996, Rousseau &

Wachtel 2000, and Beck & Levine 2002) and total value traded (e.g. Atje & Jovanovic 1993, Levine & Zervos, 1996, and Rousseau & Wachtel, 2000). The **turnover ratio (TR)** is the trading volume of the stock market relative to the average market capitalisation and it measures stock market liquidity, showing the importance and the credibility of available information. In emerging markets, an increase in liquidity is a good indication of financial development. Also, it indicates low transactions costs, which facilitate fund transfers and increase the number of firms and traded shares. Hence, it promotes growth (Rousseau & Wachtel, 2000).

The ratio of **value of shares traded to GDP (TV)** is used to measure stock market activity. It measures trading volume relative to the size of the economy. Being the product of market price and the number of shares traded, it includes elements of both liquidity and size (Beck & Levine, 2002).

3. Estimation methodology

In the literature many studies of the growth - financial development relationship (see, for example, Beck & Levine, 2002 and Levine et al. 2000) use averaged data, usually for non-overlapping five-year periods, in an effort to reduce the impact of the business cycle. However, Madsen (2002) demonstrates that averaging over 3, 5 or 8 years can produce contradictory results in Granger-Sims non-causality tests, so that any interpretation of causality for averaged data is likely to be flawed (see also Huh, 2005 for a discussion of these tests). Furthermore, there is a belief in the business cycle literature that the function of the business cycle is central to growth, so its impact should not be minimised. Instead of using averaged data we use annual data for a panel of developing countries. This increases the sample size and allows dynamic effects to be included.

Also, previous research has not adequately dealt with the problems of simultaneity and endogeneity of the explanatory variables. Here, to deal with these problems, the method of estimation uses instrumental variables and, as well as the lagged values of the explanatory

variables, the instruments include the standard conditioning variables (see, King & Levine (1993a and 1993b, Zang & Kim, 2007). These are the size of government consumption, the initial real GDP per capita, the inflation rate, the level of secondary school enrolment and the degree of openness of the economy.

Following Levine *et al.* (2000), Beck & Levine (2002), Rousseau & Wachtel (2000) and Yao (2006) recently developed dynamic panel generalized-method-of-moments (GMM) techniques are used to assess the relationship between stock market development, intermediaries development and economic growth. Since these GMM techniques are well-known we only provide a summary of them. These techniques control for unobserved country-specific effects, first-difference non-stationary variables, overcome the endogeneity of the explanatory variables by using instruments and test for the presence of autocorrelation. The traditional cross-country growth regression can be written as:

$$y_{i,t} - y_{t-1} = \alpha + \beta y_{i,t-1} + \gamma` X_{i,t} + \eta_i + \varepsilon_{i,t} \qquad (1)$$

where *y* is the logarithm of real per capita GDP, *X* represents the set of explanatory variables, other than lagged per capita GDP and including our indicators of stock market and bank development, η is an unobserved country-specific effect, ε is the error term, and the subscripts *i* and *t* represent country and time period, respectively. The dependent variable in equation (1) is the period's growth rate. The OLS estimator of (1) is biased and inconsistent since y_{it-1} is correlated with ε_{it}. Subtracting the mean from each variable and estimating this equation by OLS gives the within-groups (WG) estimator. However, the WG estimator is consistent only if all the explanatory variables are strictly exogenous (Arellano & Bond, 1998). First-differencing the equation and using the GMM estimator with instrumental variables deals with this endogeneity problem. The validity of the instruments can be checked using Sargan's test. A consequence of the first-differencing is to introduce first-order autocorrelation, so this is expected on estimation. However, it is well-known that this first-differenced GMM method performs poorly in small samples (Levine et al., 2000). Instead, Arellano & Bover (1995) and

Blundell & Bond (1998) propose a system (SYS-GMM) method which uses more instruments and links the regressions in differences with regressions in levels.

To detect whether there are serious finite sample biases in the SYS-GMM estimations, Doornik *et al*., (2002) and Bond *et al*., (2001) suggest comparing them to the within-groups estimator. Unlike Levine *et al*., (2000), Rousseau & Wachtel (2000) and Beck and Levine (2002), who used the GMM estimation only, here the within-groups estimation is also performed for comparative purposes. The main difference is in the coefficient on the lagged dependent variable. A finding that the within-group estimate of the coefficient lies above the corresponding GMM system parameter estimate suggests that the GMM system estimates are seriously biased (Bond *et al*., 2001).

In summary, our approach is to use both the within-groups and SYS-GMM estimation and to use the Sargan test and serial correlation tests to check the validity of the assumptions.

4. The Empirical Results

The data are primarily from the World Bank's Global Development and Finance & World Development Indicators and the Standard & Poor's (S&P) Emerging Stock Markets Factbooks. The countries and time periods are based on the availability of data on stock market development in the annual issues of the S&P's Emerging Stock Markets Factbooks, 1998, 2001, 2002, which track market capitalization, the number of listed companies and total value traded (among other variables) for up to fifty three countries. Selecting those countries with at least ten years data gives our sample of thirty countries: Argentina, Bangladesh, Brazil, Chile, Colombia, Cote d`Ivoire, Egypt, India, Indonesia, Jamaica, Jordan, Israel, Kenya, Korean Republic, Malaysia, Mauritius, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, South Africa, Sri Lanka, Thailand, Trinidad and Tobago, Tunisia, Turkey, Venezuela and Zimbabwe for 14 years (1988 - 2001). The commercial-central bank assets ratio (BA) is from the database of Levine *et al.* (1999). Prior to 1997, the levels of secondary school enrolment (SE) are from the UNICEF statistics database.

TABLE 1 NEAR HERE

The list of variables is summarised in table 1 and the simple correlations of the financial development variables are presented in table 2. For 420 observations all the correlations are greater than 0.08 and so are significantly positive, with the highest being 0.737 for CPS with LL. This suggests that multicollinearity may be a problem if all the financial development variables are included in an equation.

TABLE 2 NEAR HERE

In tables 3, 4 and 5 the results for the systems (SYS-GMM) and within-groups (WG) estimations are presented, as estimated using PcGive 10. In all the estimated equations dummy variables for the year are included but are not reported. As stated in section 3, should the estimated coefficient on GY(-1) from WG estimation be greater than that from the SYS-GMM estimation, it would suggest that the SYS-GMM estimates are seriously biased. When the estimated equations included GY(-1), there was no evidence of this bias. However, since its coefficient was never significant, the reported results omit this variable. The diagnostic tests check for the overall fit of the regressions (the Wald test), the validity of the instrumental variables (the Sargan test), and the presence of first-order and second-order serial correlation. Since first-order serial correlation is introduced automatically when the basic equation is differenced, any evidence of this can be ignored, and instead the results of the tests for second-order serial correlation are considered. For all the reported results the diagnostic tests are satisfactory.

TABLE 3 NEAR HERE

In table 3, taking the SYS-GMM results, while credit to the private sector (CPS) has a significantly negative coefficient in column (1), when the stock market variable is the ratio of the value of shares traded to GDP, TV, which has a significantly positive coefficient, the effect of CPS becomes insignificant when the turnover ratio, TR, replaces TV. However, in each case the effect of the stock market variable on growth is positive and significant. This finding is consistent with the results reported by Beck & Levine (2002) and Rousseau & Wachtel (2000). However, unlike Levine *et al.,* (2000) and Beck & Levine (2002) findings, our result is that credit allocation (CPS) negatively and significantly affects growth when stock market activity (TV) is taken into account. It is worth noting that the samples of Levine *et al.,* (2000)

and Beck & Levine (2002) include both developed and developing countries with 5-year averaged data over 1960-1995, and 1976-1998 respectively, whereas our sample includes developing countries only with annual data over 1988-2001. In fact, when Beck & Levine (2002, page 18) use annual data, instead of average data, only the stock market variable is significantly positive, while the relationship between bank credit and economic growth becomes insignificant. Also, our analysis uses the one-step system GMM whereas Levine et al., (2000) relies on the two-step system GMM which is known to be inconsistent and unreliable (see section 3). The results in table 3, however, confirm the findings of Ben Naceur & Ghazouani (2003) that credit allocation negatively affects growth in developing countries over 1979-1999.

TABLE 4 NEAR HERE

The results for the effects of the stock market and the size of financial intermediaries on economic growth are given in table 4. The SYS-GMM results reported in column (1) show a significant negative link between the liquid liabilities of the financial system (LL) and economic growth at the 5 per cent level when using value of shares traded over GDP (TV) for stock market activity. As in table 3, TV remains significant, now at the 1 per cent level, and positively related to growth. When focusing on the stock market liquidity by including the turnover ratio (TR) in table 4 column (2), the liquid liabilities ratio (LL) remains negatively but insignificantly related to growth while TR has a positive and a significant impact on growth at the 1 per cent level of significance. As with the credit to the private sector regressions in table 3, in all the specifications the size of the intermediaries (LL) negatively affects growth (at varying levels of significance) but the stock market variables always have significantly positive coefficients.

Overall, the results in table 4 confirm the earlier findings that stock market development has a significant positive impact on growth. However, unlike most other empirical studies findings (e.g. Levine et al., 2000, Beck & Levine 2002, and Rousseau & Wachtel, 2000), the liquid liabilities of the financial sector (LL), measuring financial intermediary size, negatively and significantly relates to economic growth. Our findings agree with the results of Hsu & Liu

(2002) that the size of financial intermediaries negatively affects growth in three developing countries over 1981 to 2001.

TABLE 5 NEAR HERE

The results for the size of commercial bank assets (BA) are reported in table 5, where this variable has a positive effect on growth, but with varying levels of significance. The significance level is higher when stock market liquidity, TR, is included, than when turnover value, TV, is included.

The results in tables 3, 4 and 5 demonstrate the importance of stock market development for growth. This suggests that a trade-off between bank development and stock market development may not exist and that they are both important for economic growth (Beck & Levine, 2002).

6. Conclusions

In this paper the joint contribution of stock markets and banks development to economic growth has been examined by using annual panel data for 1988 - 2001 for thirty developing countries, and utilising general method-of-moments estimation (GMM). The main conclusion is that while the alternative measures of stock market development are positively and significantly linked to economic growth, their presence results in the standard measures of development of the banking sector, credit to the private sector and liquid liabilities, having a negative impact on growth. This result confirms earlier findings by De Gregorio & Guidotti (1995), and Beck and Levine (2002) when they used the same technique and frequency of data for a different sample of countries.

Comment [KS2]:

References

Andres, J. Hernando, I and L´pez-Salido D J. (1999*) The Role of the Financial System in the Growth - Inflation Link: The OECD Experience Banco de Espana Documento de Trabajo* No.9920.

Arellano, M. and Bond, S. (1991) Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations *Review of Economic Studies*, **58**, pp. 277-297.

Arellano, M. and Bond, S. (1998) *Dynamic panel data estimation using DPD98 for GAUSS: a guide for users* Mimeo, Institute for Fiscal Studies, London.

Arellano, M. and Bover, O. (1995) Another look at the instrumental-variable estimation of error-components models, *Journal of Econometrics*, **68**, 29-52.

Atje, R and Jovanovic, B**.** (1993) Stock market and development *European Economic Review*, **37,** 632-641.

Bhattacharya P.C. and Sivasubramanain, M.N. (2003) Financial Development and Economic growth in India: 1970-1971 to 1998-1999 *Applied Financial Economics*, Vol. 13, 925-929

Beck, T., Demirguc-Kunt, A and Levine, R. (2000) A New Database on Financial Development and Structure. *World Bank Economic Review* **14**: 597-605

Beck, T. and Levine, R. (2002) *Stock Markets, Banks and Growth: Panel Evidence. World Bank Working Paper.*

Ben Naceur, S. and Ghazouani, S. (2003). The Determinants of Stock Market Development in Some MENA Region Countries: a Panel Data Analysis. *Finance Research Working Paper***.** October 2003.

Blundell, R. and Bond, S. (1998) Initial conditions and moment restrictions in dynamic panel data models *Journal of Econometrics*, **87**, 115-43.

Bond, S., Hoeffler, A and Temple, J. (2001) GMM *Estimation of Empirical Growth Models*. *Nuffield College, University of Oxford. Economics Papers* No. 2001-W21.

Brownbridge, M., and Kirkpatrick, C. (2000). Financial Regulation in Developing Countries. *Institute for Development Policy and Management*, Working Papers, Jan 2000.

Chang, T.Y. and Caudill, S. B. (2005) Financial development and economic growth: the case of Taiwan *Applied Economics* **37**, 1329-35

Dawson, P. J. (2003) Financial development and growth in economies in transition, *Applied Economics Letters***, 10,** 833-6

De Gregorio, J and Guidotti, P. (1995). Financial Development and Economic Growth. *World Development*, **23**, 433-8.

Demirguc-Kunt, A. and Levine, R. (1996) Stock market development and financial intermediaries: stylised factors *The World Bank Economic Review*. **10**(2): 291-321.

Doornik, J. A, Arellano, M and Bond, S. (2002) *Panel Data estimation using DPD for Ox*. *Nuffield College, Oxford* and *IFS, London.*

Driffill, J (2003) Growth and finance, *Manchester School*, **71**, 363-80.

Favara G. (2003) An empirical reassessment of the relationship between finance and growth IMF Working Papers, N. 123

Goldsmith, R, W. (1969) *Financial Structure and Development*. New Haven, CT: Yale U. Press.

Hsu, C. M and Liu W. C. (2002). The role of financial development in economic growth: the experiences of Taiwan, Korea, and Singapore. *NPF research paper, Jan*

Huh, H.-S. (2005) A simple test of exogeneity for recursively structured VAR models. *Applied Economics*, **37**, 2307-13.

King, R. G. and Levine, R. (1993a) Finance and growth: Schumpeter might be right. *Quarterly Journal of Economics*, **108**, 717-737.

King, R. G. and Levine, R. (1993b). Finance, entrepreneurship, and growth: Theory and evidence. *Journal of Monetary Economics,* **32**: 513-542.

Levine, R., Loayza, N. and Beck, T. (2000) Financial intermediation and growth: causality and causes. *Journal of Monetary Economics,* **46**: 31-77.

Levine, R. and Zervos, S. (1996) Stock markets, banks, and economic growth. *American Economic Review*, **88**, 537-558.

McKinnon, R.I. (1973) *Money and Capital in Economic Development*. Washington DC: Brookings Institution.

Madsen, J. (2002) The causality between investment and economic growth. *Economics Letters*, **74,** 157-163.

Morrison, A. (2000). Financial Development and Growth: Evidence from Latin America. CESPRI Working Papers, Centre for Research on Innovation and Internationalisation, Universita' Bocconi, Milano, Italy

Rioja F. and Valev N. (2004) "Does one size fit all?: a reexamination of the finance and growth relationship" *Journal of Development Economics*, **74**, 429-447.

Rousseau, P. L. and Wachtel, P. (2000) Equity markets and growth: cross-country evidence on timing and outcomes, 1980-1995. *Journal of Business and Finance,* **24**, 1933-57.

Shaw, E.S. (1973) *Financial Deepening in Economic Development* London: Oxford University Press.

Shan, J (2005) Does financial development 'lead' economic growth? A vector auto-regression appraisal *Applied Economics*, **37**, 1353-67.

Tang, D. (2006) The effect of financial development on economic growth: evidence from the APEC countries, 1981-2000 *Applied Economics,* **38**, 1889-1904.

Yao, S. (2006) On economic growth, FDI and exports in China *Applied Economics*, **38,** 339-51**.**

Zang, H. and Kim, Y. C. (2007) Does financial development precede growth? Robinson and Lucas might be right *Applied Economics Letters, **14**, 15-19*

Table 1 List of Variables

All variables are measured as logarithms of the corresponding numbers or, for growth and inflation, as logarithmic rates of change.

	Financial Development Variables
BA	Commercial bank assets / (commercial + central bank assets)
CPS	Domestic credit to the private sector / GDP
LL	Liquid liabilities (M3) / GDP
TR	Total value of shares traded / average market capitalisation
TV	Value of shares traded / GDP
	Conditioning Variables
GC	Government consumption / GDP
IIP	Initial real GDP per capita
INF	Inflation rate
OPEN	(Exports + imports) / GDP
SE	Secondary school enrolment
	Economic Growth Variable
GY	Growth of real GDP per capita

Table 2 Correlations of the variables 1988 - 2001 (panel of 420 observations)

	CPS	LL	BA	TR	TV
LL	0.737*	1.000			
BA	0.436*	0.327*	1.000		
TR	0.171*	0.171*	0.149*	1.000	
TV	0.474*	0.395*	0.248*	0.583*	1.000
GY	0.092*	0.039	0.131*	0.134*	0.195*

* Significantly positive at the 5% level ($r_c = 0.0802$)

Table 3: Growth, Stock Market Development and Credit Allocation

Regressors	SYS-GMM (1)	WG (1)	SYS-GMM (2)	WG (2)		
Constant	8.092 (0.000)	-	2.581 (0.219)	-		
CPS	-1.736 (0.006)	-1.800 (0.116)	-0.771 (0.246)	-1.256 (0.213)		
TV	0.917 (0.001)	0.983 (0.006)	-	-		
TR	-	-	0.921 (0.004)	0.760 (0.040)		
No. observations	299	299	299	299		
Wald test for joint significance[1]	15.01 (0.001)	7.851 (0.020)	8.54 (0.014)	4.772 (0.092)		
Sargan test [2]	432.5 (0.993)	-	439.5 (0.987)	-		
First order serial correlation test[3]	-2.219 (0.026)	-0.068 (0.946)	-2.205 (0.027)	0.082 (0.934)		
Second order serial correlation test[4]	0.477 (0.633)	0.732 (0.464)	0.3479 (0.7281)	0.434 (0.664)		
R^2	-	0.147	-	0.127		

The regressions also include dummy variables for the different time periods (not reported). Instruments include lags of GY, the control variables, and the considered measure of bank and stock market development. P-values are reported in parentheses. SYS-GMM is one-step GMM estimates and WG is within group estimates.

1 The null hypothesis is that none of the variables are worth including and the alternative is that some variables are needed.

2 The null hypothesis is that the instruments used are valid and not correlated with the residuals.

3 The null hypothesis is that the errors in the first-difference regression exhibit no first-order serial correlation

4 The null hypothesis is that the errors in the first-difference regression exhibit no second-order serial correlation (listed as m2 in Arellano & Bond, 1991).

Table 4: Growth, Stock Market Development and the Size of the Financial Intermediaries

Regressors	SYS-GMM (1)	WG (1)	SYS-GMM (2)	WG (2)		
Constant	10.235 (0.002)	-	3.835 (0.201)	-		
LL	-2.211 (0.012)	-5.020 (0.012)	-1.071 (0.205)	-4.440 (0.023)		
TV	0.929 (0.000)	0.960 (0.002)	-	-		
TR	-	-	0.933 (0.003)	0.693 (0.039)		
No. observations	299	299	299	299		
Wald test for joint significance[1]	18.63 (0.000)	15.35 (0.000)	9.23 (0.010)	6.779 (0.034)		
Sargan test [2]	452.2 (0.964)	-	477.9 (0.827)	-		
First order serial correlation test[3]	-2.204 (0.028)	-0.173 (0.862)	-2.197 (0.028)	0.046 (0.963)		
Second order serial correlation test[4]	0.448 (0.654)	-0.165 (0.869)	0.339 (0.734)	0.031 (0.975)		
R^2	-	0.180	-	0.156		

See notes to table 3.

Table 5: Growth, Stock Market Development and the Size of Bank Assets

Regressors	SYS-GMM (1)	WG (1)	SYS-GMM (2)	WG (2)		
Constant	-10.209 (0.255)	-	-17.099 (0.055)	-		
BA	2.878 (0.178)	6.071 (0.042)	4.133 (0.055)	6.776 (0.017)		
TV	0.533 (0.019)	0.792 (0.030	-	-		
TR	-	-	0.661 (0.050)	0.730 (0.081)		
No. observations	299	299	299	299		
Wald test for joint significance[1]	13.59 (0.001)	14.34 (0.001)	12.95 (0.002)	13.34 (0.001)		
Sargan test [2]	504.5 (0.536)	-	486.1 (0.751)	-		
First order serial correlation test[3]	-2.246 (0.025)	-0.086 (0.931)	-2.231 (0.026)	-0.014 (0.989)		
Second order serial correlation test[4]	0.4238 (0.672)	-0.692 (0.489)	0.368 (0.713)	0.441 (0.659)		
R^2	-	0.159	-	0.153		

See notes to table 3.