An inquiry into the nature of Causality between FDI and Financial Sector Development in South Africa: An ARDL Approach

Paul Terna Gbahabo and MccPowell Fombang

Development Finance, University of Stellenbosch Business School, Cape Town, South Africa.

Abstract

This paper is an inquiry into the nature of causality between foreign direct investment (FDI) and financial sector development (FSD) in South Africa. The role FDI plays in the growth process of an economy have been recognized by policymakers, industry practitioners and academics. This recognition has led many governments in FDI-host countries to formulate FDI-friendly policies such as tax incentives, investment allowances and grant in aid, etc. due to their perceived ability to stimulate FDI net inflows. Some of the widely recognised benefits of FDI economy include the importation of foreign capital, the transfer of knowledge and technology as well as the stimulation of competition in host economies. However, the role FDI plays in stimulating financial sector development is a road less travelled by many academics especially in many developing countries where the financial system is at an infancy stage of development. We employ the ARDL bound testing approach on time series data for a period spanning from 1975 to 2015 in order to provide an in-depth analysis on the direct causal relationship between FDI and FSD especially as most extant empirical evidence on the relationship between FDI and FSD tend to rather focus on the role finance plays in enabling Foreign Direct Investment stimulate economic growth. The data variables employed in this study was collected from the World Bank's World Development Indicators and the International Monetary Fund's International Financial Statistics database. The results show that there is a long run inverse relationship between FDI and both Banking Sector development and Stock market development in South Africa. However, in the short run, the relationship is overwhelmingly positive and statistically significant for banking sector indicators therefore indicating causality in the short run which is also confirmed by the robust check using Toda-Yamamoto causality test. The findings of this study will have a far reaching theoretical and policy implication as it sheds light on a new dimension on the relationship between FDI and Financial Sector Development in South Africa.

1. INTRODUCTION

Empirical evidence on the link between foreign direct investment (hereafter FDI), financial sector development (hereafter FSD) has primarily focused on the relationship between FDI and stock market development (see Adam and Tweneboah, 2009; Shahbaz Lean and Kalim, 2013, etc.). and the role financial sector plays in enabling FDI host countries to better absorb the benefits to be derived from FDI (e.g. Hermes and Lensink, 2003; Alfaro et al., 2004, 2010; Bekaert et al., 2005). The literature is almost silent on a possible direct causality between FDI and FSD. The few empirical papers that address this issue consider the role played by FMD in the channelling of FDI into economic production (e.g. Hermes and Lensink, 2003; Alfaro et al., 2004; Kholdy and Sohrabian, 2005, 2008; Dutta and Roy, 2011) or focus on cross country studies. For example, Al Nasser and Soydemir (2010) conduct Granger causality tests between FDI and financial development variables for Latin American countries and recently Otchere and Soumare (2016) also conducted a causal analysis between FDI and Financial Market development in Africa. Although it is established that FDI contributes more to growth in countries with more developed financial market (e.g. Alfaro et al., 2004, 2010; Klein and Olivei, 2008; Leblebicioglu and Madariaga, 2012), it is not clear how FDI and FSD interact with each other, especially in developing countries such as those in Africa, where financial markets are still at a developmental stage. Although, South Africa's financial sector is well advanced and ahead of her peers in the region, it is nevertheless even more important to estimate this relation to see if the findings from south Africa will deviate from the performance of the region.

Despite this lack of empirical studies on the direct causal relationship between FDI and FSD, there are several theoretical rationales for expecting a causal relationship between FDI and FSD. First, an increase in FDI net inflows would contribute to the expansion of economic activities and lead to an increase in funds available in the economy, which in turn would boost financial intermediation through available financial markets or the banking system (e.g. Henry,

2000; Desai et al., 2006). Besides, companies involved in FDI are also likely to be listed on local stock markets as they usually originate from industrialised countries where financing through stock market is a tradition and a must-do for any company that wants to enhance its image among investors. Second, using political economic analysis, one can argue that an increase in FDI would reduce the relative power of the elites in the economy and can prompt them to adopt market-friendly regulations, thus strengthening the financial sector (e.g. Rajan and Zingales, 2003; Kholdy and Sohrabian, 2005, 2008). Third, a relatively well-functioning financial market can attract foreign investors as they will perceive it as a sign of vitality, openness from the country's authorities and market-friendly environment, thus inducing the investors to invest more in the country (Henry, 2000). In addition, a relatively developed stock market increases the liquidity of listed companies and may eventually reduce the cost of capital, thus making the country more attractive to foreign investors (Henry, 2000; Desai et al., 2006). Each of these arguments provides a theoretical rationale for a positive relationship between FDI and financial market development.

In this paper, we conduct an empirical study on the direct causal relationship between FDI and FSD in South Africa. This study is even more relevant in the South African context for a number of reasons.

Empirically, Hermes and Lensink (2003) and Alfaro et al. (2004), among many others, have shown the importance of the development of a country's financial system in channelling FDI to more productive sectors of the economy. From the political economy perspective, it has been shown that the coexistence of advanced financial markets and political stability are necessary conditions to capture the benefits of FDI (see, for example, Kholdy and Sohrabian, 2005, 2008; Dutta and Roy, 2011). Other strands of literature, specifically studies on market liberalisation or alleviation of capital control and investment, are also closely related to our work in the sense that if one views capital controls or financial repression as a feature of an underdeveloped financial sector, then capital market liberalisation can be considered as a major step towards financial market development. Consistent with this line of argument, Henry (2000) shows that there is usually an increase in the growth of private investment as well as FDI following financial liberalisation. Desai et al. (2006) argue that because a considerable fraction of the funding for local affiliates of multinationals often comes from the local debt markets, higher interest rates due to capital control increase the cost of capital, which in turn discourages FDI.

Thus, capital control affects local investments by multinational firms because it affects local borrowing rates and increases the cost of repatriation. Finally, the costs associated with capital controls undoubtedly discourage many potential investors from establishing affiliates in the first place. Empirically, Desai et al. (2006), using US multinational firms' data, show that liberalisation of capital controls is associated with considerable increases in the activities multinational firms conduct through their affiliates. Liberalisation of capital controls appears to unleash faster growth in the business activities of multinational firms in the host countries. From this literature, it appears that the linkage between FDI and FSD passes through the adjustment of cost of capital because financial market development reduces the cost of capital and therefore spurs investments in local companies or local affiliates of multinationals.

The extant literature has not clearly established, at least empirically, a direct link between FDI and FSD, especially for African countries where stock markets are at their embryonic stages and these countries rely strongly on foreign investments for economic development programmes. The foregoing discussion relating to the link between FDI and FSD clearly suggests that the relationship between FDI and FSD is endogenously determined. We therefore use a system of simultaneous equations involving both FSD and FDI variables as dependent and independent variables in assessing this direct relationship between FDI and FSD, while controlling for other factors that affect the inflows of foreign direct investments and the development of financial markets.

Compared to previous studies, we use a multiple of variables to measure FDI and FSD, as suggested by the literature (e.g. Levine and Zervos 1998; Levine et al., 2000; Alfaro et al., 2004). For FDI, we use (i) the ratio of FDI net inflows as a percentage of GDP and (ii) the ratio of FDI net inflows as percentage of gross capital formation (GCF). For FSD, we use six measures, namely (i) stock market capitalisation as a percentage of GDP, (ii) stock market turnover ratio, (iii) stock market value traded as a percentage of GDP, (iv) total credit by financial intermediaries to private sector over GDP, (v) liquid liabilities of the financial system divided by GDP and (vi) ratio of commercial bank assets to commercial bank and central bank assets. We also include in our regressions other variables found in the literature to be key determinants of FDI and FSD.

Using Time series data for South Africa from 1975 to 2015 and Toda-Yamamoto causality tests, we document a bidirectional causality between FDI and FSD. This finding suggests that studies involving both FDI and FSD need to account for potential endogeneity problems.

4

Furthermore, AutoRegressive Distributive Lag (ARDL) regression results confirm the inverse relationship between FDI and FSD in South Africa.

The remainder of the paper is organised as follows. Section 2 describes the variables and data used, and provides basic univariate statistics. In Section 3, we present the results and the analyses of the relationship between FDI and FSD. We conclude the study in Section 4.

DATA AND METHODOLOGY

Financial Sector Development (FMD) Indicators

Following Soumare and Tchana (2015), we use five financial sector development (FSD) variables. The first two relates to the capital market while the last three variables measure the level of access and usage of banking services. The first two financial market development variables (STKMKTCAP and STKVALTRA) are related to stock market development (e.g. Levine and Zervos 1997).: STKMKTCAP, STK STKVALTRA, CREDIT, LLIAB and BA for the study. STKMKTCAP is the ratio of the total stock market capitalisation over GDP and measures the relative size of the stock market and more specifically the depth of financial market. STKVALTRA is the total stock market value traded expressed as a percentage of GDP and is also an indicator of market liquidity. CREDIT is the ratio of total credit granted by financial intermediaries to the private sector to GDP. LLIAB is equal to the liquid liabilities of the financial system (currency plus demand deposits and interest-bearing liabilities of banks and non-bank financial intermediaries) divided by GDP. BA is the ratio of total banking assets over GDP. It measures the depth of the banking sector's assets.

These three variables have been used recently by Yartey and Adjasi (2007), Allen et al. (2010, 2011) and Senbet and Otchere (2010) in their study of the relationship between stock market development and growth in Africa. The last three variables (CREDIT, LLIAB and CCB) capture the level of financial intermediation or the banking sector development in a country (e.g. Levine et al., 2000).

The financial market data used in this study are obtained from the World Bank's World Development Indicators (WDI) and the and the International Monetary Fund (IMF) International Financial Statistics (IFS) databases.

b. Foreign Direct Investment (FDI) Variables

Foreign direct investment (FDI) is measured as either the ratio of FDI net inflows over

GDP. The FDI data was sourced from the World Bank's WDI

c. Control Variables

We also use the following variables to control for other relevant factors affecting FDI and

FSD: education, inflation, exchange rate, lending interest rate, current account balance as a percentage off GDP, the ratio of gross fixed capital formation as a percent of GDP, real gross national income per capita, the ratio of central bank assets to GDP.

Table 1: Variables and sources of data.

Variable	Data Series for the period 1975-2015	Sources	Data frequency	Rationale
FSD indicators lnCredit	Log of Deposit money banks Credit to the private sector/GDP	WDI	Annually	Dependent variable
lnLLiab	Log Liquid liabilities of financial system/GDP	WDI	Annually	Dependent variable
lnSmktcap	Log Stock market capitalisation/GDP	WDI	Annually	Dependent Variable
lnStkvaltra	Log Stock value traded/GDP	WDI	Annually	Dependent Variable
FDI Variables Fdi	Net Fdi inflows /GDP	WDI	Annually	Variable of interest
Control variables lnrgnppc	Log of real GNI P per capita	WDI	Annually	
lnInfl	Log of GDP deflator	WDI	Annually	

lnexhr	Log of period average of official exchange rate of Rand to the US Dollar	WDI	Annually
intrate	Lending Interest rate	WDI	Annually
lnSav	Log of Gross domestic savings/GDP	WDI	Annually
lneducation	Log of number primary school enrolment for box sexes	WDI	Annually
lngfc	Log of gross fixed capital formation/GDP	WDI	Annually
lngov	Log of total tax revenue/Gdp	WDI	Annually
lncba	Log of central bank asset/Gdp	WDI	Annually
lnxtrade	Log of import +Export of goods and services/Gdp	WDI	Annually
lnBalance	Log of Current account balance/Gdp	WDI	Annually
lnEletcons	Log Electric power consumption per capita	WDI	Annually

PRESENTATION OF RESULTS

Table2: Toda-Yamamoto approach to causality

variable	Chi-square	Df	P_value	Observation
FDI-credit	19.837***	3	0.0002	37
Credit-FDI	37.430***	3	0.000	37
FDI-LLIAB	12.275***	3	0.0065	37
LLIAB-FDI	8.641**	3	0.0345	37
FDI-stockmktcap	43.447***	3	0.0000	37
Stockmktcap-FDI	1.759	3	0.6239	37
FDI-stockvaltra	11.221	3	0.0037	38
Stockvaltrs-FDI	4.127	3	0.1270	38
FDI-bank asset	7.753	3	0.0514	37
Bank asset-FDI	6.957	3	0.0733	37

Table 3: ARDL Regression with Credit as dependent variable

Long run	Short run	ECM	F-stat	LM	heteroscedasticity
-0.2089	0.0118***	-0.235**	9.703	1.345	25.383
(0.111)	(0.0095)	(0.0346)	(0.01)	(0.5104)	(0.497)

Table 4: ARDL Regression with Liquid Liability as dependent variable

Long run	Short run	ECM	F-stat	LM	heteroscedasticity
-0.467	0.1063	-0.228**	4.344	2.126	2.7598
(0.704)	(0.699)	(0.0354)	(0.025)	(0.145)	(0.986)

Table 5: ARDL Regression with Banking Sector Asset as dependent variable

Long run	Short run	ECM	F-stat	LM	heteroscedasticity
-0.0051	0.0048*	-0.3132	4.0469	3.1659	8.9312
(0.7786)	(0.063)	(0.0122)	(0.025)	(0.2054)	(0.9162)

Table 6: ARDL Regression with Stock Market Capitalisation as dependent variable

Long run	Short run	ECM	F-stat	LM	heteroscedasticity
-0.0765	0.0207	0.7287	4.2111	2.157	19.668
(0.0984)	(0.2974)	(0.0002)	(0.025)	(0.1419)	(0.3518)

Table 7: ARDL Regression with Stock Value Traded as dependent variable

Long run	Short run	ECM	F-stat	LM	heteroscedasticity
-0.3047	-0.1334	-0.9556	323.27	2.5018	8.898
(0.0003)	(0.237)	(0.0000)	(0.0000)	(0.1137)	(0.7806)

DISCUSSION OF RESULTS

The result from table 2 using Toda-Yamamoto approach cointegration causality shows that there is bidirectional causality running from FDI to Banking Sector Development Indicators in South Africa. However, for the Stock market indicators, the result shows a one directional causality running from FDI to Stock Market Indicators in South Africa.

Tables 3 through to 5 presents the results on the relationship between FDI and Banking Sectors Development Indicators comprising domestic bank credit to the private sector, liquid liabilities of the financial system and bank assets. The results consistently shows that there is a an inverse long run relationship between FDI and banking sector Development indicators across all three indicators. However, two out of the indicators including private credit and total banking sector assets show statistically significant and positive relationship in the short run.

Similarly, the results of the stock market indicators presented in Tables 6 and 5 also reports a long run inverse relationship between FDI and the variables of Stock market development. However, the results of the relationship between FDI and stock market development indicators are only statistically significant for the long run relationship. For the short run, the result indicates a positive but statistically insignificant relationship between FDI and Stock Market Capitalisation while reporting an inverse relationship for FDI and Stock Value Traded.

CONCLUSION

The study concludes that there is a long run inverse relationship between FDI and FSD in South Africa. However, there is a short run bidirectional causality between FDI and Banking sector development indicators in South Africa. There is therefore need for further test using quarterly data which obviously offers more observations in order to capture this dynamic relationship.

References

Adam, A. M. and G. Tweneboah (2009), 'Foreign Direct Investment and Stock market Development: Ghana's Evidence', International Research Journal of Finance and Economics, 26, 178–85.

Al Nasser, O. M. and G. Soydemir (2010), 'Domestic and International Determinants of Foreign Direct Investment in Latin America', FMA Annual Meeting, New York, USA.

Alfaro, L., A. Chanda, S. Kalemli-Ozcan and S. Sayek (2004), 'FDI and Economic Growth: The Role of Local Financial Markets', Journal of International Economics, 64, 1, 89–112.

Alfaro, L., A. Chanda, S. Kalemli-Ozcan and S. Sayek (2010), 'Does Foreign Direct Investment Promote Growth? Exploring the Role of Financial Markets on Linkages', Journal of Development Economics, 91, 2, 242–56.

Allen, F., E. Carletti, R. Cull, J. Qian and L. Senbet (2010), 'The African Financial Development Gap', Working Paper (Philadelphia, PA: Wharton School, University of Pennsylvania).

Allen, F., I. Otchere and L. Senbet (2011), 'African Financial Systems: A Review', Review of Development Finance, 1, 2, 79–113.

Arellano, M. and S. Bond (1991), 'Some Tests of Specification for Panel Data: Monte Carlo Evidence and An Application to Employment Equations', Review of Economic Studies, 58, 2, 277–97.

Arellano, M. and O. Bover (1995), 'Another Look at the Instrumental Variable Estimation of Error-Components Models', Journal of Econometrics, 68, 1, 29–51.

Asiedu, E. (2002), 'On the Determinants of Foreign Direct Investment to Developing Countries: Is Africa Different?', World Development, 30, 1, 107–19.

Asiedu, E. (2006), 'Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political Instability', The World Economy, 29, 1, 63–77.

Beck, T., M. Fuchs and M. Uy (2009), 'Finance in Africa: Achievements and Challenges', World Bank Policy Research Working Paper 5020 (Washington, DC: World Bank).

Bekaert, G., C. R. Harvey and C. Lundblad (2005), 'Does Financial Liberalization Spur Growth?', Journal of Financial Economics, 77, 1, 3–55.

Blundell, R. and S. Bond (1998), 'Initial Conditions and Moment Restrictions in Dynamic Panel Data Models', Journal of Econometrics, 87, 1, 115–43.

Carkovic, M. and R. Levine (2005), 'Does Foreign Direct Investment Accelerate Economic Growth?', in T. H. Moran, E. M. Graham and M. Blomstrom (eds.), Does Foreign Direct Investment Promote Development (Washington, DC: Institute for International Economics), 195–220.

Chinn, M. D. and H. Ito (2002), 'Capital Account Liberalization, Institutions, and Financial Development: Cross-Country Evidence', NBER Working Paper 8967 (Cambridge, MA: NBER).

De Gregorio, J. (1999), 'Financial Integration, Financial Development, and Economic Growth', Estudios de Economía, 26, 2, 137–61.

Desai, M. A., C. F. Foley and J. R. Hines Jr (2006), 'Capital Controls, Liberalizations, and Foreign Direct Investment', The Review of Financial Studies, 19, 4, 1433–64.

Dutta, N. and S. Roy (2011), 'Foreign Direct Investment, Financial Development and Political Risks', The Journal of Developing Areas, 44, 2, 303–27.

Gohou, G. L. and I. Soumar e (2012), 'Does Foreign Direct Investment Reduce Poverty in Africa and Are There Regional Differences?', World Development, 40, 1, 75–95.

Henry, P. B. (2000), 'Do Stock Market Liberalizations Cause Investment Booms?', Journal of Financial Economics, 58, 1–2, 301–34.

Hermes, N. and R. Lensink (2003), 'Foreign Direct Investment, Financial Development and Economic Growth', Journal of Development Studies, 40, 1, 142–63.

Hood, M. V. III, Q. Kidd and I. L. Morris (2008), 'Two Sides of the Same Coin? Employing Granger Causality Tests in a Time Series Cross-section Framework', Political Analysis, 16, 3, 324–44.

Im, K. S., M. H. Pesaran and Y. Shin (2003), 'Testing for Unit Roots in Heterogeneous Panels', Journal of Econometrics, 115, 1, 53–74.

Kaufmann, D., A. Kraay and M. Mastruzzi (2009), 'Governance Matters VIII: Aggregate and Individual Governance Indicators 1996–2008', World Bank Policy Research Working Paper 4978 (Washington,DC: World Bank Policy Research).

Kholdy, S. and A. Sohrabian (2005), 'Financial Markets, FDI, and Economic Growth: Granger Causality Test in Panel Data Models', Working Paper (Pomona, CA: California State Polytechnic University).

Kholdy, S. and A. Sohrabian (2008), 'Foreign Direct Investment, Financial Markets and Political Corruption', Journal of Economic Studies, 35, 6, 486–500.

Klein, M. and G. Olivei (2008), 'Capital Account Liberalization, Financial Deepness and Economic Growth', Journal of International Money and Finance, 27, 6, 861–75.

Leblebicioglu, A. and J. Madariaga (2012), 'Financial Flows, Composition of Capital and Growth', mimeo.

Levin, A., C. F. Lin and C. S. J. Chu (2002), 'Unit Root Tests in Panel Data: Asymptotic and Finite Sample Properties', Journal of Econometrics, 108, 1, 1–24.

Levine, R. and S. Zervos (1998), 'Stock Markets, Banks, and Economic Growth', American Economic Review, 88, 3, 537–58.

Levine, R., N. Loayza and T. Beck (2000), 'Financial Intermediation and Growth: Causality and Causes', Journal of Monetary Economics, 46, 1, 31–77.

Rajan, R. J., L. Zingales (2003), Saving Capitalism from the Capitalists: Unleashing the Power of Financial Markets to Create Wealth and Spread Opportunity (Princeton, NJ: Princeton University Press).

Senbet, L. and I. Otchere (2010), 'African Stock Markets', in M. Quintyn and G. Verdier (eds.), African Finance in the 21st Century volume (Basingstoke: Palgrave/International Monetary Fund), 104–42.

UNCTAD (2009), World Investment Report 2009 (New York and Geneva: Transnational Corporation, Agricultural Production and Development, United Nations).

Yartey, C. A. and C. K. Adjasi (2007), 'Stock Market Development in Sub-Saharan Africa: Critical Issues and Challenges', IMF Working Paper WP/07/209 (Washington, DC: IMF).