

The Composition of Foreign capital Stocks in South Africa: The Role of Institutions and Domestic Risk

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Abstract

This paper investigates the determinants of the absolute volumes and composition of foreign capital stocks in South Africa. The paper focuses on the role played by institutional quality (property rights), domestic risk and neighbourhood effects as potential determinants. The empirical findings show that secure property rights and low risk in the host country positively affect the absolute volumes of both long-term and short-term foreign capital but tilt the composition of foreign capital in favour of long-term foreign capital. More importantly, the results demonstrate the existence of neighbourhood effects where the institutional environment in Zimbabwe has a significant impact on South Africa's foreign capital inflows. Interestingly, it is shown that weak property rights in Zimbabwe lead to an increase in South Africa's foreign direct Investment (FDI) but a reduction in South Africa's portfolio investment. This outcome suggests that while South Africa and Zimbabwe compete for long-term foreign capital, the two countries should cooperate with each other in ensuring a sound institutional environment conducive to all forms of foreign capital.

Key words: Foreign capital stocks, Composition, FDI, Portfolio Investment and South Africa

JEL Code: F21

1 Introduction

The purpose of this paper is to investigate the impact of institutions (property rights) and domestic risk on the absolute volumes and the composition of foreign capital stocks in South Africa over the period 1960 to 2005. Since the political transformation of 1994, South Africa has attracted relatively more portfolio investment than Foreign Direct Investment (FDI). On average, between 1994 and 2002, FDI inflows amounted to 1.5% of GDP per year, whereas portfolio investment inflows totalled about 3.5% of GDP. The current composition of South Africa's foreign capital raises important questions given that it contrasts sharply with the country's

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pre-1994 composition of foreign capital. Ahmed *et al* (2005) similarly points out that the predominance of portfolio investment inflows in South Africa deviates from the experience of other emerging middle-income countries where FDI tends to outweigh portfolio investment.

While foreign capital is an important means of financing investment in the host country, it has been argued that the composition of foreign capital received by a country determines whether the capital is beneficial or detrimental to the host country (Dooley and Warner, 1995). In this regard, FDI is often considered superior to portfolio flows and foreign loans as it potentially facilitates the transfer of new technology, helps improve workers' skills and market access by the recipient country (Borensztein *et al.* 1998). Furthermore, FDI is generally considered to be more stable and resilient during periods of financial stress than portfolio investment inflows. According to this view, a high relative share of FDI in total foreign capital inflows is a sign that the recipient country is less prone to financial crises and generally in good health.

There is however a new strand of literature, a branch of the New Institutional Economics, which argues that the relative share of FDI in total foreign capital inflows and stocks tends to be lower in countries that are safer, more promising and have better institutions and policies.¹ This argument is based on the notion that FDI is less subject to expropriation than other forms of foreign capital inflows because of its intangible nature (technology and brand names). Countries that have tighter financial constraints and weak institutions will therefore finance themselves primarily through FDI which is seen as harder to expropriate. Interpreting a high relative share of FDI in total foreign capital inflows as a sign of good economic health is therefore unwarranted. In view of these different approaches to a desirable composition of foreign capital, it is crucial to understand how the host country's institutional quality and risk influence both the absolute levels and the composition of foreign capital. While FDI may be relatively stable compared to other flows, its preponderance in total foreign capital inflows may simply be an indication of institutional weaknesses and high domestic risk in the host country.

To our best knowledge, the existing empirical literature on foreign capital in South Africa established that secure property rights and low domestic risk increase the absolute volumes of all forms of foreign capital but the compositional effect is underexplored.² This paper extends the existing empirical literature in the following ways. Firstly, in addition to determining the impact of institutions and domestic risk on the absolute volumes of foreign capital stocks, the paper also explores the impact of these factors on the composition of foreign capital stocks in South Africa. Secondly, the paper extends the notion of risk by including neighbourhood effects from Zimbabwe as a determinant of the absolute volumes and composition of South Africa's foreign capital stocks. Neighbourhood effects simply refer to the systematic contagion across boundaries such that favourable or unfavourable characteristics of neighbours may importantly influence a country's own long-run economic performances (Easterly and Levine, 1998).

¹See for example Razin *et al* (1998), Hausman and Fernandez-Arias (2000) and Albuquerque (2003).

²See for example Wesso (2001), Fedderke and Liu (2002) and Fedderke and Romm (2006).

The possibility neighbourhood effects from Zimbabwe to South Africa emanates from the strong trade and business ties between the two countries. For instance, according to Games (2006), close to 27 of South Africa's biggest listed firms have operations in Zimbabwe and some of them are also listed on the Zimbabwe Stock Exchange (ZSE). The existence of such close economic ties provides channels through which institutional and economic changes in Zimbabwe can be transmitted to the South African economy. The paper will thus investigate whether the quality of institutions in Zimbabwe, measured by a *de jure* property rights index,³ significantly affect the absolute levels and composition of South Africa's foreign capital stocks.

The paper is organised in the following manner. Section 2 presents a brief overview of the foreign capital in South Africa. This is followed by a presentation of the theoretical framework in section 3. Section 4 details the econometric methodology used. The empirical findings and discussion of the results are presented in section 5. Section 6 concludes the paper with a summary of the findings and policy implications.

2 A Brief Background to the Composition of Foreign Capital Stocks in South Africa

The South African monetary authorities distinguish between three main sub-components of total foreign capital inflows. The first category is long term FDI which involves investment in a firm where foreign investors have at least 10% of voting rights. The second category, namely portfolio investment, includes the purchase by foreigners of South Africa's bonds and equities with less than 10% voting rights. The third category, other investments, constitutes foreign loans and deposits between companies, banks and the government.

South Africa's political democratisation in 1994 saw its re-integration into the world economy. This was accompanied by a surge in the international capital inflows. Since the early 1990s, South Africa also experienced changes in the composition of its foreign capital inflows and stocks. Figure 1 shows the FDI and portfolio investment stocks as percentage of GDP. It is evident that prior to 1990, FDI stocks exceeded portfolio investment stocks by a sizable margin. This contrasts with most of the post-1990 period when portfolio investment stocks outweighed FDI stocks.

[Insert figure 1 about here]

The only exception to the domination of portfolio investment stocks in the post-1990 era was between 1999 and 2001, a period during which FDI stocks seem to have grown much faster than portfolio investment stocks. However the growth of FDI stocks was not due to new FDI inflows. Rather the growth was due to the fact that four of South Africa's largest MNCs moved their major listing from the Johannesburg Stock Exchange to the London Stock Exchange.⁴ The London listing requires that the company moves its

³See Gwenhamo, Fedderke and de Kadt (2008) for details of the property rights index.

⁴Billiton, Anglo American, South African Breweries and Old Mutual, listed in London in 1999 while Didata, (an information

headquarters to London and registers as a UK Company (Heese, 2000). The South African plants of these firms thus became part of South Africa’s FDI stocks by means of book entry thus inflating the growth of the FDI stocks. It follows that there is a shift in the composition of South Africa’s foreign liabilities away from FDI to portfolio investment in the post-1990 period.

3 Theoretical Framework

According to the porfolio diversification literature, strong institutions and low domestic risk tend to encourage foreign capital inflows.⁵ We follow fedderke (2001) in specifying a portfolio theoretic model that underpins the impact of institutional and risk factors on the absolute volume of foreign capital. The model identifies the characteristics of the ratio of domestic to foreign assets in investors portfolios in the intertemporal equilibrium. The relationship is given by

$$\varpi_K = \frac{\bar{K}^f}{\bar{K}^d} = \frac{\beta(\gamma - c\rho)(1 - \pi_D)}{\delta(1 - \pi_D)(\alpha - a\rho)} \quad (1)$$

where ρ denotes the rate of time discount, α , β relate to the marginal rate of return on domestic assets, γ , δ , relate to the marginal return on foreign assets, a , b to marginal cost of adjusting domestic assets holdings, c , d to the marginal cost of adjusting foreign assets holdings and π_D to the risk of expropriation that attaches only to domestic assets. To the extent that our interest lies in the impact of the host (domestic) country’s property rights and risk on the absolute volumes of foreign capital, we focus on the condition that $\frac{\partial \varpi_K}{\partial \pi_D} > 0$. It shows that rising expropriation risk, reduce the host country’s assets in the international investors’ portfolio through its negative effect on the marginal returns.

The literature on the composition of foreign capital is divided on how institutional and risk factors influence the composition of foreign capital inflows and stocks. Some models such as the Albuquerque (2003) theoretical framework attempt to explain why institutional weaknesses and high domestic risk, tilt the composition of foreign capital away from non-FDI capital towards FDI capital. According to the model, FDI has a risk-sharing advantage over other capital flows because it contains more intangible assets such as human and organisation capital that are inalienable. This makes FDI less attractive to expropriate when compared to non-FDI foreign investment. The model assumes that international investors make a decision to invest in either an inalienable project called FDI and denoted by k_f or an alienable project called non-FDI and denoted by k_o in a chosen host country. Only a share of the current revenues $\theta \in [0,1]$ from FDI activity will be lost if the host country defaults such that $1-\theta$ is the degree of inalienability of FDI.

The first order conditions which dictate the optimal composition of foreign capital flows to maximise the technology firm) followed suit in 2000, and Richemont moved its major listing to Switzerland (Ernst & Young, 2001).

⁵Kraay *et al* (2000) and Fedderke (2002).

international investor's returns in the host country are

$$E\left(\frac{s'}{s}\right) A\alpha_f k_f^{\alpha_f-1} = 1 + r + E\left[\Psi\left(s'\right) U_{k_f}\left(k_f, k_o, s'\right) / s\right] \quad (2)$$

$$E\left(\frac{s'}{s}\right) A\alpha_o k_o^{\alpha_o-1} = 1 + r + E\left[\Psi\left(s'\right) U_{k_o}\left(k_f, k_o, s'\right) / s\right] \quad (3)$$

where A is the productivity factor, α_f and α_o are the shares of FDI and non-FDI foreign capital in the host country's production function respectively, s' is a shock in the host country, r is the interest rate on the international bond market, $U\left(k_f, k_o, s'\right)$ is the recipient country's utility under autarky.

The first order conditions imply that international investors optimise their returns when the marginal expected revenue of all foreign capital is equated to its marginal costs, r , plus a default premium given by $E\left[\Psi\left(s'\right) U_{k_x}\left(k_f, k_o, s'\right) / s\right]$ for each k_x and measures the marginal cost to the investor of the host country's incentive to default. Since the default premium is higher for non-FDI flows, the solution will be such that the level of FDI is no smaller than the level of appropriable capital, $k_f^* \geq k_o^*$. Although the model is set up in the context of foreign capital inflows, its predictions can be extended to foreign capital stocks which show the accumulated foreign capital inflows over time. The prediction of the model is that the relative share of FDI in total foreign inflows and stocks is higher for financially constrained countries if $\theta < 1$, the θ -hypothesis in the subsequent sections

In contrast to the above view, Mauro (2004) argues that inalienability of FDI depends upon the sectoral allocation of FDI such that the θ hypothesis apply mostly to FDI in high technology or human capital-intensive sectors where the benefits of expropriating foreign capital by the host country are very low thus making FDI sufficiently inalienable. In most developing countries, FDI is concentrated in capital-intensive sectors and/or the primary commodities sector where the host country can easily expropriate foreign capital. Under such conditions, the Albuquerque (2003) prediction breaks down leading to a relationship where institutional weaknesses and high domestic risk lead to a composition of foreign capital biased towards non-FDI foreign capital.

In addition to domestic risk and the host country's institutional framework, foreign capital flows are also affected by neighbourhood effects. Contagion occurs when political and economic events in the progenitor country affect the absolute levels and the composition of foreign capital in the neighbouring countries. There are two strands of literature that explain how contagion takes place. The first strand of literature focuses on fundamental economic channels such as close trade links, similar initial economic and financial linkages through which a crisis in one country can be propagated to its neighbours.⁶ The second strand of literature stresses the herding behaviour on the part of economic agents where crisis propagation is transferred between markets even in the absence of real market links.

⁶Rigobon and Forbes (2000)

4 A Review of Empirical Literature

Empirical work consistently concur that high institutional quality and low domestic risk are associated with high absolute volumes of FDI, portfolio investment and other forms of foreign capital.⁷ However the role of institutional quality and domestic risk in determining the composition of foreign capital inflows and stocks has been under explored and the existing empirical work yields conflicting results.

On the one hand, some studies support the θ hypothesis that domestic risk and poor institutional quality tend to increase the relative share of FDI in total foreign liabilities. On the other hand, some studies conclude that domestic risk and institutional inefficiencies will reduce the relative share of FDI in total foreign liabilities. The pioneering work of Hausman and Fernandez-Arias (2000) considered the determinants of the share of FDI flows in total foreign capital inflows, using averages for 1996 to 1998 for a cross-section of advanced and developing countries. They found a strong, positive and statistically significant relationship between the default risk and the share of FDI in total capital inflows. In contrast, country risk had a negative and statistically significant effect on the absolute levels of total foreign capital inflows. They concluded that riskier countries receive less foreign capital, but these countries tend to get more of their flows in the form of FDI. With regards to institutional quality, their results showed that the relative FDI share in total capital inflows is strongly and negatively associated with measures of institutional development compiled by Kaufmann *et al* (1999) and with the La Porta *et al* (2000) indices of shareholder rights. They concluded that while good institutions positively affect the volume of capital flows, they skew the composition away from FDI to other flows. Their results support the θ -hypothesis.

Albuquerque (2003) considered the determinants of the composition of capital flows for a cross-section of both developed and developing countries for the period 1975 to 1997. With average FDI shares in gross private capital flows as a dependant variable and controlling for GDP per capita and trade openness, he found that the International Country Risk Guide (ICRG henceforth) index of law and order had a negative but insignificant effect. Country risk measured by Moody's sovereign credit ratings had a strong negative effect on the share of FDI in total capital inflows. Since the Moody's credit rating assigns higher scores to countries with lower default risk, the Albuquerque (2003) result implies that good (poor) credit ratings decrease (increase) the share of FDI in total flows and this supports the θ -hypothesis.

In contrast to the above results, Ahmed *et al* (2004) do not find evidence supporting the θ -hypothesis for a sample of 81 developing countries, including South Africa. They found the share of FDI in total foreign capital inflows to be positively and significantly influenced by the institutional quality measured by the ICRG index of law and order. Since countries that rank high on the ICRG index have high quality institutions, the positive coefficient implies that strong institutions result in FDI dominating foreign capital inflows. The study also showed that the share of FDI in total foreign capital inflows tends to be higher in economies with

⁷Gastanaga *et al* (1998), Fedderke and Liu (2002), Ahmed *et al* (2005), Fedderke and Romm (2006).

abundant resources and low trade restrictions.

There are some empirical studies that have looked only at the macroeconomic determinants of the composition of foreign capital inflows. For instance, Lane and Milesi-Ferretti (2001a, 2001b) analysed how a number of potential correlates such as trade openness, per capita GDP, stock market capitalisation, market size and natural resources availability affect the composition of countries' foreign liabilities. Using a sample of developing and transition countries that included Sub-Saharan Africa, they found trade openness to be the dominant factor in explaining the share of FDI in total foreign liabilities. Lane and Milesi-Ferretti (2001a) recognised that the limitation of their work was the failure to control for institutional explanatory variables.

5 Empirical Models

The first hypothesis tested in this paper is that secure property rights in the host country will increase the host country's absolute volumes of FDI and portfolio investment stocks while high domestic risk in the host country will reduce the host country's absolute volumes of FDI and portfolio investment. To test this hypothesis, the empirical specifications shown in equations 4 and 5 are estimated separately for South Africa for the period 1960 to 2005.

$$LFDI = f \left(\underset{-}{RISK}, \underset{+}{LPROPERT}, \underset{+}{LPROPERTZ}, \underset{+}{LGDP}, \underset{+}{OPEN}, \underset{-}{LAVWAGE}, \underset{+/-}{LRATIO} \right) \quad (4)$$

$$LPI = f \left(\underset{-}{RISK}, \underset{+}{LPROPERT}, \underset{+}{LPROPERTZ}, \underset{+}{RTBR}, \underset{+}{OPEN}, \underset{-}{CREDIT} \right) \quad (5)$$

Variable definitions and plots are given in appendix A and the signs below the variables are the *a priori* expectations.

We expect that domestic risk, denoted by RISK, has a negative effect on the absolute levels of FDI and portfolio investment stocks and that the quality of property rights in the host country, denoted by LPROPERT, positively affect the absolute volume of FDI and portfolio investment stocks. The quality of property rights in the neighbouring country, in this case Zimbabwe, represents neighbourhood effects and is expected to have a positive effect on the absolute levels of FDI and portfolio investment stocks in South Africa due to positive spill-over effects channelled either through the close business linkages between the two countries or through investors herding behaviour.

The other explanatory variables are selected from the past literature. The real GDP, denoted by LRGDP, is expected to have a positive effect on the absolute levels of FDI and portfolio investment stocks. In this regard, Fedderke and Liu (2002) and Fedderke and Romm (2006) found that GDP has a positive and statistically significant impact on FDI and total foreign capital flows in South Africa. Trade openness, denoted by OPEN, is expected to have a positive effect on FDI stocks. *A priori*, we expect that labour costs,

denoted by LAVWAGE, have a negative effect on FDI. The capital-labour ratio, denoted by LRATIO, could have either a positive or negative effect on FDI depending on whether vertical or horizontal FDI dominates.

High real short-term interest rates in the host country relative to other countries tend to attract relatively more short term foreign capital. It is therefore expected that the real Treasury Bill rate has a positive effect on the portfolio investment stocks. CREDIT, a proxy for the financial sector development, is expected to have a positive effect on portfolio investment stocks.

We now turn to the determination of the composition of foreign capital stocks. The empirical specification to investigate is given by the following equation:

$$LFDISHARE = f \left(\begin{matrix} RISK, & LPROPERT, & LPROPERTZ, & LRGDP, & OPEN, & RTBR, & CREDIT \\ +/-, & +/-, & +, & +, & +, & -, & + \end{matrix} \right) \quad (6)$$

The signs on risk and property rights are ambiguous depending on whether the θ -hypothesis holds or otherwise. Regarding the other explanatory variables, GDP is expected to have a positive effect on the relative share of FDI in total foreign capital stocks.⁸ *A priori*, we expect trade openness to have a positive effect on the relative share of FDI in total foreign capital stocks.⁹ Since relatively high domestic real short-term interest rates in the host country tend to attract relatively more short term foreign capital, RTBR is expected to have a negative impact on the relative share of FDI in total foreign capital stocks. Financial sector development, captured by the variable CREDIT, is expected to have a positive effect on the relative share of FDI total foreign capital stocks.¹⁰

6 Econometric Methodology

We employ the Johansen estimation technique¹¹ to estimate the structural models for the determinants of the absolute levels of FDI and portfolio investment stocks and the determinants of the relative share of FDI in total foreign capital stocks. In its general form, an unrestricted VAR is specified as follows:

$$Z_t = A_1 Z_{t-1} + A_m Z_{t-m} + \mu + \delta_t \quad (7)$$

Where Z_t is an $n \times 1$ matrix of endogenous variables, m is the lag length, μ is the matrix of deterministic terms and δ is a Gaussian error term. Reparametrisation provides the VECM specification:

$$\Delta Z_t = \sum_{i=1}^{k-1} \Gamma_i \Delta Z_{t-i} + \Pi Z_{t-k+1} + \mu + \delta_t \quad (8)$$

⁸See, for example, Lane and Milesi-Ferretti (2001a, 2001b) and Ahmed *et al* (2005).

⁹Lane and Milesi-Ferretti (2001a, 2001b), Albuquerque (2003) and Ahmed *et al* (2005).

¹⁰See, for example, Ahmed *et al* (2002).

¹¹Johansen and Juselius (1990, 1991, 1992).

The existence of r cointegrating relationships amounts to the hypothesis that:

$$H_1(r) : \Pi = \alpha\beta' \quad (9)$$

where Π is a $p \times p$ matrix, α is the $p \times r$ loading matrix capturing the speed of adjustment to equilibrium and β is $p \times r$ matrix of long run coefficients. α and β are assumed to be of full rank. Therefore, $H_1(r)$ is the hypothesis of reduced rank of Π . When $r > 1$, issues of identification arise¹² and should be resolved by means of restrictions on the loading matrix (α), the matrix representing short run dynamics and the cointegration space(β).¹³

The empirical specifications for the determinants of the absolute levels of FDI and portfolio investment stocks are presented in equations 10 and 11 respectively. In the FDI model, theory postulates the existence of feedback effects from FDI to output. Borensztein *et al* (1998) argued that FDI enhances productivity and output in the host country. Therefore theoretically, we expect two long run relationships in equation 10, one explaining FDI and the other explaining GDP. In the case of portfolio investment, our a priori expectation is of a single cointegrating vector.

$$\Pi Z_{t-k+1} = \begin{bmatrix} \alpha_{11} & \alpha_{12} \\ \alpha_{21} & \alpha_{22} \\ \alpha_{31} & \alpha_{32} \\ \alpha_{41} & \alpha_{42} \\ \alpha_{51} & \alpha_{52} \\ \alpha_{61} & \alpha_{62} \\ \alpha_{71} & \alpha_{72} \\ \alpha_{81} & \alpha_{82} \end{bmatrix} \begin{bmatrix} 1 & -\beta_{12} & \beta_{13} & -\beta_{14} & -\beta_{15} & \beta_{16} & 0 & -\beta_{18} \\ -\beta_{21} & 1 & 0 & -\beta_{24} & -\beta_{25} & -\beta_{26} & -\beta_{27} & -\beta_{28} \end{bmatrix} \begin{bmatrix} LFDI \\ LRGDP \\ RISK \\ LPROPERT \\ OPEN \\ LAVWAGE \\ LRATIO \\ LPROPERTZ \end{bmatrix}_{t-k+1} \quad (10)$$

$$\Pi Z_{t-k+1} = \begin{bmatrix} \alpha_{11} \\ \alpha_{21} \\ \alpha_{31} \\ \alpha_{41} \\ \alpha_{51} \\ \alpha_{61} \\ \alpha_{71} \end{bmatrix} \begin{bmatrix} 1 & -\beta_{12} & \beta_{13} & -\beta_{14} & -\beta_{15} & -\beta_{16} & -\beta_{17} \end{bmatrix} \begin{bmatrix} LPI \\ LRGDP \\ RISK \\ LPROPERT \\ RTBR \\ CREDIT \\ LPROPERTZ \end{bmatrix}_{t-k+1} \quad (11)$$

The empirical specification for the determinants of the relative share of FDI in total foreign capital stocks is shown in equation 12. Our a priori expectation is of one cointegrating vector.

¹²Wickens (1996), Johansen (1990, 1992), Pesaran and Shin (1995a), Pesaran, Shin and Smith (1996).

¹³Greenslade *et al* (1999).

$$\Pi Z_{t-k+1} = \begin{bmatrix} \alpha_{11} \\ \alpha_{21} \\ \alpha_{31} \\ \alpha_{41} \\ \alpha_{51} \\ \alpha_{61} \\ \alpha_{71} \\ \alpha_{81} \end{bmatrix} \begin{bmatrix} 1 & -\beta_{12} & -\beta_{13} & \beta_{14} & \beta_{15} & -\beta_{16} & -\beta_{17} & +\beta_{18} \\ & & & & & & & - \end{bmatrix} \begin{bmatrix} LFDISHARE \\ LRGDP \\ RISK \\ LPROPERT \\ RTBR \\ OPEN \\ CREDIT \\ LPROPERTZ \end{bmatrix}_{t-k+1} \quad (12)$$

Where all the variables are defined in appendix A.

7 Findings

In accordance with the requirements of the VECM technique, table 1 reports the results of the ADF test statistics confirming that all variables included in the study are I(1).

[Insert table 1 about here]

Given the small sample size, we follow the maximum eigenvalue statistic indicating 2 cointegrating vectors in the FDI model as shown in table 2, and a single cointegrating vector for both the portfolio investment and the FDI-share models as shown in table 3 and 4 respectively ¹⁴

ng vectors chosen.

[Insert table 2 about here]

[Insert table 3 about here]

[Insert table 4 about here]

7.1 Discussion of the Long-run Parameter Estimates

Table 5 reports the long-run parameter estimates for the FDI. Our baseline overidentified model is shown in column B and can be represented by the equilibrium relationships in equations 13 and 14.

[Insert table 5 about here]

$$LFDI = 1.57LRGDP_t - 2.31RISK_t - 1.64LPROPERT_t + 3.79OPEN_t \quad (13)$$

(3.61) (3.50) (1.97) (2.69)

$$LRGDP = 0.06LFDI_t + 0.73LPROPERT_t + 0.34OPEN_t + 0.68LAVWAGE_t + 0.89LRATIO \quad (14)$$

The error correction terms for the LFDI and LGDP vectors are -0.105 and -0.934 respectively. Since, both error correction terms are between 0 and -2 and statistically significant, the estimated relationships are stable dynamically.

¹⁴Enders (2004) argues that the maximal eigenvalue statistic is more appropriate in small sample sizes.

Our focus is on equation 13 which explains the determination of FDI. In line with the predictions of the portfolio diversification literature, RISK has a negative and statistically significant coefficient with an implied elasticity of -3.01. This implies that a 1% increase in the domestic risk, measured by the South African-American sovereign spread leads to a 2.31% decrease in FDI stocks. LPROPERT has a positive statistically significant elasticity of 1.64 showing that an improvement in the ratings of the status of formal property rights in South Africa leads to an increase in FDI. The results confirm that secure property rights and low domestic risk tend to increase the absolute volumes of FDI to South Africa. These findings are consistent with those of Faria and Mauro (2004) who established that institutional quality measured by the average of the Kaufmann *et al* (2003) governance indicators has a positive and significant effect on FDI for a number of emerging economies including, South Africa and those of Fedderke and Romm (2006) who obtained a positive relationship between FDI and property rights for South Africa for the period 1956 to 2003.

Consistent with earlier studies, GDP has a positive elasticity of 1.57 supporting the market size hypothesis which predicts that longterm FDI is attracted to countries with substantial market sizes. Trade openness also has a positive and significant impact on FDI. In the GDP equation shown in equation 14, it is evident that there exist feedback effects from FDI to GDP with an implied elasticity of 0.06. This supports the argument by Borensztein *et al* (1998) that FDI has some productivity-enhancing effects in the host country.

In model C, we include the *de jure* property rights index for Zimbabwe, LPROPERTZ, as an explanatory variable for FDI stocks in South Africa in order to test if there are any neighborhood effects on South Africa originating from Zimbabwe. *A priori*, we expected that secure property rights in Zimbabwe would have a positive spill-over effect on FDI in South Africa. It is evident that there is a negative and significant relationship between FDI stocks in South Africa and the property rights index for Zimbabwe with an implied elasticity of -1.06. Since the property rights index for Zimbabwe assigns higher values for more secure property rights, the negative sign shows that worsening (improving) property rights in Zimbabwe will increase (decrease) the stocks of FDI in South Africa. Although this result contradicts our *a priori* expectations, there is a plausible explanation. A probable explanation for this finding is that Zimbabwe and South Africa compete for foreign investment and present two alternative investment destinations to foreign investors who are interested in investing in Southern Africa. As property rights in Zimbabwe worsen, investors may decide to relocate to a safer investment destination in South Africa.

In the GDP vector, all the variables maintain their signs as in the baseline model. An important point is that LPROPERTZ has a negative effect on LRGDP with an implied elasticity of -0.11. This suggests that as property rights improve (worsen) in Zimbabwe, the level of GDP in South Africa falls (increases).

From the above empirical results we can conclude that domestic risk in the host country negatively affects FDI and while secure property rights have a positive impact on FDI. Contrary to our expectation, weak property rights in Zimbabwe will lead to an increase in the absolute levels of FDI in South Africa. Another

important finding is the existence of feedback effects from FDI to GDP.

We now examine the impact of institutional quality (property rights), domestic risk and neighborhood effects on the absolute volume of portfolio investment stocks. The results are presented in Table 6.

Insert table 6 about here]

We choose the model in column A as our baseline model and is represented by the following equilibrium relationship

$$LPI = 4.67LRGDP_t - 2.13RISK_t + 1.41LPROPERT_t + 0.13RTBR_t + 3.57LCREDIT \quad (15)$$

(5.99)
(1.51)
(2.54)
(1.86)
(2.94)

The error correction term for the above relation is -0.159 and suggests that estimated relationship is dynamically stable. Although RISK has a marginal statistical significance, the negative elasticity of -2.13 suggest that portfolio investment is discouraged by increasing levels of domestic risk. Consistent with the portfolio diversification literature, LPROPERT has a positive and statistically significant elasticity of 1.41. The other control variables, GDP denoted by LRGDP, the real Treasury Bill rate denoted by RTBR and the financial sector development denoted by CREDIT all have a positive statistically significant effect on portfolio investment stocks in line with our *a priori* expectations. Unlike the case of FDI, we do not control for the labour costs and trade openness because these explanatory variables are generally not viewed as theoretically relevant for the determination of portfolio investment. Although LPROPERTZ is marginally significant, it has a positive effect on the portfolio investment stocks in South Africa suggesting that as property rights in Zimbabwe improve (worsen), the portfolio investment stocks in South Africa increase (decrease). Poor property rights in Zimbabwe in this case have a negative spill-over effect on portfolio investment in South Africa. This contrasts our earlier finding for FDI where it was shown that poor property rights in Zimbabwe lead to an increase the absolute level of FDI in South Africa.

The differences of the impact of neighborhood effects on FDI and portfolio investment could be explained by the different time horizons of FDI and portfolio investment. On the one hand, FDI tends to be long term in nature. Thus, when the property rights in Zimbabwe deteriorate, South Africa may receive more FDI as long-term direct investors relocate their investment from Zimbabwe to South Africa. This allows the long-term foreign investors to continue having access to resources and markets in the Southern African region. On the other hand, portfolio investment is generally short-term. As such, when property rights in Zimbabwe deteriorate, short-term foreign investors may disinvest or stop new investments in South Africa due to fear of contagion.

Thus far we have established the impact of institutional quality (property rights), domestic risk and neighborhood effects on the absolute volumes of FDI and portfolio investment stocks. We now turn to the question of how institutional quality, domestic risk and neighborhood effects impact on the composition of foreign capital stocks in South Africa. Table 7 reports the results for the FDI-share model.

[Insert table 7 about here]

The baseline model in column A is represented in the following equation

$$LFDISHARE = 1.17LRGDP_t - 0.94RISK_t + 0.15LPROPERT_t + 2.19OPEN - 0.03RTBR_t + 0.15LCREDIT$$

(4.99) (4.87) (1.71) (3.04) (3.45) (1.71)

(16)

It is evident that from the error correction terms that the relationship is dynamically stable. The results show that RISK has a negative and statistically significant effect on the relative share of FDI in total foreign capital stocks with an elasticity of -0.94. This implies that, as domestic risk in South Africa increases, the relative share of FDI in total foreign capital stocks decreases. Although the property rights index is marginally significant, its positive sign suggests that, an improvement of property rights in South Africa will lead to an increase in the relative share of FDI in total foreign capital stocks.

The findings suggest that domestic risk and institutional inefficiency reduce the relative share of FDI in total foreign capital stocks. This contradicts the θ -hypothesis suggested by Albuquerque (2003) which postulates that poor institutional quality and domestic risk increase the relative share of FDI in total foreign capital stocks due to the risk-sharing advantage of FDI. Instead, the results are in line with an alternative hypothesis suggested by Faria and Mauro (2004) who argue that FDI in the capital-intensive and natural resource sectors is not inalienable thus fully appropriable leading to a relationship where domestic risk and institutional inefficiency reduce the relative share of FDI in total foreign capital stocks.

A possible explanation for our empirical finding is that FDI in South Africa is concentrated in the natural resource and /or capital-intensive sectors where the host country can expropriate foreign investment easily. When property rights and the institutional environment weaken under such circumstances, foreign investors tend to shift their investment away from FDI to other forms of foreign capital, thus reducing the relative share of FDI in total foreign capital stocks. In the short-run, RISK and LPROPERT are statistically insignificant as shown in the lower panel of table 4.9 in column A. This shows that the θ -hypothesis is not satisfied in the short-run.

These results confirm those of Ahmed *et al* (2005) who found that the institutional quality measured by the ICRG index of law and order positively affects the relative share of FDI in total foreign capital inflows for a group of 81 developing countries, including South Africa. Ahmed *et al* (2005) suggested that their findings could be explained by the concentration of FDI in the natural resources and human capital-intensive sectors where FDI is not inalienable.

The other control variables have plausible elasticities that are consistent with earlier empirical literature. LRGDP, OPEN and LCREDIT have a positive and statistically significant effect on LFDISHARE. This shows that as national income, trade openness and financial sector development improve, the share of FDI in

total foreign capital stocks goes up. The variable RTBR has a negative effect on LFDISHARE. This shows that short-term interest rates reduce the relative share of FDI in total foreign capital stocks. These results are in line with the earlier findings of Lane and Milesi (2001a, 2001b), Albuquerque (2003) and Ahmed *et al* (2005).

Model C shows that LPROPERTZ has a negative statistically significant effect on LFDISHARE. This implies that, as property right worsen (improve) in Zimbabwe, the share of FDI in total foreign capital stocks in South Africa increases (decreases) and this can be explained by the impact of neighbourhood effects on the absolute volumes of FDI and portfolio investment. It was established that deteriorating property rights in Zimbabwe increase the absolute levels of FDI but reduce the absolute levels of portfolio investment in South Africa. As such, deteriorating property rights in Zimbabwe will lead to an increase in the relative share of FDI in total foreign capital stocks.

8 Conclusion

The aim of the paper was to investigate the impact of institutional quality (property rights), domestic risk and the neighbourhood effects on the absolute volumes of FDI and portfolio investment as well as the composition of foreign capital stocks in South Africa for the period 1960 to 2005. The paper contributes several important insights. The first point is that domestic risk which is a combination of default risk and currency risk negatively affects the absolute levels of FDI and portfolio investment and that institutional quality, proxied by an index of *de jure* property rights for South Africa, positively affects the absolute levels of FDI and portfolio investment stocks. These results are consistent with our *a priori* expectations that an environment characterised by high quality institutions and low domestic risk is conducive for all forms of foreign capital.

The second point is concerned with the effect of domestic risk and property rights on the relative share of FDI in total foreign capital stocks. In contrast to the θ -hypothesis, we found that domestic risk and institutional weaknesses reduce the relative share of FDI in total foreign capital stocks. A likely interpretation is that in the long-run, FDI in South Africa is not inalienable and a reduction in the relative share of FDI in total foreign capital stocks is not an indication of increasing institutional efficiency. This result could be explained by the concentration of FDI in the natural resources extraction and/or capital-intensive sectors where the host country government and/or political elite can easily expropriate foreign capital.

From the above we can conclude that while good institutions (secure property rights) and low domestic risk increase the absolute volumes of both FDI and portfolio investment, the compositional effect is to create an external capital structure biased towards FDI. These results tend to support the notion that middle income countries such as South Africa should focus on attracting more FDI relative to other foreign capital such as international loans and portfolio investment. For the South African government, the results suggests

that to change the current composition of foreign liabilities, which is biased towards portfolio investment, the government should implement policies that ensure low domestic risk (both default and currency) and secure property rights. The same policy recommendation was made by Ahmed *et al* (2001) for a group of 81 countries, including South Africa. In addition, secure property rights and low domestic risk will not only increase the relative share of FDI in total foreign capital stocks but it will also increase the absolute levels FDI and portfolio investment.

The third issue is concerned with the neighbourhood effects, captured by including the *de jure* property rights index for Zimbabwe as an explanatory variable for foreign capital stocks in South Africa. In contrast to our expectation, it was found that deteriorating property rights in Zimbabwe will lead to an increase in the absolute levels of FDI stocks as well as the relative share of FDI in total foreign investment stocks in South Africa. A plausible explanation for this finding is that Zimbabwe and South Africa present alternative destinations to foreign investors interested in investing in the Southern African region. Therefore, deteriorating property rights in Zimbabwe may induce foreign direct investors to relocate their investment from Zimbabwe to South Africa. However, in the case of the short-term portfolio investment, it was shown that there is a positive relationship between the *de jure* property rights index for Zimbabwe and portfolio investment stocks for South Africa. This implies that deteriorating property rights in Zimbabwe will lead to a decrease in the portfolio investment stocks in South Africa. This outcome suggest that while South Africa and Zimbabwe could compete for long-term foreign capital, the two countries should cooperate with each other in ensuring a sound institutional environment conducive to all forms of foreign capital.

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