Profiling Sectoral Risks of Foreign Direct Investment in Africa

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Abstract
 Despite Africa’s exceptional FDI performance during the past decade, the majority of FDI inflows have been directed to a few selected countries. As investors face many risks when investing in developing countries, it is argued that risk perception plays a vital role in the FDI inflows into Africa. This article focuses on the relationship between risk and FDI. A structural equation model is used to analyse this relationship with a dataset of ten risk categories and FDI data from 42 African countries. The study focuses on four sectors, namely metals, automotive, communications and real estate. Overall, results indicate that government effectiveness and legal and regulatory risks produce the biggest concern for investors. The conclusion is that each sector has different risk patterns regarding FDI. The empirical results imply that if African countries need to focus on government effectiveness, stability and transparency to attract the levels of FDI required to stimulate economic growth.

1 Introduction

According to the African Economic Outlook (2010), foreign direct investment (FDI) is seen as a major source of growth as it raises productivity for the whole economy by spreading its effects to other firms and sectors through technology spillovers and increased competition. Since FDI plays a vital role in the promotion of economic development for developing countries, it is extremely important to evaluate how various types of risk influence the investment decision. This article focuses specifically on the sectoral risk determinants for various African countries.

The past decade has seen a remarkable increase in FDI to developing countries, as they attracted US$785 billion from 2000 to 2008. At the forefront of the investment trend is the South East Asian (SEA) region, which received 60 percent of global FDI inflows in 2009. Even with improved performance, Africa received a mere 11 percent (UNCTAD, 2010) of global FDI inflows during 2009. Despite an annual growth rate of 4.9 percent between 2000 and 2008 (McKinsey Global Institute, 2010), and several efforts of African countries to increase FDI
inflows, it is clear that Africa is only just managing to keep up with developments seen in other developing regions. Africa’s progress has been inconsistent and lags behind other areas of growth across the world. Chinese investment in Africa is widespread, with 45 of the 53 African nations receiving FDI from China between 2003 and 2008 (UNCTAD, 2007). While traditional investors focused on investment in North Africa, Chinese FDI to Africa was mostly concentrated in Southern and East Africa. It is also interesting to note that the approach of Chinese firms to doing business in Africa differs substantially from the dominant Western approach. The most significant aspect being that Chinese firms are less risk averse and also undertake the building of infrastructure in return for access to various natural resources, such as oil and other minerals (Sautman & Yan, 2009).

The much debated presence of emerging countries, such as China, in Africa has caused a stir with traditional investors, with many countries rethinking their approach of FDI to Africa. According to Asiedu (2006), traditional determinants, such as good policies and institutions, are known to be the foundation of attracting FDI to Africa; however, a different approach is needed if Western countries want to keep up with China.

A major aspect of the Western approach to FDI in Africa is their reliance on various credit risk-rating agencies to evaluate the country credit risks according to the financial indicators, balance of payments sheet and other macro-economic indicators. According to Brink (2004), such ratings are often used as a reflection of the overall investment climate of a certain country and not that of a credit rating, the purpose it was designed to fulfil. Country ratings are then mistakenly used for purposes other than those for which they were actually intended. This study aims to review the approach to the determinants and associated risks for FDI, specifically in Africa.

There are certain determinants that influence the decision of firms to engage in FDI. Narrowing it further, certain key determinants prevail in Africa. Previous literature indicates that the most significant determinants to Africa are openness to trade, inflation, foreign reserves, natural resource endowments, political freedom and original literacy (Asiedu, 2002; Onyeiwu & Shretsha, 2004; Naude & Krugell, 2007).

The importance of sectoral determinants and risks regarding the FDI decision is highlighted by Hauser (2005). When confronted with the FDI decision, a firm will either enter the market via a Greenfield investment or by merging with an existing firm. The level of uncertainty or risk and technological advances of the firm offers an explanation as to why one mode is preferred above the other. Hauser (2005) then argues that different types of investments are made in different sectors and emphasises this with a study conducted on German and Austrian FDI. He draws the conclusion that investors engaged in the power supply and mining sectors are likely to enter the market by an acquisition (merger) of an existing firm. Firms investing in the manufacturing or services

\footnote{Greenfield FDI entails a new venture that require new operational facilities to be established (Investopedia, 2013)}
sectors will enter the market via a Greenfield investment due to the mentioned differences.

Since developing countries have been attracting a substantial amount of FDI inflows, which is beneficial for their economic growth and development, it is vital to understand how risks of various types act as constraints to flows of such investment.

According to White and Fan (2006), different levels of risks exist for different countries, sectors and industries. A firm will engage in FDI if the given level of risk is acceptable. The most relevant risks are global risk, country risk, industry risk and enterprise risk. It is important to take into account that there is a considerable level of overlap between the levels of risk and different types of risk in order to quantify these risks in an empirical evaluation.

It is clear that the way in which risk is perceived is a significant determinant of FDI. It is therefore important for investors to identify, estimate and assess the relevant risk in order to make an appropriate decision regarding FDI. Risks can be classified in numerous ways, each reflecting a particular focus of interest. In this article, risk will be classified to fit the research question, which is how FDI is influenced by sectoral risks.

The rest of this article is organised as follows. Section 2 presents the background and provides a literature overview of the study. The research methods are presented in section 3. Results and findings are provided in section 4. Conclusions and recommendations are discussed in the final section.

2 Background

2.1 Africa-specific determinants

The past decade has seen a substantial increase in FDI in developing countries and while Africa did not initially benefit from the boom, the picture is starting to change. McKinsey (2010) highlights the continent’s achievement in his paper; ‘Lions on the move: the progress and potential of African economies’. In 2008, Africa had a collective GDP of US$1.6 trillion, there were 316 million new mobile users since 2000, 52 cities with more than one million people each and the continent was home to 60 percent of the world’s uncultivated arable land. Although the region has rebounded well from the global economic and financial crisis, the path to recovery was hampered by the image of uncertainty and instability in the political arena (Goldstein, 2004). The political turmoil of North Africa, most notably that of Libya and the Ivory Coast, is an illustration of how economies are brought to a halt if political instability reigns in a country. Goldstein (2004) supports this view by stating that Africa’s perceived risk is a factor that negatively influences FDI to the region.

Asiedu (2001) is of the opinion that another reason for the futile FDI flows into Africa is because of the continent’s approach to attracting FDI. She argues that policies implemented in other developing regions have not been successful in Africa. This suggests that Africa has a different set of factors that deter-
mine FDI inflows. While a high return on capital and sufficient infrastructure in developing countries are necessary to attract FDI, these determinants are not significant for Africa. Openness to trade seems to be important for both developing countries as well as the African region.

Ngowi (2001) found that FDI to African countries is influenced by a number of significant determinants. These determinants include human capital, openness to trade, competitiveness, macroeconomic indicators, political stability, transparent financial markets and natural resources.

Morisset (2000) found that a striking investment environment attracts more FDI in African countries than a large market or natural resource endowments. Liberal investment policies along with strong growth now become important determinants for African countries.

Like Goldstein (2004), Jenkins and Thomas (2002) also state that low FDI into Africa is attributable to an “African perception”. The authors conclude that sound economic policies and political stability will improve FDI to the region. According to Naudé and Krugell (2003), FDI inflows to Africa generally depend on inflation, good governance, investment, government consumption and literacy.

In another study conducted by Asiedu (2006), it was established that policies to improve economic stability, the availability of natural resources and the size of the domestic market are important factors for attracting FDI. Onyeiwa and Shrestha (2004) indicate that the inflation rate, economic growth, foreign reserves, openness and natural resources play a significant role in African countries’ ability in promoting FDI. Contrary to other studies, the authors conclude that political rights and infrastructure do not have an impact on FDI inflows.

In summary, the literature identifies the key FDI determinants to Africa as openness to trade, inflation, natural resource endowments, political freedom, original literacy and the implementation of economic policies.

From the preceding discussions it can be concluded that although traditional FDI determinants are present in Africa, the effect is less significant than in developing countries. A lack of significance is contributed to various factors, such as slow economic reform, closed trade policies and most importantly, the perceived image of Africa that is a result of an unstable political arena.

2.2 Sectoral determinants for FDI in developing countries

Though the literature on FDI in general is rich, research regarding the determinants on sectoral level is limited. Previous studies on the sectoral level exist for developing countries and will be investigated to establish a framework for Africa.

Blackman and Wu (2002) conducted a study on the determinants of FDI in the Chinese power sector. They found that government policies, the approval process for FDI projects, regulatory environment and the risk of default on power purchase contracts are the most important institutional barriers.

According to Tsan (2005), good education, an established infrastructure, a large market and a healthy current account balance are vital determinants
for attracting FDI to Malaysia’s manufacturing sector. Similarly, Dhanini and Hasnain (2002) found that, in the Indonesian manufacturing sector, low labour costs, good education, adequate infrastructure and policies promoting FDI are key factors for attracting FDI.

Kolstad and Villanger (2008) established the determinants of FDI for the services industry by using industry-level FDI data from 57 countries. The authors found institutional quality and democracy to be more important determinants than investment risk and political stability. Democracy is a significant determinant in developing countries, while institutional quality is important for high-income countries. They also concluded that service FDI is market seeking and is not affected by trade openness.

Riedl (2009) conducted a study based on FDI data for eight new EU member states (transition economies). He also found that FDI into the services sector is market seeking, while FDI in the manufacturing sector is driven by international competitiveness measured by labour costs.

Resmini (2000) conducted a study for the Central and Eastern European countries (CEEC) to determine the FDI patterns in several sectors. Her findings show that FDI inflows for the science-based and capital-intensive sectors are influenced by the host country’s progress towards a market economy. Trade openness seems to be only significant in traditional sectors and the proximity to Western Europe particularly influences FDI inflows for the science-based and capital-intensive sectors.

As stated earlier, literature regarding the determinants for sectoral level is not only limited, but it differs in terms of methods used, sample size, periods covered and variables used. In general, literature suggests that there seems to be different determinants for various sectors.

2.3 Aspects of risk theory focused on the FDI decision

Despite challenges such as the global financial crisis in 2008/2009 and, more recently, the political upheaval in North Africa, the African continent was a growth hotspot in 2011 with a 24 percent increase in FDI projects (FDI Intelligence, 2012). Even with obstacles such as inadequate infrastructure, corruption and conflict, investors remain hopeful of an African rebirth (Creamer, 2012). Foreign investors are confronted with a certain ‘African-image’ of instability and uncertainty. Goldstein (2004) finds that Africa’s perceived risk negatively influences FDI inflows. This follows Ernst and Young’s (2012) opinion that the perception gap hampers investment from those who are not yet doing business in Africa.

Despite the gap between its actual and perceived risk, Africa also presents opportunities for those willing to invest, with the continent being home to six of the ten fastest-growing economies over the last decade (Creamer, 2012).

This forces us to re-evaluate the way we perceive risk and to carefully evaluate the manner in which risk influences the investment decision. Subsequently, investment in Africa and its associated risks will need to be viewed through a completely different lens.
2.4 Literature review of studies pertaining to sectoral risks

White and Fan (2006) are of the opinion that risk differs significantly by country, sector and industry. Since FDI inflows to the African region have increased substantially, it is important to understand how various risks constrain investments. Furthermore, an MNC will only invest if the level of risk is acceptable. Drawing from this, it is clear that risk perception plays a major part in investment decisions.

According to Bilmelli (2010), the biggest challenge her business faces is the perception that their clients have of Africa. She goes on to explain that Africa has the largest gap between perceived and actual investment risk when compared to other emerging countries (Ernst & Young, 2011). In order to minimise this gap, a thorough understanding of both perception and reality of investment in Africa is needed.

However, literature on the African continent is limited. Studies conducted on other developing countries were investigated in order to create a theoretical framework for Africa.

Using cross-country data for the period 1981 to 1999, Alfaro (2003) studied the benefits of FDI for primary, manufacturing and the services sectors and analysed the growth impact for the host country. The author found that economic growth and other benefits for the host country depend on the sector into which FDI flows.

Resmini (2000) conducted a study on the sectoral determinants of FDI in Central and Eastern Europe. The study used data from 12 host countries over the period 1990 to 1995 and focused on the manufacturing sector. The author explains that the observations have been divided into homogenous sectors, i.e. scale intensive, high-tech and traditional in order to establish the differences and similarities between industrial sectors. Although data are limited, Resmini (2000) concludes that the results indicate that sector-specific risks can affect FDI distribution of European firms in the manufacturing sector.

Kolstad and Villanger (2008) used panel data to examine the determinants of FDI flows in the services sector. The study was conducted using data from 57 countries including developed, transition and developing countries, for the period 1989 to 2000. The authors conclude that institutional quality, democracy, and market size are significant determinants. Services, being non-tradable, are unaffected by a host country’s trade openness.

Kinoshita’s (2011) results indicate that market size, infrastructure, trade integration and a skilled labour force contribute to more FDI in the tradable sectors. The author used data from 15 Central Eastern and South-eastern European countries over the period 2000 to 2007 to determine whether FDI inflows to non-tradable sectors contributed to external balances.

Walsh and Yu (2010) analysed various determinants for emerging and developed economies using a dataset that distinguishes between primary, secondary and tertiary sector FDI flows. The authors found that second and tertiary sectors are influenced in different ways by country income levels, exchange rate valuation, financial depth, school enrolment, judicial independence and labour
market conditions. The primary sector showed little dependence on the above-
mentioned determinants.

In a study conducted on the perception risk of renewable energy in North
Africa, the authors found that the barriers to FDI in this sector are regulatory,
political and force majeure (which includes terrorism). Various stakeholders
were interviewed to assess how perceived risk influences investment in renewable
energy projects in North Africa (Komendantova, et al., 2012). The authors
concluded that in order for the region to attract more FDI, more attention
should be paid to a stable enforceable regulatory environment.

2.5 Sectoral trends in Africa

The next section provides a brief discussion on the sectoral trends in Africa for
Greenfield as well as M&A investments.

Metal was chosen to represent the primary sector, the automotive industry
will represent the manufacturing sector and communications will represent the
services sector. Large-scale projects were undertaken in the real estate sector
and this will be a representation of the primary, manufacturing and services
combined. Though this approach might be considered somewhat arbitrary, the
data do not allow for further disambiguation.

Ernst and Young’s Africa Attractiveness Survey (2011) on FDI projects in
Africa indicates that the region is high on the agenda of global investors, with
43 percent of respondents already investing in Africa. When confronted with
the FDI decision, a firm will either enter the market via a Greenfield invest-
ment or by merging with an existing firm. The level of uncertainty or risk and
technological advances of the firm offer an explanation as to why one mode is
preferred above the other (Hauser, 2005).

UNCTAD (2012) cited that cross-border M&As increased by 53 percent in
2011 to US$526 billion, driven by a rise in the number of projects. While higher
levels of FDI inflows to developing and transition economies can be attributed
to Greenfield investments, the growth in developed regions is spurred on by
large M&A projects. Greenfield investment projects were responsible for US$904
billion in 2011 and continue to retain a significantly higher level than M&As, as
has been the case since the financial crisis (UNCTAD, 2012).

Figure 4.7 shows that the number of real estate projects surpasses the num-
ber of any of the other projects in the sectors that were studied, because the deals
tend to be quite significant. Real estate projects are also more volatile, closely
following the trend of global FDI flows, peaking and dropping at correspond-
ing times. Communications experienced very low levels since 2003; nonetheless,
inflows into this sector peaked at US$8 billion in 2009. The boom in communica-
tions can be attributed to the increased FDI inflows experienced by Africa as
a continent due to higher growth rates. Greenfield investment projects for met-
als have fluctuated around an average of US$2 billion maximum and US$1 billion
minimum for the past eight years. According to Ernst and Young (2012), the
volatility and uncertainty regarding the global economy will continue through
2012, but the metal industry has an appetite for growth and there will be an
increase in projects. The Automotive sector has not had the same levels of investment as the other three sectors, but a steady increase can be noted from 2009.

Upon closer investigation of the fDi Markets Database, the following can be concluded regarding Africa’s real estate sector. The North African region accounts for the top half of the countries attracting investment. Djibouti, Sudan and the Congo (DRC) also receive a number of projects. Source countries are mainly located in the Middle East (UAE, Bahrain, Qatar), but China is also making headway. Switzerland and Luxembourg make up the rear of the top investors, with nine projects each, mostly across North Africa.

Leading the way in the communications sector from 2003 to 2011 were the United Arab Emirates (UAE), France, the UK, South Africa, China and Finland with investment projects in Nigeria, South Africa, Uganda, Zimbabwe, Mauritius and Ethiopia (fDi Markets, 2012). The main companies include the MTN Group, SEACOM, Zain and Vodafone. The Finnish company, Nokia, has several projects in Africa with projects based in Egypt, Uganda, Nigeria and Ghana.

Greenfield Metal’s investment projects during 2003 to 2011 were aimed at South Africa, Ghana, Congo (DRC), Namibia and Niger. Source countries comprise Canada, Australia, the USA, the UK, China, and the UAE. Luxembourg and Israel stood out with ArcelorMittal and EngeInvest as the respective companies undertaking investment projects (fDi Markets, 2012).

In the automotive industry, South Africa, Ethiopia, Sudan, Senegal and several North African countries served as destination countries. An interesting surprise was source country Iran, with several projects in Algeria, Egypt, Senegal and Sudan. Top companies investing included Nissan, China Motor Corporation, BMW, Iran Khodro Industrial Group (IKCO) and Tata.

Figure 2 shows a sectoral distribution of M&As in Africa during 2003 to 2011. It is striking that the real estate and communication sectors have had similar trends up until 2008. Much like Greenfield investment, M&A investment for the metal sector has fluctuated heavily, with a recent downward trend noted, which is in stark contrast to the upward trend for Greenfield projects. Similarly, the automotive sector has attracted significantly lower levels than that of the other sectors for both Greenfield and M&As.

Using Bureau van Dijk’s (2012) Zephyr database, M&A projects were analysed. Yet again, the North African region plays a prominent role as investment destination for real estate. An astonishing find was that Zimbabwe is an important destination as well as a source country. The Zimbabwean-owned Pearl Properties has one of the largest M&A projects in Africa with a project value of US$4.329 billion. The project offers the management of real estate on a fee or contract basis and is based in South Africa. Other source countries include Switzerland, South Africa, Virgin Islands and Ecuador.

M&A investment projects in the communication sector display similar destination countries as Greenfield investments, but unexpectedly include Sudan, Mali and Burkina Faso. The Netherlands, Nigeria, Egypt, the UK and France are the top source countries. The top investing companies comprise the French
company Vivendi, Vodafone Group Plc (UK) and Tecom Investments, which is based in the UAE.

Investment projects into the metal sectors were also aimed at South Africa, Ghana, DRC, Namibia and Egypt similar to the Greenfield projects. Brazil made a sizeable investment in Guinea in 2010; Korea undertook a mining investment in the mining of other non-ferrous metal ores in 2006 in Madagascar; and Bermuda has various mining projects across the African continent.

Drawing on previous literature and comparing it to the data discussed, it is evident that FDI to Africa is on the increase with mostly developed countries as the main source of investment. Having said this, it is noteworthy to mention that there are several developing countries that have started to play a part, including the likes of China, South Africa, India, Nigeria and Brazil.

3 Method

3.1 Risk rating and FDI inflows: Description of data

The Financial Times “DiMarkets” database is the only database that has specific sectoral and industry information on FDI, especially for the African continent (Ernst & Young, 2012). Data is available on a deal-by-deal basis and we use the period 2003 to 2012. This level of data, combined with the reality of African data requires a different approach. Not all African countries receive FDI in every sector every year. Therefore if viewed as a time series there will be “holes” in the data that will generate to many missing values if standard econometric techniques are used. Therefore we look at the data from an observation-based population perspective rather than from a time series perspective.

To provide a scope of the different risks pertaining to international transactions, data from the Economist Intelligence Unit (EIU) were analysed. In the analysis of the EIU, the ten aggregated risk indices were used, i.e. financial, foreign trade and payments, government effectiveness, infrastructure, labour market, legal and regulatory, macroeconomic, and political stability risk. These indices are aggregate indices that contain detailed information on all operational risk aspects. Table 1 gives a brief overview of the breakdown of the EIU indices.

EIU data is available for 44 African countries from 2006 and for 22 from 2003. This limitation further hampers the analysis as countries for which no data exists are excluded from the analysis. Due to the limited availability of suitable data, countries excluded from the empirical study include Congo (DRC), Liberia, Sierra Leone, Djibouti, Comoros, Guinea Bissau, Somalia, Mauritania, Mali, Central African Republic and Niger.

Many arguments can be made about how this affects the study and the outcome. We however contend that just because certain data does not currently exist does not mean that no analysis is possible. Africa cannot wait ten years for adequate data to solve its current needs. A thorough scientific approach on the data that is available will provide an indication of possible trends and form the foundation of future work in this area. Interpretation of the results is
however limited due to the data limitations.

4 Specification

4.1 General specification

Standard econometric techniques are not adequate to accommodate the data limitations discussed in FDI in country/sector-specific sets. We therefore use Structural Equation Models (SEMs) to answer the research question of which risk factors are significant for FDI in Africa in the sectors of Automotive, Communication, Mining and Real Estate.

In order to determine the correlation between risk and FDI, the sample population used is all the Greenfield FDI deals for the four sectors. Instead of using annual data, this study focuses on the information per FDI deal. The value of investment projects into different sectors was measured against risk ratings. The study therefore investigates whether the various risk category factors have an influence on the inflows of FDI to African countries by firstly doing a factor analysis on the Risk factors in the population of deals and then regressing the unobserved risk variable on the value of FDI.

4.2 Structural Equation Modelling

Structural Equation Modelling (SEM) is a general statistical modelling technique used to establish relationships among variables. SEM is widely used in social sciences and results in many different opinions and criteria for acceptability. It is regarded as a confirmatory technique in that it tests models that are conceptually derived beforehand. Consequently, SEM allows for the testing of theoretical specification and is therefore theory driven and not data driven like normal regression. SEM is a combination of factor analysis and a series of multiple regressions. In this sense, SEM allows for the simultaneous testing of both the measurement model as well as the structural relationships in the model. The measurement model specifies the relationships between variables and factors (Arbuckle, 2011).

The reason why SEM is used as opposed to other multiple regression, lies in the fact that factors/variables can be correlated (as theory states they are), which cannot be done in single regression analysis. Another advantage is that SEM allows for multiple dependent variables, whereas single regression analysis is restricted to the use of only a single dependent variable. The subgroup ability allows for the determination of the relationships between variables. Via the interpretation of the measurement models, the extent to which the theory is supported by the data, is examined.

The measure of the degree of fit of the models that are used are important. The two main classes of model fit indices are the Absolute Fit and the Relevant Fit indices. Within these two classes, there are several indices that are used in SEM literature. A brief discussion of the main types will follow.
The Absolute Fit indices describe the ability of the model to reproduce the covariance matrices. It is critical to examine the model fit indices as they are useful to test certain hypotheses, especially those involved in the comparison of different models evaluated with the same data. The types of indices associated with the Absolute Fit comprise model chi-square ($x^2$), the minimum discrepancy for the model based on chi-square (CMIN), root mean squared error of approximation (RMSEA) and goodness of fit (GFI). These indices provide a clear perspective on the ability of a model to duplicate the covariance matrices. Two models are compared by evaluating absolute fit as well as relative fit. Relative fit of the model is established by comparing the theoretical model and the baseline model. Baseline model has a standard specification with the assumption that no relationships exist among the variables. The relative fit of the model will indicate if the estimated model is a better one than one with no correlation between variables.

The model chi-square tests the hypothesis that the observed and implied covariance matrices are equal. A non-significant chi-square value ($p>0.5$) will indicate a good-fitting model. It suggests that there are few discrepancies between the observed and implied covariance matrices. The RMSEA looks at the average size of residuals; therefore, smaller values indicate a better-fitting model. Values that are less than 0.10 indicate an acceptable fit, whereas values less than 0.05 indicate a good-fitting model (Arbuckle, 2011).

The second classes of model fit indices are that of relative fit indices. These indices compare a theoretical model with a baseline model. The baseline model specifically considers a model with no relationships among variables. Therefore, these fit indices determine whether the model specified is better than a model where there are no relationships between variables. The most commonly reported relative indices are that of Normed Fit Index (NFI), Incremental Fit Index (IFI), the Comparative Fit Index (CFI), Bolen’s Relative Fit Index (RFI) and its derivative the Tucker-Lewis Coefficient (TLI). For all three of these fit indices, their values will range from 0 to 1 and generally those values that are greater than 0, 9 would suggest a good-fitting model.

### 4.3 Model specification

Three different types of SEM specifications exist; these are Confirmatory Factor Analysis (CFA), path analysis were observed variables are used, and path analysis were unobserved (latent) variables are used. This study uses the CFA method due to its more deductive nature. It follows a more logical approach due to its bottom-up strategy which indicates that the conclusions are reached empirically. A top-down approach will alternately be where a conclusion is derived beforehand, based on theory. The SEM is estimated based on the theoretical model of the risk factors that have an influence on FDI. The sectoral model forms the empirical part, and depending on the goodness of model fit, conclusions are made based on the empirical results (Arbuckle, 2011).

Figure 3 shows the graphical SPSS Amos specification of the model. The different risk categories are used as observed variable which constitutes the
factors of the unobserved risk variable (latent variable) that is regressed against FDI. A combination of factor analysis and regression is used to test the model using SPSS Amos.

5 Results

In Table 2, the high CMIN values and low NFI and IFI values indicate that the various sectors are significantly different and that it is better to fit a separate model for each sector rather than using a general model under which each sector can have a nested model.

In Table 2, the high CMIN values and low NFI and IFI values indicate that the various sectors are significantly different and that it is better to fit a separate model for each sector rather than using a general model under which each sector can have a nested model.

5.1 Sector comparison

Three of the measurement models show an insignificant relation between risk and FDI. This reveals an insignificant relationship between the risk rating of a country and the FDI amount invested. However, the difference in the results obtained from the different sector models suggests a significant difference regarding the risk profile of investment observations. The underlying covariance and correlation structure of the observation based FDI data allows the FDI figures to influence the risk factors that make up the unobserved risk factor – which is the most significant finding of this study.

Table 3 provides a summarised overview of the estimation results for the different sectors. The results are markedly different from the aggregate model, with the estimation indicating significant and good fit. CMIN/DF is the primary measure of fit. It represents the minimum discrepancy of the model divided by the degrees of freedom. Although there is no set criterion, the general rule is that below five is a “good fit” and below three an “extremely good fit”. All the sectors are below 5 and Automotive and Real Estate are below 3. The NFI, IFI and CFI values as mentioned before should be close to one. In all cases they are above 0.95. For the Real Estate sector they are above 0.99. These results validate the interpretation of good fit.

The RMSEA values are 0.1 or below and the PCLOSE values (close to exact fit measure) are below 0.05 except for Real Estate. The high value for Real Estate is attributed to population size as this sector has the least amount of observations and the PCLOSE measure is close related to population size.

Table 4 provides a summary of the estimated significant risk factors. The first section of the table lists the significant factors of the unobserved risk variable and their standardized effects. Significance is determined by a result of 0.7 or above. From these results one can conclude that there is a distinctive difference in risk factors for each sector.
The second part of the table is the regression of the unobserved risk variable on FDI. The results are in general insignificant or slightly negative. The FDI variable constitutes the actual dollar value and one can conclude that the actual investment amount is unrelated to risk. The significance in the risk factors in the sample of FDI deals per country per year does however reflect that risk is a significant factor in the decision on whether to invest or not.

The study examined the difference in risk factors for the various sectors against which it was tested. Risk factors shown in Table 4 to be insignificant are the political stability factor, especially for the real estate sector, and in some cases, the infrastructure risk factor. The most significant risks tend to be the legal and regulatory, and government effectiveness factors. It can be concluded that there are different risk patterns regarding the FDI inflows for Africa.

Bearing this in mind, the results presented lead to an interesting conclusion. The conclusion is that certain sectors are influenced by specific risk factors, as is indicated in Table 4. For the automotive industry, the legal and regulatory, financial and government effectiveness risks are the most significant, which is an indication that the sector leans toward being efficiency seeking. Risk to FDI is insignificant for the metals industry and the communication sector. FDI inflows for the metals sector tend to be resource seeking, while FDI inflows for communications are market seeking. The real estate sector is the only sector with an acceptable model fit and a strong covariance is evident between the financial and tax policy risk. This finding reveals the fact that investment into this sector could be asset and investment tax driven.

The study exposed some interesting findings regarding the relationship between risk and FDI in Africa. As more data becomes available, future research will hopefully be able to address the relationship in a much more in-depth manner than has been possible here.

6 Conclusion and recommendations

The objective of this study was to specifically explore on sectoral level the relationship between risk and FDI inflows into various African countries. The intention was to determine, with the help of literature and empirical evidence, the effect of risk-rating factors on FDI inflows into various sectors of the economy and whether the effect of these factors was significant.

This study focused on the African region and posed the question whether a relationship exists between risk and FDI. This study has made four contributions:

- Firstly, it has provided an empirical test of the relationship between risk and FDI inflows. The results indicate that in Africa risk factors differ for the various sectors they were tested against, as set out in Table 3 and Table 4.

- Secondly, a contribution was made to the literature on FDI to African countries. This study also contributed to the relatively small, but growing
literature on sectoral FDI. Very few studies exist that focus on African FDI, let alone sectoral FDI.

• Thirdly, it added to the speculation on the relativity of traditional determinants of FDI to Africa. The results showed that certain sectors are influenced by certain risk factors. It can be concluded that traditional determinants provide the overall framework for an investment decision concerning Africa, but a different approach is needed when investing in specific sectors within these individual countries.

• Fourthly, the results obtained are of interest to African countries looking to attract FDI through favourable investment policies. African governments need to identify and implement sustainable policies in order to strengthen their investment climate and reduce risk. Policies could include the reform of tax incentives and innovative financing schemes such as public-private partnerships.

Recommendations for further research include an expansion on selection of the sectors presented in this study. Research could also be conducted on investment into individual African countries in order to gain an in-depth insight into how risk affects the FDI inflows into particular sectors of specific countries. Country analyses will provide a different insight than the general overview that was used in the study.

As for any study conducted on multiple African countries, the main constraint for this study was the availability of adequate data. Although the situation is changing, with more and more international bodies and private entities collecting more specific data, the need still exists for African governments to produce more detailed and transparent data, especially data concerning M&A projects.

To conclude, the literature review discussed several categories of risks that impact the investment decision, in general and in developing countries in particular. These risks include financial, operational, regulatory and even cultural risks. The study focused particularly on risks associated with investment into the metals, automotive, communications and real estate sectors. The results showed that legal and regulatory and government effectiveness risks cause the biggest concern for investors. This highlights the importance of stable and predictable regulations as well as a transparent and effective government to ensure continuous FDI inflows. There is a need for African governments to identify policies and procedures that can best reduce regulatory risk in order to stimulate investment. Additional efforts to ensure good governance will add to the favourable investment climate. Any progress on reducing these risks could bring benefits for African countries that are looking to increase their levels of FDI.

References


### Table 1: Economist intelligence unit operational risk indicators

<table>
<thead>
<tr>
<th>Financial risk</th>
<th>Government effectiveness risk</th>
<th>Labour market risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devaluation risk</td>
<td>Policy formulation</td>
<td>Trade unions</td>
</tr>
<tr>
<td>Depth of financing</td>
<td>Quality of bureaucracy</td>
<td>Labour strikes</td>
</tr>
<tr>
<td>Access to local markets</td>
<td>Excessive bureaucracy/red-tape</td>
<td>Labour laws</td>
</tr>
<tr>
<td>Marketable debt</td>
<td>Vested interests/cronyism</td>
<td>Skilled labour</td>
</tr>
<tr>
<td>Banking sector health</td>
<td>Corruption</td>
<td>Specialised labour</td>
</tr>
<tr>
<td>Stock market liquidity</td>
<td>Accountability of public officials</td>
<td>Meritocratic remuneration</td>
</tr>
<tr>
<td></td>
<td>Human rights</td>
<td>Freedom of association</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Foreign trade &amp; payments risk</th>
<th>Political stability risk</th>
<th>Security risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trade embargo risk</td>
<td>Social unrest</td>
<td>Armed conflict</td>
</tr>
<tr>
<td>Financial crisis</td>
<td>Orderly transfers</td>
<td>Terrorism</td>
</tr>
<tr>
<td>Discriminatory tariffs</td>
<td>Opposition stance</td>
<td>Violent demonstrations</td>
</tr>
<tr>
<td>Excessive protection</td>
<td>Excessive executive authority</td>
<td>Hostility to foreigners/private property</td>
</tr>
<tr>
<td>Capital account</td>
<td>International tensions</td>
<td>Violent crime</td>
</tr>
<tr>
<td>Current account convertibility</td>
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<td></td>
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<tr>
<td>Capital controls risk</td>
<td></td>
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<table>
<thead>
<tr>
<th>Infrastructure risk</th>
<th>Macroeconomic risk</th>
<th>Legal &amp; regulatory risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port facilities</td>
<td>Exchange rate volatility</td>
<td>Fairness of judicial process</td>
</tr>
<tr>
<td>Air transport facilities</td>
<td>Recession risk</td>
<td>Enforcement of contracts</td>
</tr>
<tr>
<td>Retail and distribution network</td>
<td>Price instability</td>
<td>Speediness of judicial process</td>
</tr>
<tr>
<td>Telephone network</td>
<td>Crowding out</td>
<td>Discrimination against foreign companies</td>
</tr>
<tr>
<td>Road network</td>
<td>Interest rate volatility</td>
<td>Confiscation/expropriation</td>
</tr>
<tr>
<td>Power network</td>
<td></td>
<td>Unfair competitive practices</td>
</tr>
<tr>
<td>Rail network</td>
<td>Tax policy risk</td>
<td>Protection of intellectual property rights</td>
</tr>
<tr>
<td>IT infrastructure</td>
<td>Stable regime</td>
<td>Protection of private property</td>
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<tr>
<td>Discriminatory taxes</td>
<td></td>
<td>Integrity of accounting practices</td>
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<tr>
<td>Level of corporate taxation</td>
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<td>Price controls</td>
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<tr>
<td>Retroactive taxation</td>
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Source: Economist Intelligence Unit (2013)

### Table 2: Estimation results for general model

<table>
<thead>
<tr>
<th>Model</th>
<th>DF</th>
<th>CMIN</th>
<th>p</th>
<th>NFI</th>
<th>IFI</th>
<th>RFI</th>
<th>TLI</th>
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</thead>
<tbody>
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<td>.0</td>
<td>.0</td>
<td>.0</td>
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<td>Measurement intercepts</td>
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<td>.1</td>
<td>.1</td>
<td>.0</td>
<td>.0</td>
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<tr>
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<td>.1</td>
<td>.1</td>
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<td>.0</td>
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<tr>
<td>Measurement residuals</td>
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<td>.4</td>
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<td>.2</td>
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Source: Own Calculations
### Table 3: Summary of SEM estimations for the different sectors

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<thead>
<tr>
<th>Metals</th>
<th>CMIN/DF</th>
<th>NFI Delta1</th>
<th>IFI Delta2</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PCLOSE</th>
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</thead>
<tbody>
<tr>
<td>Default model</td>
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<td>.101</td>
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<table>
<thead>
<tr>
<th>Automotive OEM</th>
<th>CMIN/DF</th>
<th>NFI Delta1</th>
<th>IFI Delta2</th>
<th>CFI</th>
<th>RMSEA</th>
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</thead>
<tbody>
<tr>
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<table>
<thead>
<tr>
<th>Communications</th>
<th>CMIN/DF</th>
<th>NFI Delta1</th>
<th>IFI Delta2</th>
<th>CFI</th>
<th>RMSEA</th>
<th>PCLOSE</th>
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<tbody>
<tr>
<td>Default model</td>
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<td>.976</td>
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<table>
<thead>
<tr>
<th>Real Estate</th>
<th>CMIN/DF</th>
<th>NFI Delta1</th>
<th>IFI Delta2</th>
<th>CFI</th>
<th>RMSEA</th>
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<tbody>
<tr>
<td>Default model</td>
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</table>

Source: Own Calculations

### Table 4: Significant risk factors

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<tr>
<th>Significant risks</th>
<th>Metals</th>
<th>Automotive</th>
<th>Communication</th>
<th>Real estate</th>
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<tr>
<td>Legal and regulatory *(0.93)</td>
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<tr>
<td>Foreign trade and payments *(0.80)</td>
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<tr>
<td>Infrastructure *(0.77)</td>
<td>Infrastructure *(0.74)</td>
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<td></td>
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</tbody>
</table>

Risk to FDI: Insignificant 0.15  Insignificant  Insignificant  Insignificant

*Calculated Standardized Factor Weights above 0.7 indicates a significant factor

Source: Own summary based on results
Figure 1: Greenfield FDI inflows – Africa

Greenfield FDI 2003-2011

Source: fDi Markets Database (2012)

Figure 2: M&A FDI inflows – Africa

Mergers & acquisitions 2003-2011

Source: Zephyr Database (2012)
Figure 3: Structural equation model specification

Source: Own Specification based on theoretical basis