

Gordon Institute of Business Science

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The impact of indigenization policy requirements on investment

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Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.



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The Article

Title: The Impact of Indigenization Policy Requirements on Investment

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Abstract:

Foreign direct investment (FDI) is constrained by various regulations – among these are indigenization laws which introduce risk and complexity to Multinational Corporations (MNCs). Researchers have assumed these regulations dampen investor confidence. This research aims first to establish if such a relationship exists, second, to establish specifically how these laws have influenced investment in South Africa, and lastly if investors utilized Real Options behavior to mitigate such risks.

The first research question showed a relationship between levels of indigenization, FDI and MNC activity. The second research question also showed that equity restrictions in B-BBEE did limit investment in South Africa. And lastly, Question 3 indicated that knowingly or unknowingly, some Real Options behavior was observed in South African MNCs, during the period under investigation.

Keywords:

Indigenization; Local Ownership Requirements; Equity Restrictions; FDI; Real Options Theory

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INTRODUCTION

In general, business strategy deals with exploiting opportunities while minimizing risks, in other words, “value creation in imperfect markets” (Smit & Trigeorgis, 2017, p. 315). At times the risks involved are of an institutional nature, such as the foreign regulations that multinationals are subject to when exploiting opportunities in other countries (Ang, Benischke, & Doh, 2015; Arregle, Miller, Hitt, & Beamish, 2013; Chang & Wu, 2014; Meyer, Estrin, Bhaumik, & Peng, 2009a). One such regulation is the laws pertaining to equity restrictions, ie. laws that restrict the level of ownership Multinational Corporations (MNCs) may have in foreign countries. MNCs are business enterprises that operate in more than one country (Arregle *et al.*, 2013). When entering a new country, the MNC must decide on the degree of internationalisation (Arregle *et al.*, 2013), in other words, the form of ownership they wish to have, and the level of control (Chang & Rosenzweig, 2001; Tsang & Yamanoi, 2016). The options include greenfield, acquisition, and international joint ventures (IJV’s) (Reddy, 2014; Slangen, 2013).

Greenfield and acquisition market entry strategies are different from IJVs as a form of business ownership. IJVs are different in that they take place across a spectrum of legal, political, and economic environments (Li, Zhou, & Zajac, 2009). This cross-country relationship increases the level of environmental uncertainty and risk for the MNC (Aguir & Misra, 2017).

Foreign direct investments (FDIs) are not exempt from regulatory influences (Ang *et al.*, 2015; Arregle *et al.*, 2013; García-Canal & Guillén, 2008). The Organisation for Economic Co-operation and Development (OECD) classifies regulatory restrictions into

the following categories: “equity restriction, screening and approval, key foreign personnel, and other types of restriction” (OECD, 2017). Reasons for these restrictions include national security concerns, to prevent the exploitation of natural resources, to support the domestic productive capacity, and to limit exposure to firms responsible for social upliftment (UNCTAD, 2016). In South Africa, the indigenisation policy comes in the form of the Broad-Based Black Economic Empowerment (B-BBEE) legislation, which aims at sustained economic development and transformation of previously disadvantaged peoples by encouraging black capitalism (Andreasson, 2010). B-BBEE encompasses black ownership, representation, procurement and training (Andreasson, 2010).

This research focuses on equity restrictions otherwise referred to as local ownership requirements, localisation, or indigenisation policies. In some countries, the institutional environment requires a level of local ownership if the MNC wishes to invest (Andreasson, 2010; Javorcik & Spatareanu, 2008; Karabay, 2010). This means that any MNC wanting to enter a country requires an equity-share agreement with a local company from within the host country (Javorcik & Spatareanu, 2008). These requirements increase the risks to the MNC (Chun, 2012; Javorcik & Spatareanu, 2008; Olibe, Michello, & Thorne, 2008; Vagner, 2008). Benefits of ownership requirements include access to markets; particularly Government contracts in the case of South Africa (Andreasson, 2010), as well as shelter from legislation aimed at wholly owned subsidiaries such as changes in tax legislation, quotas or expropriation (Slangen, 2013), and mitigation from policy uncertainty. Threats of this legislation to MNCs include knowledge and technological spill overs (Javorcik & Spatareanu, 2008). Overall, local ownership

requirements are viewed more as a threat to the MNC than an instrument which encourages investment (Vagner, 2008).

Post the great financial crisis of 2008, emerging markets have presented themselves as high-risk, high-growth investment destinations (Stiglitz, 2016). These markets are the logical choice for expansion when compared to saturated developed markets (London & Hart, 2004), although many have local ownership requirements.

Recent literature has brought IJVs to the forefront, covering topics such as value creation and the role of investor protection (Aguir & Misra, 2017), firm performance (Lin & Fu, 2017), institutional distance (Ferreira, Vicente, Borini, & Almeida, 2016; Leitão, 2011), the rationale for using IJV's in emerging markets (Panibratov, 2016), why they terminate the contracts, (Meschi, Norheim-Hansen, & Riccio, 2016), country factors impacting the FDI decision (Ramírez-Alesón & Fleta-Asín, 2016; Xie, Reddy, & Liang, 2016) and ownership characteristics of the subsidiary (Lien & Filatotchev, 2015). These studies have spanned numerous geographies, having studied US (Aguir & Misra, 2017), Chinese (Lin & Fu, 2017), Brazilian (Ferreira *et al.*, 2016; Meschi *et al.*, 2016), and Russian firms (Panibratov, 2016). Some studies have been across numerous countries (Ramírez-Alesón & Fleta-Asín, 2016). In some countries, MNC's are forced to use IJV's, and this was shown to have a direct impact on the FDI decision (Karabay, 2010).

Despite large volumes of works covering a vast array of topics in international business studies, the institutional country factors have not been extensively covered (Aguir & Misra, 2017). Specifically, there is a gap in the literature dealing with the implication of local ownership requirements for MNCs and the impact that has on their

decision to invest in a country, as well as the level of investment. By establishing whether indigenisation does indeed impact FDI, policy makers can make more informed decisions, when creating legislation aimed at MNC's. Furthermore, this research will also investigate how foreign investors changed their investment behavior during times of increased ownership requirements.

THEORETICAL BACKGROUND AND HYPOTHESIS

Foreign Direct Investment

Foreign direct investment has been an important topic in business and academia in recent years (Ramírez-Alesón & Fleta-Asín, 2016). Foreign direct investment (FDI), which can be defined as "investment that involves ownership and confers effective management control" (Chang & Rosenzweig, 2001). The advantages of FDI for the MNC include those deriving from location, internalisation, and ownership. The main reasons MNCs engage in FDI, however, is to expand their markets, or to lower cost inputs. (Alam & Zulfiqar Ali Shah, 2013; Panibratov, 2016). Non-FDI forms of MNC expansion include exporting, licensing, non-equity alliances, and are not part of this study (Chang & Rosenzweig, 2001, p. 748).

It is well established that foreign direct investment is important for any country's economy as it improves economic growth. Country factors have been shown as important for location decisions for foreign investment (Ramírez-Alesón & Fleta-Asín, 2016). FDI is influenced by political, social, and economic factors, such as "labour cost, labour

productivity, market size, natural resource intensity, external debt, political stability, quality of infrastructure, corruption practices, tax rates, openness, inflation, real effective exchange rate” (Alam & Zulfiqar Ali Shah, 2013, pp. 515–516).

When investing in new geographical markets, MNCs must make two decisions, namely the investment mode and the level of control. Investment mode asks whether the MNC would prefer to start a new company from the ground up (greenfield) or whether they wish to acquire an existing enterprise (brownfield). Level of control asks whether the MNC wants full ownership, or whether they should start IJVs (Panibratov, 2016).

Aguir & Misra (2017) investigated the role that the foreign country’s legal system has on choice of ownership and found that the type of legal system has a substantial influence on the choice of ownership an MNC uses in a foreign country. Other studies have shown that country policies and the institutional character further influence the decision to enter a country using an IJV (Meyer, Estrin, Bhaumik, & Peng, 2009; Ramírez-Alesón & Fleta-Asín, 2016; Zou & Chen, 2016).

In emerging market countries where institutional uncertainty and risks are more prominent, MNCs could change the degree of their equity investments in order to mitigate risk (Ferreira *et al.*, 2016). In such cases MNCs establish IJVs in the host country with either minority, equal, or majority equity shareholding (Chang & Rosenzweig, 2001).

Partial ownership or a joint venture (JV) is defined as “a legal organization that takes the form of a short-term partnership in which the parties jointly undertake a transaction for mutual profit... ..and involves making an entity with one or more partners

so that the parent company possesses only partial ownership of the subsidiary...”(Panibratov, 2016, pp. 99–100). International Joint Ventures (IJV) are “distinct legal entities formed by firms from different countries, combining the resources of the partners to attain a common well-defined objective” (Aguir & Misra, 2017, p. 515). JVs come with their own benefits and risks for MNCs (Chang & Rosenzweig, 2001). MNCs choose IJVs for markets where they require specific local knowledge, capital, and technology as local partners are best suited to deal with local staff, suppliers, buyers and institutions (Panibratov, 2016).

IJVs come with their own form of risk which include less control and reduced profits (Panibratov, 2016). IJVs are also subject to subject to more environmental uncertainty than other forms of ownership due to cross-country institutional differences (Aguir & Misra, 2017).

Institutions

Even though organisations are impacted by the environment in which they operate, the incorporation of institutions into strategy development is relatively new (Ang *et al.*, 2015). Institutions are defined as “the basic rules of the game, such as legal regimes and the way they are enforced, widely held norms that constrain behaviour and organising principles of economic activity” (Chang & Wu, 2014, p. 1104; North, 1990).

Scholars recognise three institutional pillars, namely cognitive, regulatory and normative (Ang *et al.*, 2015). The regulatory pillar relates to laws or rules, written and unwritten (Ang *et al.*, 2015), and are there for oversight and direction (Arregle *et al.*, 2013).

Despite the aim being to create certainty (Arregle *et al.*, 2013), they often are a source of uncertainty in cross border operations (Ang *et al.*, 2015), as they are perceived to increase the level of transaction costs in MNC operations (Arregle *et al.*, 2013).

Studies into institutions and their impact on strategy include investigations on their impact on market share (Ang *et al.*, 2015), semi-globalisation (Arregle *et al.*, 2013), industry dynamics (Chang & Wu, 2014), market entry (Meyer *et al.*, 2009a), firm ownership structure and performance (Douma, George, & Kabir, 2006). Country institutions are said to “significantly” impact market entry strategies (Meyer *et al.*, 2009a).

Local Ownership Requirements

One of the institutional risks that MNCs face in emerging countries is restrictions to full ownership of a company (Ferreira *et al.*, 2016). Local ownership restriction describes the degree to which MNC's may have full ownership of their subsidiary in another country (Makino & Beamish, 1998), while indigenisation is defined as “the requirement that the host country imposes on an investor to share ownership of an affiliate with residents in the host country” (Karabay, 2010, p. 218; Katrak, 1983).

Local ownership requirement forms part of indigenisation laws in emerging countries, in an attempt to empower individuals and groups who were previously disadvantaged through minority rule and colonisation (Andreasson, 2010). Indigenisation laws are found across both emerging economies and developed economies (Karabay, 2010). Local ownership has benefits for both the individual firm, as they provide access to markets that would previously been unavailable to the MNC. This is particularly important for MNC's that wish to do large contracts with their host countries governments, as this can be a prerequisite. In addition, the economy of the host country as a whole also benefits as knowledge and technological spill overs are inevitable (Javorcik & Spatareanu, 2008).

Where local ownership requirements are present, IJVs become the ownership model of choice for MNCs starting in emerging economies (Makino & Beamish, 1998), and on occasion this ownership form forms part of the FDI prerequisites (Karabay, 2010). These requirements have a direct impact on the FDI decision (Karabay, 2010).

Studies have been done looking at the impact of local ownership requirements and the performance on MNCs (Makino & Beamish, 1998), although to the researcher's knowledge, no study has been done looking at local ownership requirements and extent of investment in a foreign country. The overarching research question is *What are the effects of indigenisation policies on foreign direct investment?* Two sub-questions that follow are:

- *Research Question 1a: What are the effects of the level of indigenisation requirements on foreign direct investment?*
- *Research Question 1b: What are the impacts of indigenisation levels on the number of MNC's willing to invest in a country?*

South Africa's Local Ownership Requirements

Local ownership requirements in South Africa is encapsulated in the following pieces of legislation:

- The Employment Equity Act 55 of 1998
- The Broad-Based Black Economic Empowerment Act 53 of 2003
- The B-BBEE Codes of Good Practice 2007
- The Broad-Based Black Economic Empowerment Amendment Act 46 of 2013
- and various industry charters (such as the Mining Charter).

The Employment Equity act, although not dealing with ownership, was the forerunner to Broad-Based Black Economic Empowerment, and stated that there should be fair representation of all races and genders across management. The purpose of Broad-Based Black Economic Empowerment (B-BBEE) is to facilitate economic transformation among previously disadvantaged members of South Africa, including Africans, Coloureds, and Indians, with focus on women and people living with disabilities. B-BBEE provides a scorecard with targets, which when combined provides a company

with a B-BBEE score and B-BBEE level. The higher the level, the more it enables a company to do business with State-Owned Enterprises and Government. The scorecard was initially published/gazetted/promulgated in 2007, and revised in 2013 (with implementation of the revision in 2015).

Table 1 shows the different elements of B-BBEE and their weightings (Department of Trade and Industry, 2012).

INSERT TABLE 1

The ownership requirements, although extensive, translates to 25%+1 vote ownership requirement in the firms for both the 2007 and 2013 codes. However, in the 2013 codes, ownership also became a priority element, meaning that a company that does not achieve the minimum requirement will automatically be discounted a level. This rule also applies to small, family owned businesses as well as MNCs.

Table 2 below shows how the B-BBEE points translate to a B-BBEE Level (Department of Trade and Industry, 2012).

INSERT TABLE 2

Regarding local ownership requirements, South Africa has three distinct periods, broadly speaking:

- Prior to 2007 – no local ownership requirements in place
- 2007-2012 – local ownership requirements for the B-BBEE codes
- 2013 onwards – more stringent local ownership requirements.

Research Question 2: What impact did South Africa's B-BBEE ownership requirements have on foreign investment?

Real Options Theory

Real Options Theory (ROT) was developed by Myers (1977) to describe how the theory of financial options can be used to make strategic business decisions, especially in high-risk environments. The topics covered in ROT research include, inter alia, “market entry timing, modes of entry, organisational forms, and FDI” (Trigeorgis & Reuer, 2017, p. 42).

Real Options Theory has also been referred to as “a theory of sequential foreign investments” (Chang & Rosenzweig, 2001) as real option theory posits that in an uncertain environment, MNCs could reduce their risk through staged investments in an IJV. (Brouthers, Brouthers, & Werner, 2008; Chintakananda & McIntyre, 2014; Chung, Lee, Beamish, Southam, & Nam, 2013; Driouchi & Bennett, 2011; Trigeorgis & Reuer, 2017). To date, and to the author's knowledge, no research has been conducted testing ROT and the risk associated with local ownership requirements.

Real Options Theory has provided new understanding to numerous business topics (Ragozzino, Reuer, & Trigeorgis, 2016) such as “market entry timing, modes of entry, organisational forms, FDI, MNC performance, [etc.]” (Trigeorgis & Reuer, 2017, p. 42). Other domains where ROT has been applied include entrepreneurship, research and development, JVs and mergers and acquisitions (Ragozzino *et al.*, 2016). Real Options

Theory has its origins in finance literature the word first being used by Myers (1977) to describe the opportunity to purchase real assets.

Financial options involve the purchase of financial securities, whereas real options have real underlying assets. An option, in this context, is a right, but not obligation to make a future investment should the conditions be favourable, and to withhold said investment otherwise (Trigeorgis & Reuer, 2017). Real options help firms make investment decisions in uncertain environments, by limiting the risk of a downturn, while keeping the option to take advantage of potentials upturns (Ragozzino *et al.*, 2016).

Trigeorgis & Reuer, (2017, pg. 45) build on the 5 real option rights presented by (Ragozzino *et al.*, 2016). The 5 basic options include options to:

- Defer or stage market entry (e.g. considering entry into new market)
- Grow (e.g. Taking an equity stake in another firm when entering the market)
- Expand or Contract plant or outsourcing contract
- Switch suppliers across foreign subsidiaries
- Exit market

Four key outcomes to ROT is that investments in uncertain conditions are encouraged, staged, flexible, and should follow a portfolio approach (Trigeorgis & Reuer, 2017).

ROT is often combined with Transaction Cost Economics when making ownership/location/internalisation choices (Brouthers *et al.*, 2008; De Villa, Rajwani, & Lawton, 2015; Slangen, 2013). Ronald Coase was the first to identify that interactions

between firms give rise to certain costs that require governance (Coase, 1937). The theory would eventually be called Transaction Cost Economics, and be popularised by the Nobel prize winner Williamson (Tadelis & Williamson, 2012; Williamson, 1989, 1998, 2010). In its essence, TCE theory deals with uncertainty when making investment decisions. These uncertainties arise from external risks, internal risks and asset specificity (Brouthers, Brouthers, & Werner, 2008; Williamson, 1989, 1998).

TCE proved applicable in disciplines such as “economics, organisation, law, sociology, marketing, finance, accounting, and operations”; to the extent that by 2002 more than 600 articles investigated some dimension of TCE (Geyskens, Benedict, & Kumar, 2006).

Entry mode is said to be explained by Transaction Cost Theory (TCT) (Chang & Rosenzweig, 2001), and thus has been used in numerous studies of IJVs. (Aguir & Misra, 2017; Ferreira, Pinto, & Serra, 2014; Hou, Li, & Priem, 2013; Panibratov, 2016; Peng & Beamish, 2014). Although TCT is popular in deciding ownership/location/internalisation (OLI), it has been found to be more comprehensive when combined with other methods such as Real Options Theory (Brouthers *et al.*, 2008; Demirbag, Tatoglu, & Glaister, 2009).

Brouthers *et al.*, (2008), Li and Li, (2010), Ragozzino *et al.*, (2016), as well as Trigeorgis and Reuer, (2017) have suggested that by combining TCE and ROT companies may improve decision making models that will ultimately reduce risk.

Transaction cost theory focuses on control rights in IJVs (Aguir & Misra, 2017). Essentially, according to TCE, companies tend to invest less when risk and uncertainty arises from the choice of ownership (Triki & Mayrhofer, 2016), but fails to take opportunity costs and competitor behaviour into account. ROT can assist in mitigating these risks by suggesting that investment under uncertain circumstances should be staggered to reduce immediate exposure in uncertainty, while maintaining the option to take advantage of future conditions (Brouthers *et al.*, 2008).

Trigeorgis & Reuer (2017, p. 53) summarise the role of TCE and ROT in FDI in the following way: MNCs will enter a market through FDI if uncertainty prohibits a simple licensing agreement. This is done to reduce transaction costs through control and monitoring. While this limits transaction cost, the investment is largely irreversible, thus flexibility is restricted. ROT focuses on how to exploit uncertainty and risks across borders by accessing the real options to expand or withdraw operations, maintaining flexibility.

From the above literature, the third research question addressed in this study is, “Given the increasing risks of Local Ownership Requirements, what forms of Real Options Behaviour (if any) did MNCs exhibit when investing in South Africa between 2000-2016?”. Is there evidence that MNCs

- *Research Question 3a: made smaller initial investments?*
- *Research Question 3b: staged their investments?*
- *Research Question 3c: stopped investing?*
- *Research Question 3d: divested?*

DATA AND METHODOLOGY

This research is a two-phase, mixed-method approach. It is two phases in that Research Question 1 had to be proven first, before the analysis of Question 2 and 3 would make sense. Question 3 also uses a separate panel of data to Question 1 and 2. The first phase was a quantitative longitudinal study, while the second phase followed a case study approach. Although case studies are usually qualitative in nature, Question 2 and 3 remain quantitative, however, they delve into the South African context and investment inflow patterns. Two-phased, mixed-method approaches, such as the one described above, and those put forward by Creswell, Plano Clark, Gutmann, & Hanson, (2003) provides a practical example once a theoretical principle has been established (Creswell & Creswell, 2009; Ellinger, Watkins, & Marsick, 2009).

Empirical Setting

The World Bank's Foreign Ownership Requirements Database list equity restrictions for 82 of the 105 countries in the database (World Bank, 2017). These equity restrictions are applied across 32 industries, as well as providing an economy average. For countries requiring local ownership, the percentage of local ownership required varies between 2% (in countries like Australia and the United Kingdom) and 65% (Syria).

In South Africa, indigenisation laws have been in force since 2007, in the form of BBBEE legislation, this legislation is applied across industries, provided the firm meet a minimum revenue threshold of R10 million. Although the ownership requirements are

extensive, they effectively translate to 25%+1 vote. In addition to the generalised BBEE legislation, individual industries also have Charters which they follow.

Research context and sample

This research aims to test if local ownership requirements, such as those in South Africa's BBEE legislation impact foreign direct investment, and strategies management use to mitigate such legislation. To do this, the first research question looks at several countries' FDI inflow data and the local ownership requirements present in that country. To answer Research Question 1a, the World Bank's Foreign Ownership Database is used which has 105 countries' local ownership requirements. The included countries were those in which foreign ownership information, FDI data (from UNCTAD), and GDP/capita data (from World Bank) was available. In the end 82 countries were included for Research Question 1a, and 1b. To test Research Question 1b the researcher made use of UNCTAD's database, which lists the number of MNCs that invested in each country every year.

The second research question focuses in on South Africa. To test Research Question 2, South Africa's FDI data is extracted from the beforementioned database. The data was segregated into the periods of 2000-2006, 2007-2012, 2013-2016 and are compared as they represent periods of increasing indigenisation laws.

The final research question deals with how corporate investment strategy in South Africa changed during the abovementioned periods. This research question looks for Real Options behaviour of MNC's. Data was obtained from OSIRIS, which provides foreign shareholding for all JSE listed companies, where the shareholding was more than 3%. Only the year-end shareholding was used. The difference in shareholding from one year to the next represented changes in investment for the year. The database provided 1253 foreign investors investing in South African JSE listed companies during the period of 2000-2016.

Operationalization of variables

Independent Variable

The independent variable across all hypotheses is the level of indigenization or local ownership requirement that is applicable within a country. This local ownership requirement forces a multinational to give over a percentage of their shareholding to citizens of the country. Individual industries have different ownership restrictions, however, for this study the researcher used the World Bank's Equity Restrictions Economy Average.

Dependent Variable

The dependent variable for Research Question 1a is Foreign Direct Investment Inflows for initially all countries, regardless of whether the country has indigenization laws or not. Research Question 1b uses the number of MNCs investing in countries as the dependent variable, Data availability across all countries for the period of 2000-2016 was not available, and thus the researcher only made use of countries for which FDI, Equity Restrictions, MNCs Investment, and GDP/Capita for the period under review was available. This resulted in a sample of 82 countries.

Research Question 2 uses only South Africa's Foreign Direct Investment Inflows for the period of 2000-2016, however, it divides the time period up into periods of increasing ownership requirement. Lastly, Research Question 3a-3d, uses foreign shareholder percentage in South African JSE listed companies for the period of 2000-2016.

Moderating Variable

To conduct the various tests, the researcher had to attempt to mitigate the chance of a spurious regression, resulting from FDI increasing or decreasing merely due to a country being an attractive or unattractive investment destination. To mitigate this risk, GDP per Capita was used as a moderating variable.

Table 3: Summary of the Variables.

INSERT TABLE 3

Reliability and Validity

It is important to test for unit root as it avoids the problem of spurious regression (meaningless results) (Gujarati, 2004). Thus, a stationarity test was conducted in the study. This is the most dominant unit root test in econometrics when using panel data. The study made use of both of informal graphical presentation and formal ADF and PP tests.

The graphical method on its own does not give concrete evidence that the data is indeed integrated of the same order. Therefore, the use of a more formal method to confirm whether the panel data is indeed stationary or not was carried out in the following subsection. ADF and PP Fisher Chi-square tests were employed in the study. Probability for Fisher tests are calculated via the approaching Chi-square distribution value. Asymptotic normality are assumed for all other tests.

The rule of thumb followed when testing for unit root test is that, the null hypothesis assumes individual unit root process (Choi, 2001; Maddala & Wu, 1999). Thus, the operational null hypothesis for the panel data assumes the presence of a unit root. To conclude that the data does or does not have unit root, one checks if the corresponding probability is either above or below 5%. A probability of greater than 5% means that one does not reject the null hypothesis (the data has a unit root) and a probability of less than 5% means that one rejects the null hypothesis and consider the alternative.

RESULTS

Descriptive Statistics

Descriptive Statistics of the variables is conducted before proceeding with the statistical tests. The next sub-section covers Unit Root Test, which is applied to the set of data used in the study to determine the time series properties of individual variables. To check if data does not have a unit root (stationary data), a unit root test using Augmented Dicky Fuller (ADF) and a confirmatory test Philips Perron (PP) test were employed before Hypothesis testing. The unit root test is an important test to avoid the problem of spurious regression (meaningless results) (Gujarati, 2004).

Descriptive statistics provide confirmation of goodness fit of the panel data (Gujarati, 2004). Important aspects of the descriptive statistics are kurtosis, skewness, mean and median, and the Jarque-Bera (J-B). Skewness measures the distribution of the data around the mean. Negative skewness implies the distribution has a long-left tail. Conversely a positive skew implies the distribution has a long right tail. Kurtosis measures how flat or peaked the distribution of data is (Gujarati, 2004) Thus, Jarque–Bera test is a goodness-of-fit test of whether sample data has the skewness and kurtosis matching a normal distribution (Gujarati, 2004). In the case of central tendency, the mean, median and the mode are analysed below.

Table 4: Descriptive statistics results.

INSERT TABLE 4

To check for goodness of fit of the model, the study used Jarque-Bera results. The J-B probability was reported and the J-B statistic was greater (absolute term) than the observed value under the null hypothesis of a normal distribution. The probabilities obtained both in the test for normality and the Jarque-Bera indicates that the variables are normally distributed.

Reliability and Validity Testing

Unit Root Analysis was conducted to establish reliability and validity. When conducting the unit root analysis, the graphical analysis proved inconclusive with the panel data showing no constant trend and a random fluctuation trend throughout. Thus, the panel data is not stationary in levels and therefore contains a unit root. However, a secondary test on all log differenced panel data showed the log difference fluctuated around the zero mean which means that the panel data is integrated of the same order. Therefore, there is absence of unit root and the panel data is stationary.

Table 5 shows the results for Augmented Dickey-Fuller (ADF) test and Philip-Perron (PP) results, respectively. PP tests are not parametric, unlike ADF which selects the level of serial correlation. Therefore, PP test serves as a confirmatory test to ADF as it shows if results obtained in ADF are indeed correct. Analysing and commenting on the results, both ADF and PP tests.

As shown in table 5, panel data contained a unit root in levels as the corresponding probability is greater than 5%, necessitating a failure to reject the null hypothesis which

claims the presence of unit root. However, after first difference, panel data for both countries with and without local ownership requirements under ADF and PP became stationary as the probability of 0.0000 was obtained. A probability of less than 5% permits rejection of the null hypothesis which claims the presence of unit root. Therefore, if panel data becomes stationary after first differencing, it implies that the data is integrated of the same order. Since the panel data is integrated of the same order, the use of other tests such cointegration analysis and Granger causality tests is justified. Hypothesis testing using Wald tests and T-tests was employed and the analysis was explained as follows.

Table 5. Panel unit root test: Summary

INSERT TABLE 5

Hypothesis testing using Wald tests and T-tests was employed and the analysis was explained as follows.

Analysis of Research Questions

Hypothesis testing is a distinct method used in statistics to confirm the validity of an assumed outcome over its alternative (Gujarati, 2004). In econometrics, there are several methods used to test the validity of assumed outcomes namely descriptive statistics in

which the mean, mode, and standard deviation can be used. To answer the questions posed earlier, each research question was subjected to various tests as indicated in table 6. After confirming that the series is stationary, different tests were done using NumXL and Eviews software, hence, the results are presented in the following subsections.

The effect of indigenisation policies on FDI

Research Question 1 sought to establish whether investment behaviour changes in countries with stricter local ownership requirements, in order to establish this, a Granger causality test and Wald test were conducted.

In order to conduct a meaningful granger causality, test it is imperative to select the order in which the test is tested upon. Thus, to choose the lag order for the granger test, the Akiake Information Criterion (AIC) is taken into consideration. The AIC measures the relative quality of statistical models for a given set of time series data (Asteriou & Hall, 2007). Therefore, given the panel data in consideration, the AIC can estimate the quality of the data. So, AIC provides a means for panel data model specification as it offers a relative of the information lost when a given model is used to represent to process that creates the data. In so doing, the study followed the Lag Order Selection Criteria (LOSC) as presented in Table 6.

INSERT TABLE 6

The lower the Akaike Information Criterion (AIC) better the panel data (Granger & Newbold, 1974). Thus, results for lag order selection. Thus, results for lag order selection presented in Table 6 above confirmed that the criteria selected 5 lags. From Table 6 70.34577 under lag 5 is the lowest AIC. Therefore, lag order 5 is selected and granger causality test was conducted thereafter. Table 7 shows results of the pairwise granger causality test.

INSERT TABLE 7

First, FDI inflows and local ownership requirements were subjected to pairwise Granger Causality test under the null hypothesis “does not granger cause”. The computed probability of 3.00 E-6 under *FDI Inflows and Local Ownership* is less than 5% significant level, the null hypothesis that local ownership does not granger cause FDI Inflows is rejected.

Following the Granger Causality Test, a Wald Test was conducted. Table 8 contains the output of the Wald Test conducted.

INSERT TABLE 8

Table 8. EViews Wald Test summary

ANOVA is used when determining if there is a statistical difference between the means of independent groups. This test was also used for Hypothesis 1a-d. Table 4.6 contains the output of the ANOVA results.

INSERT TABLE 9

Table 9. Research Question 1 ANOVA Results summary

The Wald test (Table 8) that was conducted produced a probability of less than 5% indicating that the presence of local ownership requirements had a negative impact on FDI inflows. In addition to this, Table 9 shows Analysis of Variance (ANOVA), residual Analysis and Regression Coefficients. The results under regression statistics, it is estimated that at most 61.7% of the variation in the variables is explained within the model. Subsequently, the analysis of variance (ANOVA) revealed that the regression model is statistically significant, thus, the model is statistically valid. After confirming that the model is statistically significant, it was imperative to comment on regression coefficients. The regression coefficients results revealed that all exogenous variables were statistically significant since their corresponding *t-statistics* are greater than 2 in absolute terms.

Therefore, the results of the tests conclude undeniably that countries with lower local ownership requirements and those without local ownership requirements attract more investments.

In reference to Research Question 1b, table 8 shows the computed probability of less than 5% on three tests (t-statistic, F-statistic & Chi-statistic) are less than 5%. Furthermore, the results from table 9 show that the panel data follows a normal distribution and the model is statistically significant. The corresponding probabilities at 5% level of significance led to the rejecting decision, hence concluding that indeed that more MNCs will invest in countries that do not have local ownership requirements.

Thus, concluding research question 1, not only do countries with lower local ownership requirements attract more investments in dollar terms, they also attract more MNC's who are willing to invest in that country.

The effect of B-BBEE legislation on investment inflows into South Africa

Research Question 2 sought to establish whether the FDI into South Africa was influenced by changes in the B-BBEE legislation.

Table 10. Research Question 2 Results summary

INSERT TABLE 10

The high probability values (which are greater than 5% for all three tests; t-statistic, F-test and Chi-square) indicate that the null hypothesis is not rejected. This shows that

eventually, as local ownership restrictions in South Africa increased over time, levels of FDI decreased.

Table 11. Research Question 2 T-Tests

INSERT TABLE 11

Table 10 shows results for three-time periods (2000-2007, 2008-2012, 2013-2016). The results are explained below:

- 2000-2007: more investments were made and there were no local ownership requirements in South Africa. A probability of 0.0250 during this period led to the acceptance of the claim that “As local ownership restrictions in South Africa increased over time, levels of FDI decreased”.
- 2008-2012: considering the results obtained, more investments were made during this period, as shown by the p-value obtained leading to the rejection of the claim that “as local ownership restrictions in South Africa increased over time, levels of FDI decreased”.
- 2013-2016: this period marks the turning point of investments in South Africa. The results revealed that indeed fewer investments were made during this period as shown by the computed p-value of 0.0615 leading to the acceptance of the claim “as local ownership restrictions in South Africa increased over time, levels of FDI decreased”.

Real Options behaviour by MNCs investing in South Africa

Research Question 3 looked at MNC investment behaviour in South Africa between 2000 and 2016. In particular, it sought to establish whether MNCs investments reflected Real Options Behaviour.

Table 12. Research Question 3a-d Results summary

INSERT TABLE 12

Research Question 3a sought to confirm whether companies investing in South Africa during times of increased ownership made smaller initial investments. According to Real Options Theory, this would enable the MNC to limit exposure to risk, and allow for future evaluations. The corresponding probability is greater than 5% and therefore it was shown that smaller initial investments were made in periods of stricter local ownership requirements in South Africa.

The Research Question 3b looked at staged investments, another example of Real Options Behaviour. By staging investments, MNCs reduce their risk. This question that claims that smaller more frequent subsequent investments were made in periods of stricter local ownership requirements, is not rejected and the computed results show that stricter ownership requirements led to smaller, more frequent investments made in South African companies.

Research Question 3c wants to establish whether companies stopped investing during times of increased regulatory requirements. The computed probability of 0.676378 gives credibility to the non-rejection decision and thus, it is shown that MNCs stopped investing in periods of stricter local ownership requirements.

Finally, in our analysis of MNC investment activity, Research Question 3d aim to establish divestiture behaviour. A probability of less than 5% leads to a strong rejection of the claim that MNCs divested in periods of stricter local ownership requirements.

Thus, the research confirmed that during times of increased local ownership requirements, foreign investors changed their investment behaviour. During times of increased equity restrictions, foreign investors:

- Question 3a: made smaller initial investments
- Question 3b: led to smaller, more frequent investments
- Question 3c: stopped investing

Unfortunately, the methodology employed could not determine whether investments were delayed. The methodology could only identify real options behaviors, such as those mentioned above.

Figure 1. Periodogram MNCs investing in South Africa

INSERT FIGURE 1

The periodogram shows the level of investments in South Africa from 2000-2016. As depicted in figure 1, investments dropped significantly in South Africa. This follows stricter restrictions imposed in South Africa during the period. Also, investor confidence was distorted due to different economic challenges South Africa has been facing ever since 2003 such as unrest, political ideologies, and unstable currencies. Thus, figure 1 confirms the findings of the hypothesis testing which concluded that there were lesser investments in times of stricter local ownership requirements in South Africa.

Summary of results

First, descriptive analysis was done to check the goodness fit of the model to check if the panel model was correctly specified. Second, unit root test was conducted second to check is the panel pool was integrated of the same order thus, stationary data. Thus, Dickey-Fuller test was used as the main test and Philips-Peron tests as a confirmatory test. Both methods revealed that the data series under consideration contain a unit root in levels and become stationary after first differencing. the series is integrated at the same order which is the order I. Finally, to answer the research questions various method were employed. Different outcomes where obtained and commented upon thereafter.

DISCUSSION AND CONCLUSION

Principal Findings

As discussed previously, foreign direct investments are influenced by numerous regulations (Ang *et al.*, 2015; Arregle *et al.*, 2013; García-Canal & Guillén, 2008), among which are equity restrictions (OECD, 2017). Equity restrictions can be applied to industries or whole economies (Andreasson, 2010; Chun, 2012; Javorcik & Spatareanu, 2008; Karabay, 2010; Olibe *et al.*, 2008).

Past research has indicated that equity restrictions are a source of uncertainty and raise the level of transaction costs (Ang *et al.*, 2015; Arregle *et al.*, 2013). Indeed, these laws are viewed as risky for MNCs who would, at worst case scenario have to give a share of ownership to indigenous people who may or may not have the business' best interest at heart (Chun, 2012; Ferreira *et al.*, 2016; Javorcik & Spatareanu, 2008; Olibe *et al.*, 2008; Vagner, 2008). Despite the numerous benefits to MNC's (Andreasson, 2010; Slangen, 2013), they risk knowledge spillovers (Javorcik & Spatareanu, 2008).

It was previously noted that despite large volumes of works covering a vast array of topics in international business studies, the institutional country factors have not been extensively covered (Aguir & Misra, 2017). Particularly pointing out the gap in the literature dealing with the implication of local ownership requirements for MNCs, the impact that has on their decision to invest in a country, and the level of investment. In addition, that no research has been conducted on local ownership requirements from the

perspective of TCE and ROT. This research has added to the literature in closing all these gaps.

The purpose of this research was first to fill the gap in the literature dealing with the implication of local ownership requirements for MNCs and the impact that has on their decision to invest in a country, as well as the level of investment. This was answered by Research Question 1 and 2.

Once it was established that indigenisation policies does indeed impact FDI, this research investigated how foreign investors changed their investment behaviour during times of increased ownership requirements by using Real Options Theory (Question 3).

Research Question 1a indicates that FDI is less for countries that have a local ownership requirement and FDI reduces when local ownership requirements increase. This was further confirmed with when it was proven that more MNC's invested in countries that do not have a local ownership requirement (Research Question 1b). This research quantifies and confirms past research which indicated that equity restrictions are a source of uncertainty and raise the level of transaction costs (Ang et al., 2015; Arregle et al., 2013). As TCE theory deals with uncertainty when making investment decisions, in particular the increased uncertainties arising from external risks of legislation (Brouthers, Brouthers, & Werner, 2008; Williamson, 1989, 1998), it is evident that as equity restrictions increased, it would impact investment decisions.

Research Question 2 is an extension of Research Question 1a and 1b, as it still looks at FDI flow in response to local ownership, but focuses on one country, where local

ownership legislation changed over time. Local ownership requirements in South Africa was formally implemented in 2007 when B-BBEE codes of good practice was introduced and was amended in 2013. Despite that the official local ownership requirement remained at 25%+1 vote, the criteria itself became a priority element, intensifying the importance to of the element. The results from Question 2 has showed that the local ownership requirements found in the B-BBEE codes did have an impact on Foreign Direct Investment in South Africa. Thus, MNCs found that the B-BBEE regulations, and the changes in the B-BBEE regulations were a risk.

When confronted with a risk in investment, MNCs need to find a way to mitigate the risk, while still deriving benefit. Real Options Theory is one-way MNCs mitigate risk. Real Options Theory research has historically included “market entry timing, modes of entry, organisational forms, and FDI” (Trigeorgis & Reuer, 2017, p. 42), and is also referred to as the theory of sequential foreign investments (Chang & Rosenzweig, 2001). In markets where institutional uncertainty and risks are more prominent, real options help firms make investment decisions in uncertain environments, by limiting the risk of a downturn, while keeping the option to take advantage of potentials upturns (Ragozzino *et al.*, 2016). As Research Question 2 indicated that MNCs viewed the investments in South Africa as increasing in risk during each stage of increasing local ownership requirements, Research Question 3 investigated how MNCs responded.

According to Real Options Theory, MNCs have 5 real options (Trigeorgis & Reuer, 2017, p. 45) namely,

- Defer or stage market entry (e.g. considering entry into new market)

- Grow (e.g. Taking an equity stake in another firm when entering the market)
- Expand or Contract plant or outsourcing contract
- Switch suppliers across foreign subsidiaries
- Exit market.

This research was able to show that MNCs investing in South Africa during the period of 2000-2016, made smaller initial investments, staged their investment over time, or stopped investing. There was no evidence of divestiture, or exiting the market. This research adds to Real Options Theory, in that smaller initial investments was not explicit in the Real Options Meta Study (Trigeorgis & Reuer, 2017, p. 45).

Implications for Management

Advantages of FDI for the MNC include those deriving from location, internalisation and ownership. However, the main reasons MNC's engage in FDI is to expand their markets, or to lower cost inputs. (Alam & Zulfiqar Ali Shah, 2013; Panibratov, 2016).

Management can learn from this study, that even during times of increased risk due to local ownership requirements, it does not mean that the investment destination needs to be completely denied. Instead, management can use Real Options decision making to make smaller investments or enter into Joint Ventures in order to mitigate their risk until management is more comfortable to operate in the constrained environment.

Implications for Policy Makers

Foreign direct investment is important for any country's economy as it improves economic growth. Country factors has been shown as important for location decisions for foreign investment (Ramírez-Alesón & Fleita-Asín, 2016). Previous studies have shown that FDI is influenced by numerous political, social and economic factors (Alam & Zulfiqar Ali Shah, 2013, pp. 515–516). This research has shown that local ownership requirements are yet another factor which influences FDI and MNC behaviour.

Thus policy makers should be aware that in an attempt to promote the economic well being of their citizens by enforcing local ownership, they could inadvertently be doing the exact opposite. This was evident during the release of the mining charter in South Africa in July 2017, when listed mining firms lost R50bn in market value in response to the 4% increase in local ownership requirements. (Le Cordeur, 2017a).

Limitations of the Research

As with all academic studies, certain limitations exist. The first limitation is with the non-probability sampling technique, limiting the generalizability of the study. To compound limitations, numerous variables could impact FDI, including GDP, growth, political risks, levels of taxation, etc., and not only the extent of local ownership requirements.

Secondly, within Real Options Theory, the key decision to be made by management is whether to delay investment. Such an action cannot be analysed post-hoc, as the motives of those deciding on the investment needs to be known. Thus we were only able to look at four of the five Real Options behaviour.

Finally, although the use of secondary data presents certain advantages to the researcher, it also presents certain generic risks, such as ambiguity, accuracy, timeliness, sample size, and company reputation (Cheng & Phillips, 2014). Due to the reputation of the databases, and scope of the data available, these risks are mostly mitigated.

Suggestions for Future Research

Further research is recommended, as research question showed that within certain countries, local ownership requirements might influence FDI. Thus future research could look at what country or economic factors could create the environment in which local ownership requirements become an investment criterion.

Finally, it is further recommended to analyze the impact of local ownership requirements in specific industries such as mining. Restrictions in this research occurred because sector FDI data for specific countries proved difficult to obtain.

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Tables and Figures

Table 1: Calculation of B-BBEE Score

Element	2007 BEE Codes		2013 BEE Codes	
	Weighting	Bonus	Weighting	Bonus
Ownership	20	3	25	0
Management Control	10	1	15	4
Employment Equity	15	3	-	-
Skills Development	15	0	20	5
Preferential Procurement	20	0	-	-
Enterprise/Supplier Development	15	0	40	4
Socio-economic Development	5	0	5	0
TOTAL	100	7	100	13

Table 2: Comparison between 2007 and 2013 B-BEEE Score Card calculation

2007 Codes	2013 Codes	B-BBEE Level
100+	100+	1
85-100	95-100	2
75-85	90-95	3
65-75	80-90	4
55-65	75-80	5
45-55	70-75	6
40-45	55-70	7
30-40	40-55	8

Table 3: Variables

Hypothesis	Independent-variable	Dependent-variable	Control variable
Question 1a	Level of indigenisation	FDI	GDP/Capita
Question 1b	Level of indigenisation	No. of MNC's investing	GDP/Capita
Question 2	Level of indigenisation	South African FDI	-
Question 3a	Level of indigenisation	Shareholding % of MNC in subsidiary	-
Question 3b	Level of indigenisation	Shareholding % of MNC in subsidiary	-
Question 3c	Level of indigenisation	Shareholding % of MNC in subsidiary	-
Question 3d	Level of indigenisation	Shareholding % of MNC in subsidiary	-

Table 4: Descriptive Statistics

	FDI Inflows	GDP per Capita	Number of Cross Border M&As
Mean	9726.934	11581.38	89.32309
Median	2101.656	4513.136	18.00000
Maximum	253825.8	67792.30	1178.000
Minimum	-31689.3	111.3634	0.000000
Std. Dev.	20657.57	14975.27	161.0927
Skewness	5.071033	1.572988	3.022117
Kurtosis	41.99270	4.392276	13.68937
Jarque-Bera	77038.73	561.6977	7156.501
Probability	0.000000	0.000000	0.000000
Sum	11078978	13191197	101739.0
Observations	1139	1139	1139

Table 5: ADF and PP Test Results

			Test	Statistic	Prob.	Decision	Conclusion
FDI Flows	Trend & Intercept	Levels	ADF	139.33	0.314	Do not reject the null hypothesis	Panel data has a unit root
			PP	266.12	0.143	Do not reject the null hypothesis	Panel data have unit root
		1 st difference	ADF	441.96	0	Reject null hypotheses	No unit root
			PP	1054.7	0	Reject null hypothesis	No unit root
Number of cross Borders M&As	Trend & Intercept	Levels	ADF	109.22	0.907	Do not reject the null hypothesis	Panel data has a unit root
			PP	168.4	0.065	Do not reject the null hypothesis	Panel data have unit root
		1 st difference	ADF	351.09	0	Reject null hypotheses	No unit root
			PP	815.97	0	Reject null hypothesis	No unit root
GDP per capita	Trend & Intercept	Levels	ADF	78.193	1	Do not reject the null hypothesis	Panel data has a unit root
			PP	56.615	0.07641	Do not reject the null hypothesis	Panel data have unit root
		1 st difference	ADF	275.82	0	Reject null hypotheses	No unit root
			PP	506.11	0	Reject null hypothesis	No unit root

Table 6: Lag order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-31523.1	NA	1.35E+29	78.42568	78.44901	78.43464
1	-28511.4	5986.068	7.83E+25	70.97353	71.09019	71.01833
2	-28414.3	191.9211	6.40E+25	70.77192	70.9819	70.85257
3	-28365.1	96.937	5.89E+25	70.68917	70.99248	70.80566
4	-28257.6	210.4244	4.69E+25	70.4616	70.85823	70.61393
5	-28195	121.8573*	4.18e+25*	70.34577*	70.83573*	70.53394*

* indicates lag order selected by the criterion

LR: sequentially modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Table 7: Granger Causality Test

Null Hypothesis	Obs	F-statistic	Prob.
Local ownership requirements does not Granger cause FDI inflows	804	12.9583	3.00E-06

Table 8: Wald Test – Research Question 1

Question	Results
	t-statistic = 3.490962, Probability = 0.0005
	F-statistic = 5.838836, Probability = 0.0005
<i>Research Question 1a</i>	Chi-square 5.838836 Probability = 0.0005
	Null hypothesis C(1)=2 Normalized Restriction (=0)
	C(1) Val = 2404.228; Std.err. = 688.1277
	t-statistic = -5.442859, Probability = 0.0000
	F-statistic = 29.62472, Probability = 0.0000
<i>Research Question 1b</i>	Chi-square 29.62472, Probability = 0.0000
	Null hypothesis C(1)=0 Normalized Restriction (=0)
	C(1) Val = -2267.309; Std.err. = 416.5658

Table 8: ANOVA and Regression Test – Research Question 1

Question	Regression statistics	ANOVA	Regression Coefficients				
				Value	Std. Error	t-stat	P-Value
Research Question 1a	R Squared = 61,7%	F stat= 610,49	Intercept	2762.43	482.71	5.72	0.00%
	Ad R squared = 61.6%	P-Value = 0.0%	Value of cross-border M&As	0.72	0.03	23.44	0.00%
	Standard Error= 12794,69		Number of cross-border M&As	23.38	3.86	6.06	0.00%
			GDP/Capita	0.14	0.03	4.33	0.00%
Research Question 1b	R Squared = 64.5%	F stat=687.61	Intercept	-2318,58	383,54	-6.05	0.00%
	Ad R squared = 64.4%	P-Value=0.0%	Number of cross-border M&As	41.1	2.87	14.32	0.00%
	Standard Error= 10182.68		GDP/Capita	-0.11	0.03	-4.22	0.00%
			FDI inflows	0.45	0.02	23.44	0.00%

Table 9: Research Question 2 Results summary

	T-Statistic		F-Statistic		Chi-Square		Normalized Restriction	
	Probability		Probability		Probability		Val	StdErr
Question 2	1.158623	0.2647	1.342407	0.2647	1.342407	0.2466	5.323587	4.594754

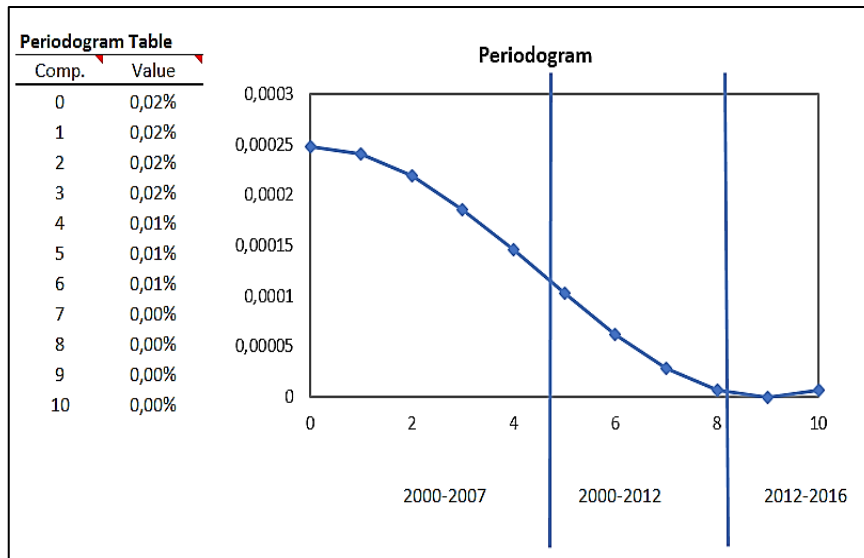
Table 10: Research Question 2 T-Tests

<i>Period</i>	<i>Sample Mean</i>	<i>Sample Std. Dev</i>	<i>Method</i>	<i>Value</i>	<i>Probability</i>
2000-2007	3033.569	3020.192	t-statistic	2.840018	0.0250
2008-2012	5829.709	2406.493	t-statistic	5.415927	0.0056
2013-2016	4517.636	3093.079	t-statistic	2.920479	0.0615

Table 11. Research Question 3 Results summary

	Mean	Median	Sample Mean	Sample Median	Sample Std. Dev	T-statistic	T-Statistic Probability
Question 3a	0.03245	0.02315	4.21538	6.11216	1.54652	54.1048	0.123143
Question 3b	0.653873	0.26545	4.35326	6.45264	2.98779	33.76853	0.165743
Question 3c	0.32121	0.3214	4.54323	4.43111	1.23191	34.48271	0.676378
Question 3d	0.23154	0.32143	3.87685	3.65468	1.45363	-11.3214	0.00154

Figure 1: Periodogram MNCs investing in South Africa



Gordon Institute of Business Science

University of Pretoria

Support Document:

The impact of indigenization policy requirements on investment

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16391579

A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the degree of Master of Business Administration.

6 November 2017

Abstract:

Foreign direct investment (FDI) is constrained by various regulations – among these are indigenization law which introduce risk and complexity to Multinational Corporations (MNCs). Researchers have assumed these regulations dampen investor confidence. This research aims first to establish if such a relationship exists, second, to establish specifically how these laws have influenced investment in South Africa, and lastly if managers utilize Real Options behavior to mitigate such risks.

A variety of tests were employed including ADF, PP, Granger Causality, Wald, and Periodograms.

The first research question showed a relationship between levels of indigenization, FDI and MNC activity. The second research question also showed that equity restrictions in B-BBEE did limit investment in South Africa. And lastly, Question 3 indicated that knowingly or unknowingly, some Real Options behavior was observed in South African MNCs, during the period under investigation.

Keywords:

Indigenization; Local Ownership Requirements; Equity Restrictions; FDI; Real Options Theory

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.



Zane Rinke
6 November 2017

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Literature Review

1.1. Introduction

During June 2016, the South African Minister of Mineral Resources announced a revision to the Mining Charter which would see existing mines' local ownership requirements being increased 4% from 26% to 30%, while new mines would require 51% local ownership. Analysts called the market reaction a “bloodbath”, with listed mining firms loosing R50bn in market value almost immediately, and local currency loosing 2% to US Dollar in response (Le Cordeur, 2017a). Moody's Investor Service disapproved of the move (EyeWitnessNews, 2017), while Fitch Ratings Agency called the revised charter a “radical approach”, and warned that it would impact investment (Le Cordeur, 2017b). This research aims to test if local ownership requirements, such as those in South Africa's new mining charter, do in fact impact foreign direct investment.

Multinational corporations (MNCs) are business enterprises that operate in more than one country (Arregle, Miller, Hitt, & Beamish, 2013). When entering a new country, the MNC must decide the degree of internationalisation (Arregle et al., 2013), in other words, the form of ownership they wish to have, and the level of control thereof (Chang & Rosenzweig, 2001; Tsang & Yamanoi, 2016). The options include greenfield, acquisition, and International Joint Ventures (IJVs) (Reddy, 2014; Slangen, 2013).

Greenfield and acquisition market entry strategies are different from IJVs as a form of business ownership. An IJV takes place across a spectrum of legal, political, and economic environments (Li, Zhou, & Zajac, 2009). This cross-country relationship increases the level of environmental uncertainty and risk for the MNC (Aguir & Misra, 2017).

Foreign Direct Investments (FDIs) are not exempt from regulatory influences (Ang, Benischke, & Doh, 2015; Arregle et al., 2013; García-Canal & Guillén, 2008). The Organisation for Economic Co-operation and Development (OECD) classifies regulatory restrictions into the following categories: “equity restriction, screening and approval, key foreign personnel, and other types of restriction” (OECD, 2017). Reasons for these restrictions include: national security concerns, prevention of the exploitation of natural resources, supporting the domestic productive capacity, and limiting exposure to firms responsible for social upliftment (UNCTAD, 2016).

In South Africa, the indigenisation policy comes in the form of the Broad-Based Black Economic Empowerment (B-BBEE) legislation, which aims at long-term economic transformation by encouraging black capitalism (Andreasson, 2010). B-BBEE encompasses black ownership, representation, procurement, and training (Andreasson, 2010).

This research focuses on equity restrictions otherwise referred to as local ownership requirements, localisation, or indigenisation policies. In some countries, the institutional environment requires a level of local ownership if the MNC wishes to invest (Andreasson, 2010; Javorcik & Spatareanu, 2008; Karabay, 2010). In other words, any MNC wanting to enter a country requires an equity-share agreement with a local company from within the host country (Javorcik & Spatareanu, 2008). These requirements increase the risks to the MNC (Chun, 2012; Javorcik & Spatareanu, 2008; Olibe, Michello, & Thorne, 2008; Vagner, 2008).

A benefit of ownership requirements is access to markets - particularly Government contracts in the case of South Africa (Andreasson, 2010). Other benefits include shelter from legislation aimed at wholly-owned subsidiaries such as changes in tax legislation, quotas or expropriation (Slangen, 2013), and mitigation from policy uncertainty. Threats include knowledge and technological spill overs (Javorcik & Spatareanu, 2008). Overall,

local ownership requirements are viewed more as a threat to the multinational than an instrument which encourages investment (Vagner, 2008).

Ownership restrictions on resource extraction firms (mining) are present in 20 of the 85 countries in the World Bank's Investing Across Borders, with up to 6 countries enforcing MNCs to hold only a minority stake in an IJV (World Bank, 2017).

1.2. Research Purpose: The Business Need

With the background of the great financial crisis of 2008, emerging markets have presented themselves as high-risk, high-growth investment destinations (Stiglitz, 2016). These markets are the logical choice for expansion when compared to saturated developed markets (London & Hart, 2004), despite many having local ownership requirements.

The proposed research will aid businesses when making ownership, location, or internalisation decisions, by developing a model with which to evaluate the investment destination.

1.3. Research Purpose: The Academic Need

Recent literature has brought IJVs to the forefront, covering the following topics, inter alia: value creation and the role of investor protection (Aguir & Misra, 2017); firm performance (Lin & Fu, 2017); institutional distance (Ferreira, Vicente, Borini, & Almeida, 2016; Leitão, 2011); the rationale for using IJVs in emerging markets (Panibratov, 2016); why contracts are terminated (Meschi, Norheim-Hansen, & Riccio, 2016); country factors

impacting the FDI decision (Ramírez-Alesón & Fleta-Asín, 2016; Xie, Reddy, & Liang, 2016); and ownership characteristics of the subsidiary (Lien & Filatotchev, 2015). These studies have spanned numerous geographies, having looked at US firms (Aguir & Misra, 2017), Chinese firms (Lin & Fu, 2017), Brazilian firms (Ferreira et al., 2016; Meschi et al., 2016), and Russian firms (Panibratov, 2016). While some studies have been conducted across numerous countries (Ramírez-Alesón & Fleta-Asín, 2016).

Despite large volumes of works covering a vast array of topics in international business studies, the institutional country factors have not been extensively covered (Aguir & Misra, 2017). There is specifically a gap in the literature dealing with the implication of local ownership requirements for MNCs, the impact that has on their decision to invest in a country, and the level of investment. Further to this, no research has been conducted on local ownership requirements from the perspective of TCE and ROT.

1.4. Foreign Direct Investment

Foreign Direct Investment (FDI) has been an important topic in business and academia in recent years (Ramírez-Alesón & Fleta-Asín, 2016).

Foreign Direct Investment (FDI) is defined as “investment that involves ownership and confers effective management control” (Chang & Rosenzweig, 2001). Advantages of FDI for an MNC include those deriving from location, internalisation, and ownership. However, the main reasons MNCs engage in FDI is to expand their markets, or to lower cost inputs. (Alam & Zulfiqar Ali Shah, 2013; Panibratov, 2016). Non-FDI forms of MNC expansion not included in this study include exporting, licensing, and non-equity alliances. (Chang & Rosenzweig, 2001, p. 748).

Foreign direct investment is important for any country's economy as it improves economic growth. Country factors have been shown to be as important for location decisions for foreign investment (Ramírez-Alesón & Fleta-Asín, 2016). FDI is influenced by the political, social and economic factors, such as “labour cost, labour productivity, market size, natural resource intensity, external debt, political stability, quality of infrastructure, corruption practices, tax rates, openness, inflation, real effective exchange rate” (Alam & Zulfiqar Ali Shah, 2013, pp. 515–516).

When investing in new geographical markets, MNCs must make two decisions, namely, the investment mode, and the level of control. The investment mode decision asks whether the MNC would prefer to start a new company from scratch (greenfield) or whether they wish to acquire an existing enterprise (brownfield). The level of control decision asks whether they want full ownership, or whether they should start an IJV (Panibratov, 2016).

Aguir & Misra (2017) investigated the role that the foreign country's legal system has on choice of ownership and found that the type legal system has substantial influence on the choice of ownership a MNC uses in a foreign country. Other studies have shown that country policies, and the institutional character further influence the decision to enter a country in an IJV (Meyer, Estrin, Bhaumik, & Peng, 2009; Ramírez-Alesón & Fleta-Asín, 2016; Zou & Chen, 2016).

In emerging market countries where institutional uncertainty and risks are more prominent, MNCs could change the degree of their equity investments in order to mitigate risk (Ferreira et al., 2016). In such cases MNCs establish IJVs in the host country with either minority, equal, or majority equity shareholding (Chang & Rosenzweig, 2001).

Partial ownership or a Joint Venture (JV) is defined as “a legal organization that takes the form of a short-term partnership in which the parties jointly undertake a transaction for mutual profit... and involves making an entity with one or more partners so that the

parent company possesses only partial ownership of the subsidiary...”(Panibratov, 2016, pp. 99–100). International Joint Ventures (IJV) are “distinct legal entities formed by firms from different countries, combining the resources of the partners to attain a common well-defined objective” (Aguir & Misra, 2017, p. 515). JVs come with their own benefits and risks for MNCs (Chang & Rosenzweig, 2001).

MNCs choose IJVs for markets where they require specific local knowledge, capital, and technology. Local partners are best suited to deal with local staff, suppliers, buyers, and institutions (Panibratov, 2016).

IJVs come with their own form of risk which includes less control and lower profits (Panibratov, 2016). IJVs are also subject to more environmental uncertainty than other forms of ownership due to cross-country institutional differences (Aguir & Misra, 2017).

1.5. Institutions

Even though organisations are impacted by the environment in which they operate, the incorporation of institutions into strategy development is relatively new (Ang et al., 2015). Institutions are defined as “the basic rules of the game, such as legal regimes and the way they are enforced, widely held norms that constrain behaviour and organising principles of economic activity” (Chang & Wu, 2014, p. 1104; North, 1990).

Scholars recognise three institutional pillars, namely, cognitive, regulatory, and normative (Ang et al., 2015). The regulatory pillar relates to laws or rules, written and unwritten (Ang et al., 2015), and are there for oversight and direction (Arregle et al., 2013). Despite the aim being to create certainty (Arregle et al., 2013), they often are a source of uncertainty in cross-border operations (Ang et al., 2015), as they are perceived to increase the level of transaction costs in MNC operations (Arregle et al., 2013).

Studies into institutions and their impact on strategy include studies on their impact on market share (Ang et al., 2015), semi-globalisation (Arregle et al., 2013), industry dynamics (Chang & Wu, 2014), market entry (Meyer, Estrin, Bhaumik, & Peng, 2009), firm ownership structure, and performance (Douma, George, & Kabir, 2006),

Institutions are said to significantly impact market entry strategies (Meyer et al., 2009), thus, this research aims to further investigate regulatory institutions, in particular those relating to local ownership requirements, and how they impact FDI and market entry strategies.

1.6. Local Ownership Requirements

One of the institutional risks that MNCs face in emerging countries is a restriction on full ownership of a company. (Ferreira et al., 2016). Local ownership restriction is “the extent in which foreign ownership is either prohibited or restricted” (Makino & Beamish, 1998). Indigenisation is defined as “the requirement that the host country imposes on an investor to share ownership of an affiliate with residents in the host country” (Karabay, 2010, p. 218; Katrak, 1983).

Local ownership requirement forms part of indigenisation laws in emerging countries, in an attempt to empower individuals and groups who were previously disadvantaged through minority rule and colonisation (Andreasson, 2010). Degrees of indigenisation laws are, however, not only found across emerging economies such as “South Africa, Zimbabwe, Namibia, Brazil, China, India, Russia, Mexico, Indonesia, Mexico, Korea, Turkey, the Philippines, Thailand, but are also present in developed economies such as Finland, France, Norway, Sweden, Switzerland and even the USA, and Canada” (Karabay, 2010).

Local ownership has benefits for both the individual firm, and the economy of the host country, as knowledge and technological spill overs are inevitable (Javorcik & Spatareanu, 2008).

Where local ownership requirements are present, IJVs become the ownership model of choice for MNCs starting in emerging economics (Makino & Beamish, 1998). On occasion this ownership form forms part of the FDI prerequisites (Karabay, 2010). These requirements have a direct impact on the FDI decision (Karabay, 2010).

Although studies have been done looking at the impact of local ownership requirements and the performance on MNCs (Makino & Beamish, 1998), to the researchers' knowledge, no research has been done looking at local ownership requirements and extent of FDI, and degree of ownership taken.

1.7. Local Ownership Requirements in South Africa

Local ownership requirements in South Africa are encapsulated in the following pieces of legislation:

- The Employment Equity Act 55 of 1998
- The Broad-Based Black Economic Empowerment Act 53 of 2003
- The B-BBEE Codes of Good Practice 2007
- The Broad-Based Black Economic Empowerment Amendment Act 46 of 2013
- and various industry charters (such as the Mining Charter)

The Employment Equity act, although not dealing with ownership, was the forerunner to Broad-Based Black Economic Empowerment (B-BBEE) act, and stated that there should be fair representation of all races and genders across management. The purpose of Broad-Based Black Economic Empowerment is to facilitate economic transformation among previously disadvantaged members of South Africa, including Africans, Coloureds and Indians, with focus on women and people living with disabilities. B-BBEE provides a scorecard with targets which, when combined, provides a company with a B-

BBEE score and B-BBEE level. The higher the level, the more it enables a company to do business with State-Owned Enterprises and Government. The scorecard was initially provided in 2007, and revised in 2013 (with implementation in 2015).

The below table shows the different elements of B-BBEE and their weightings.

Table 1 Elements of the B-BBEE Codes (Department of Trade and Industry, 2012)

Table 3 Elements of the B-BBEE Codes (Department of Trade and Industry, 2012)

Element	2007 BEE Codes		2013 BEE Codes	
	Weighting	Bonus	Weighting	Bonus
Ownership	20	3	25	0
Management Control	10	1	15	4
Employment Equity	15	3	-	-
Skills Development	15	0	20	5
Preferential Procurement	20	0	-	-
Enterprise/Supplier Development	15	0	40	4
Socio-economic Development	5	0	5	0
TOTAL	100	7	100	13

The ownership requirements, although extensive, translates to 25%+1 vote ownership requirement in the firms for 2007 and 2013 codes. In the 2013 codes, ownership also became a priority element, meaning that a company that does not achieve the minimum requirement will automatically be discounted a level. This rule also applies to small, family owned businesses as well as MNCs.

The table below shows how the B-BBEE points translate to a B-BBEE Level.

Table 1.2 B-BBEE Points and Levels (Department of Trade and Industry, 2012)

2007 Codes	2013 Codes	B-BBEE Level
100+	100+	1
85-100	95-100	2
75-85	90-95	3
65-75	80-90	4
55-65	75-80	5
45-55	70-75	6
40-45	55-70	7
30-40	40-55	8

Broadly speaking, South Africa has three distinct periods regarding local ownership requirements:

- Prior to 2007 – no local ownership requirements in place
- 2007-2012 – local ownership requirements for the B-BBEE codes
- 2013 onwards – more stringent local ownership requirements.

1.8. Transaction Cost Economics

Ronald Coase was the first to identify that interactions between firms give rise to certain costs that require governance (Coase, 1937). The theory would eventually be called Transaction Cost Economics (TCE), and be popularised by the Nobel prize winner Williamson (Tadelis & Williamson, 2012; Williamson, 1989, 1998, 2010). In its essence, TCE theory deals with uncertainty when making investment decisions. These uncertainties arise from external risks, internal risks, and asset specificity (Brouthers, Brouthers, & Werner, 2008; Williamson, 1989, 1998).

TCE proved applicable in disciplines such as “economics, organisation, law, sociology, marketing, finance, accounting, and operations”; to the extent that by 2002 more than 600 articles investigated some dimension of TCE (Geyskens, Benedict, & Kumar, 2006).

Entry mode is said to be explained by Transaction Cost Theory (TCT) (S. J. Chang & Rosenzweig, 2001), and has thus been used in numerous studies of IJVs. (Aguir & Misra, 2017; Ferreira, Pinto, & Serra, 2014; Hou, Li, & Priem, 2013; Panibratov, 2016; Peng & Beamish, 2014). Although TCT is popular in deciding Ownership/Location/Internalisation (OLI), it has been found to be more comprehensive when combined with other methods (Brouthers et al., 2008; Demirbag, Tatoglu, & Glaister, 2009).

TCE aims at understanding what firms should do in complex, risky transactions (Ketokivi & Mahoney, 2015). Specifically, TCE aims at answering the question on which activities are more efficiently performed by the business themselves (vertical integration), and which activities are better left being performed by a separate organisation in the market (horizontal integration). The basis of the theory states that due to the presence of competition, outsourcing should be the most efficient mechanism. That being said, outsourcing results in certain transaction costs, such as sourcing, contracting etc. When these costs are compounded they can result in market failure. At this point it is more efficient to bring the activity in-house. Williamson found that market failure is most evident under conditions of “asset specificity, internal and external uncertainty, and frequency of transactions” (Geyskens et al., 2006; Tadelis & Williamson, 2012; Williamson, 1989, 1998, 2010).

Asset specificity refers to assets which cannot be easily used outside of the partnership between the two firms, increasing the likelihood of exploitation. Asset specificity is the key construct in TCT, and most of the predictive ability of the theory is due to this construct. (Geyskens et al., 2006; Williamson, 1998). Uncertainty arises in cases of unpredictable forecasts, or performance results are possible arising from external forces (environmental uncertainty) or internal forces (behavioural uncertainty). Walker & Weber

(1984) divided environmental uncertainty into volume uncertainty and technological uncertainty. The frequency of transaction, although part of the original theory, has not received as much attention in research (Geyskens et al., 2006). It should be pointed out that uncertainty is only a problem in the presence of asset specificity (Williamson, 1989).

A key underlying assumption of TCE is bounded rationality. The benefits of vertical integration stems from the ability to exercise control (Geyskens et al., 2006).

The critique against TCE is said to be “extensive” (Ketokivi & Mahoney, 2015, p. 123). Some authors critique the idea that environmental uncertainty should increase vertical integration, saying it should instead promote flexibility (Geyskens et al., 2006). While others just view TCE as bad theory due to the inherent assumptions (Ghoshal & Moran, 1996). Despite the critique levelled against TCE, the theory continues to gain momentum and is utilised across numerous disciplines (Ketokivi & Mahoney, 2015).

One of these critiques levelled against TCE is the extensive forecast required (Mayer & Argyres, 2004). The risks that arise from forecasting could be addressed through Real Options Theory.

1.9. Real Options Theory

Real Options Theory (ROT) was developed by Myers (1977) to describe how the theory of financial options can be used to make strategic business decisions, especially in high-risk environments. Among the topics covered in ROT research include “market entry timing, modes of entry, organisational forms, and FDI” (Trigeorgis & Reuer, 2017, p. 42).

Real Options Theory has also been referred to a theory of sequential foreign investments (Chang & Rosenzweig, 2001) as ROT posits that in an uncertain environment, MNCs

could reduce their risk through staged investments in an IJV. (Brouthers et al., 2008; Chintakananda & McIntyre, 2014; Chung, Lee, Beamish, Southam, & Nam, 2013; Driouchi & Bennett, 2011; Trigeorgis & Reuer, 2017). To date, and to the author's knowledge, no research has been conducted testing ROT and the risk associated with local ownership requirements.

Real Options Theory has provided new understanding to numerous business topics (Ragozzino, Reuer, & Trigeorgis, 2016) such as “market entry timing, modes of entry, organisational forms, FDI, MNC performance, [etc.]” (Trigeorgis & Reuer, 2017, p. 42). Other domains where ROT has been applied include entrepreneurship, R&D, JVs and M&A's (Ragozzino et al., 2016). Real options has its origins in finance literature the word first being used by Myers (1977) to describe the opportunity to purchase real assets.

Financial options involve the purchase of financial securities, whereas real options have real underlying assets. An option, in this context, is a right, but not obligation to make a future investment should the conditions be favourable, and to withhold said investment otherwise (Trigeorgis & Reuer, 2017). Real options helps firms make investment decisions in uncertain environments, by limiting the risk of a downturn, while keeping the option to take advantage of potentials upturns (Ragozzino et al., 2016).

Trigeorgis & Reuer, (2017, pg. 45) built on the 5 real option rights presented by (Ragozzino et al., 2016). The 5 basic options included options to:

- Defer or stage market entry (e.g. considering entry into new market)
- Grow (e.g. Taking an equity stake in another firm when entering the market)
- Expand or Contract plant or outsourcing contract
- Switch suppliers across foreign subsidiaries
- Exit market

Four key outcomes to ROT is that investments in uncertain conditions are encouraged, staged, flexible, and should follow a portfolio approach (Trigeorgis & Reuer, 2017).

1.10. Using TCE and ROT in understanding FDI

One of the theories that TCE is combined with when making OLI choices, is Real Options Theory (ROT) (Brouthers et al., 2008; De Villa, Rajwani, & Lawton, 2015; Slangen, 2013). This combination was also recently the subject of a Master's thesis (Choquette, 2014). The combination of theories is said to improve MNC decision making (Brouthers et al., 2008).

Studies have suggested that by combining TCE and ROT, companies may improve decision making models that will ultimately reduce risk (Brouthers et al., 2008; Li & Li, 2010; Ragozzino et al., 2016; Trigeorgis & Reuer, 2017).

Transaction cost theory focuses on control rights in IJVs (Aguir & Misra, 2017). Essentially, according to TCE, companies tend to invest less when risk and uncertainty arises from the choice of ownership (Triki & Mayrhofer, 2016), but fail to take opportunity costs and competitor behaviour into account. ROT can assist in alleviating these risks by suggesting that investment in uncertain should be staggered to reduce immediate exposure in uncertainty, while maintaining the option to take advantage of future conditions (Brouthers et al., 2008).

Trigeorgis & Reuer (2017, p. 53) summarise the role of TCE and ROT in FDI in the following manner: MNC's will enter a market through FDI's if uncertainty prohibits a simple licensing agreement. This is done to reduce transaction costs through control and monitoring. While this limits transaction cost, the investment is largely irreversible, thus flexibility is restricted. ROT focuses on how to exploit uncertainty and risks across

borders by accessing the real options to expand or withdraw operations, maintaining flexibility.

1.11. Research Questions

From the above literature, the main research question to be answered is: Does local ownership requirements (indigenisation), influence investment decisions?

Following the main question, are sub-questions and their appropriate hypothesis, namely:

Sub-Question 1: Are investment patterns different in countries that have local ownership requirements when compared with countries that don't?

Hypothesis 1a: There will be lower levels on investment in countries that do not have local ownership requirements

Hypothesis 1b: Lower levels on investment will go to countries with lower local ownership requirements

Hypothesis 1c: Less MNC's will invest in countries that do not have local ownership requirements

Hypothesis 1d: MNC's will invest less in countries that do not have local ownership requirements

Sub-Question 2a: Did changes to BBBEE legislation influence foreign direct investment in South Africa?

Hypothesis 2a: As local ownership restrictions in South Africa increased over time, levels of FDI increased

Sub-Question 2b: How did South Africa's economy perform against its peers over the same time period?

Hypothesis 2b: As local ownership restrictions in South Africa increased, South Africa's economic performance increased relative to it's peers

Sub-Question 3: Did MNC's investing in South Africa between 2000-2016 exhibit "Real Options" behaviour?

Hypothesis 3a: Larger initial investments were made in periods of stricter local ownership requirement

Hypothesis 3b: Larger less frequent subsequent investments were made in periods of stricter local ownership requirements

Hypothesis 3c: MNC's started investing in periods of stricter local ownership requirements

Hypothesis 3d: MNC's divested in periods of less local ownership requirements

Research Methodology and Design

2.1. Choice of methodology

The research was approached from a philosophy of positivism, which is defined as “a research philosophy where highly structured methods are employed to facilitate replication, resulting in law-like generalisations” (Saunders & Lewis, 2012, p. 104). The philosophy of positivism was applied as the researcher attempted to establish how MNCs have responded to different levels of ownership requirements.

In this regard the research was also classified as inductive, as it would “develop a theory as a result of analysing data already collected” as it would “begin with specific observations and measures, begin to observe patterns and repeated occurrences” (Saunders & Lewis, 2012, p. 109).

The research methodology is said to be explanatory, as it aimed to explain the relationship between variables (Salkind, 2012a; Saunders & Lewis, 2012). In particular, the aim was to establish local ownership conditions that promoted foreign direct investments.

The research strategy that was followed was archival research, as the data had already been collected by external organisations, and was merely analysed in a different way to answer the research question (Saunders & Lewis, 2012).

The study analysed data across a period (i.e. from 2000 to 2016), thus the study is said to be longitudinal. A longitudinal study is “a study of a particular topic over an extended period of time” (Saunders & Lewis, 2012, p. 124)

Finally, this research resulted in measurable mathematical outputs and thus is said to be quantitative in nature. Quantitative data is “the collection of data that involves larger,

more representative respondent samples and the numerical calculation of results” (Wiid & Diggines, 2009, p. 86)

It could be argued that this research is a two-phase, mixed-method approach. Two phases in that Research Question 1 had to be proven first, before the analysis of Question 2 and 3 would make sense. Question 3 also uses a separate panel of data to Question 1 and 2. The first phase was a quantitative longitudinal study, while the second phase followed a case study approach. Although case studies are usually qualitative in nature, Question 2 and 3 remain quantitative, however, they delve into the South African context and investment inflow patterns. Two-phased, mixed-method approaches, such as the one described above, and those put forward by Creswell, Plano Clark, Gutmann, & Hanson, (2003) provides a practical example once a theoretical principle has been established (Creswell & Creswell, 2009; Ellinger, Watkins, & Marsick, 2009).

2.2. Population and sample

A universe is defined as “survey elements that qualify for inclusion in the research study, and is set by the research question, which specifies who or what is of interest, which may include individuals, groups of people, organizations, or even objects.” (Lavrakas, 2008). From the universe, a population is defined as “a group of potential participants to whom you want to generalise the results of the study” (Salkind, 2012, p. 95) or “the complete set of group members” (Saunders & Lewis, 2012, p. 132). Finally, the sample is then a “subset of the population (Salkind, 2012, p. 95; Saunders & Lewis, 2012, p. 132).

As the researcher used as much of the information that was available in the respective data tables, the only filter that was applied was that all the data had to be available across all the tables. For example, if there was FDI data and local ownership data for Albania, but the data table containing information on GDP per Capita did not contain information

for Albania, then Albania would be excluded from the country. This is effectively non-probability judgement sampling

In addition to the rule stated above, the following sampling and sample size was applicable:

In this study, the universe and population was as follows:

Table 2.1 Universe and Population

Hypothesis	Universe and Population
Hypothesis 1a	Universe: All countries listed in the World Bank's Foreign Ownership Restrictions Database Population: All countries listed in the World Bank's Foreign Ownership Restrictions Database for which there is a value
Hypothesis 1b	Universe and Population: All countries listed in the World Bank's Foreign Ownership Restrictions Database that have a local ownership requirement of more than 0%
Hypothesis 1c	Universe: All countries listed in the UNTAD's Value of cross-border M&As by region/economy of seller Population: All countries listed in the UNTAD's Value of cross-border M&As by region/economy of seller for which we have a value
Hypothesis 1d	Universe: All countries listed in the UNTAD's Number of cross-border M&As by region/economy of seller, 1990-2016 Population: All countries listed in the UNTAD's Number of cross-border M&As by region/economy of seller, 1990-2016 for which we have data
Hypothesis 2a	Universe and Population: All FDI in South Africa from 2000-2016
Hypothesis 2b	Universe: All countries for which FDI is available Population: All FDI for countries with a comparable GDP/Capita in 2000
Hypothesis 3a-d	Universe: All MNC who invested in another country from 2000-2016 Population: All MNCs that invested in JSE listed firms from 2000-2016

The sample for Hypothesis 1a-d include all countries for which the various databases had local ownership data, FDI, MNCs investing and the value of MNC investments for the period of 2000-2016, this resulted in a sample of 82 countries.

The sample for Hypothesis 2a-b include FDI for South Africa from 2000-2016, along with the three stages of local ownership requirements. Hypothesis 2b also includes 20 countries; FDI, which had GDP/Capita similar to South Africa in 2000.

The sample for Hypothesis 3a-d include all MNCs who invested more than 3% in a JSE listed firm between 2000 and 2016, and this resulted in a sample of 1255 MNC's over the period.

2.3. Unit of analysis

The unit of analysis was the major entity that was analysed, and could be an individual, group, object, interaction or geography (Trochim, 2006). The unit being analysed in this study was the interaction between an MNC and a host country, more specifically decision to invest in a host country where local ownership is a legal requirement.

2.4. Measurement instrument

As secondary data was the only source of data, no measurement instrument was required to answer the research question.

2.5. Data gathering process

Secondary data (timeseries) was used throughout this research. Secondary data is defined as “data used for a research project that were originally collected for some other purpose”. The databases, sources, and information types are described in the following table.

Table 2.2 Secondary Data Sources

Database	Data Table	Source
OSIRIS	Table 6: Shareholder Percentage	https://osiris-bvdinfo.com
UNCTAD	Table 2: FDI Table 3: MNCs investing Table 4: Value of MNC investment	www.unctad.org
WorldBank	Table 1: Foreign Ownership Requirements Table 5: GDP/Capita	www.worldbank.org

2.6. Analysis Approach

To comprehend the relationship between two or more variables, there is a pool of scientific methods which can be used ranging from panel based models to traditional scientific time series econometric methods (corrected OLS and MOLS) (Gujarati, 2004). Consequently, descriptive and statistical analysis (uni-dimensional, bivariate and multi-variate analysis) could be employed depending of the nature of the data to be analysed. However, the study used time series panel data thus, descriptive statistics, unit root tests and hypothesis tests were employed. To check if the model was well specified, goodness fit of the model was employed. To check if the data in question was stationary, unit root tests were employed using Augmented Dicky Fuller (ADF) and Phillip-Peron (PP) tests. To answer the research questions, the study employed various tests such as Wald test and t-tests. A brief explanation of all data analysis methods used is summarised below.

A 95% confidence level was required to establish significance. Thus, the level of significance was 0.05 (Salkind, 2012:183).

Eviews 9.5 and NumXL add-in was used to perform the analysis.

Data analysis techniques						
Goodness fit of the model			Descriptive statistics [Kurtosis, mean, median, Jarque-Bera (JB) and mode].			
Unit root test			ADF & PP Tests			
Hypothesis testing						
Research question	Hypothesis	Variables			Test	Justification
		Independent-variable	Dependent-variable	Control variable		
Question 1	Hypothesis 1a;	Level of indigenisation	FDI	GDP/Capita	Eviews: Granger Wald test t-statistic F-statistic Chi-squared	Recommended for panel data
	Hypothesis 1b;	Level of indigenisation	FDI	GDP/Capita		Recommended for panel data
	Hypothesis 1c;	Level of indigenisation	No. of MNC's investing	GDP/Capita		Recommended for panel data
	Hypothesis 1d;	Level of indigenisation	Value of MNC investments	-	NumXL: ANOVA, Regression Analysis	Recommended for panel data
Question 2	Hypothesis 2a;	Level of indigenisation	South African FDI	-	Eviews: Wald test t-statistic F-statistic Chi-squared	Recommended for panel data
	Hypothesis 2b;	Level of indigenisation	South African FDI	-		Recommended for panel data
Question 3	Hypothesis 3a;	Level of indigenisation	Shareholding % of MNC in subsidiary	-	Eviews: t-test t-statistic f-statistic Chi-squared	Recommended for panel data
	Hypothesis 3b	Level of indigenisation	Shareholding %of MNC in subsidiary	-		Recommended for panel data
	Hypothesis 3c	Level of indigenisation	Shareholding % of MNC in subsidiary	-	T-test & Numxt: Correlogram analysis	Recommended for panel data
	Hypothesis 3d	Level of indigenisation	Shareholding % of MNC in subsidiary	-	t-test t-statistic	Recommended for panel data

2.7 Limitations

As with all academic studies, certain limitations exist. The first limitation was with the non-probability sampling technique, which limited the generalizability of the study. To compound limitations, numerous variables could impact FDI, including GDP, growth, political risks, levels of taxation, etc., and not only the extent of local ownership requirements.

Secondly, within Real Options Theory, the key decision to be made by management is whether to delay investment. Such an action cannot be analysed in secondary data, as the motives of those deciding on the investment needs to be known. Thus we were limited to analysing Real Options type behaviour.

Finally, although the use of secondary data presented certain advantages to the researcher, it also presents certain generic risks, such as ambiguity, accuracy, timeliness, sample size, and company reputation (Cheng & Phillips, 2014). Due to the reputation of the databases, and scope of the data available, these risks and mostly mitigated.

Results

3.1 Introduction

This section presents, interprets and analyses the results from tests performed to achieve the objectives in the study. The chapter is divided into different subsections which give a set of statistics relating to the basic features of the data in the study. Together with simple graphic analysis, they formed the basis of most of the quantitative analyses. Descriptive statistics of the variables was conducted first. The following subsection covers unit root test which was applied to the set of data employed in the study to determine the time series properties of individual variables. To check if data did not have a unit root (stationary data), unit root test using Augmented Dicky Fuller (ADF) and a confirmatory test Philips Perron (PP) test were employed. The unit root test is an important test to avoid the problem of spurious regression (meaningless results) (Gujarati, 2004).

3.2 Descriptive statistics of the panel data

Descriptive statistics provide confirmation of goodness fit of the panel data. Important aspects of the descriptive statistics are kurtosis, skewness, mean and median, and the Jarque-Bera (J-B). Skewness measures the distribution of the data around the mean. Negative skewness implies the distribution has a long-left tail. Conversely a positive skew implies the distribution has a long right tail. Kurtosis measures how flat or peaked the distribution of data is (Gujarati, 2004) Thus, Jarque–Bera test is a goodness-of-fit test of whether sample data has the skewness and kurtosis matching a normal distribution (Gujarati, 2004). In the case of central tendency, the mean, median and the mode are analysed below.

Table 3.1 Shows the outcome of the descriptive statistics described above.

Table 3.1. Descriptive Statistics Results.

	FDI INFLOWS	GDP CAPITA	NUMBER OF CROSS-BORDER M&As	VALUE OF CROSS- BORDER M&As
Mean	9726.934	11581.38	89.32309	4491.531
Median	2101.656	4513.136	18.00000	150.1790
Maximum	253825.8	67792.30	1178.000	250799.0
Minimum	-31689.3	111.3634	0.000000	-55040.07
Std. Dev.	20657.57	14975.27	161.0927	17069.44
Skewness	5.071033	1.572988	3.022117	8.519647
Kurtosis	41.99270	4.392276	13.68937	96.93437
Jarque-Bera	77038.73	561.6977	7156.501	432535.4
Probability	0.000000	0.000000	0.000000	0.000000
Sum	11078978	13191197	101739.0	5115853.
Observations	1139	1139	1139	1139

To establish goodness of fit, the study used Jarque-Bera results. The J-B probability was reported and the J-B statistic was greater (absolute term) than the observed value under the null hypothesis of a normal distribution. The probabilities obtained both in the test for normality and the Jarque-Bera indicates that the variables are normally distributed. Also, a small probability value (less than 0.05) leads to the rejection of the null hypothesis of a normal distribution. Thus, the hypothesis for normality and the Jarque-Bera probabilities indicated that the variables are normally distributed.

3.3 Unit root/stationary test results

It is imperative to test for unit root as it avoids the problem of spurious regression (meaningless results) (Gujarati, 2004). Thus, a stationarity test was employed in the study which is the most dominant unit root test in econometrics when using panel data. The study made use of both of informal graphical presentation and formal ADF and PP tests. The graphical results from the test for stationarity are presented in Figure 4.2(a) and (b).

As shown in Figure 4.2 (a) and (c), the panel data has no constant trend and shows a random fluctuation trend throughout. The study concluded that the panel data is not stationary in levels hence, it contains a unit root. However, figure 4.2 (b) and (d) shows all differenced panel data. The plots of panel data in log differenced fluctuated around the zero mean which means that the panel data is indeed integrated of the same order. Hence, there is the absence of unit root and the panel data is stationary

Figure 3.1 (a) Countries without local ownership requirements; Plot of Panel data in levels.

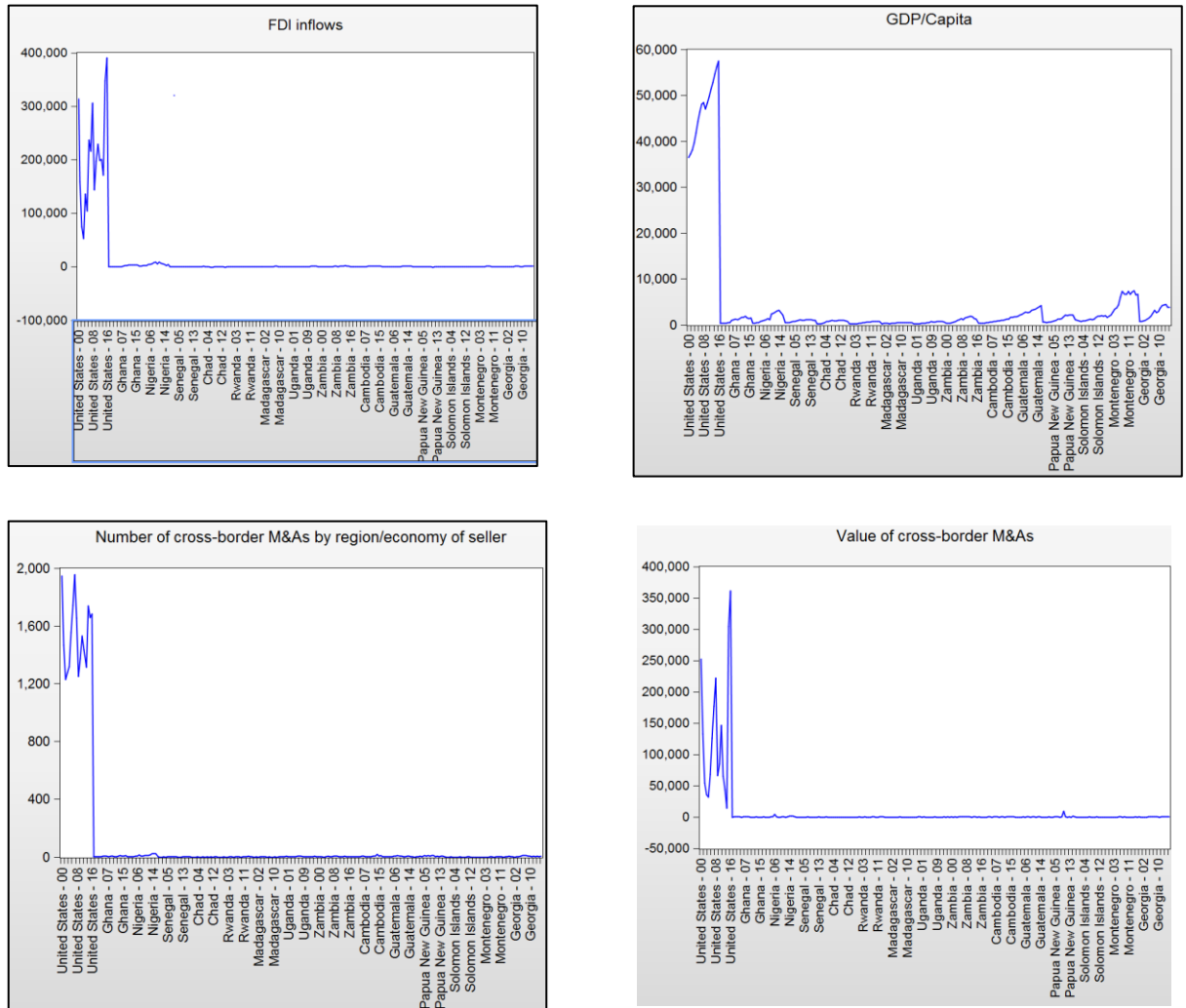


Figure 3.1. (b) Countries Without local ownership requirements; Plot of Panel data in 1st difference

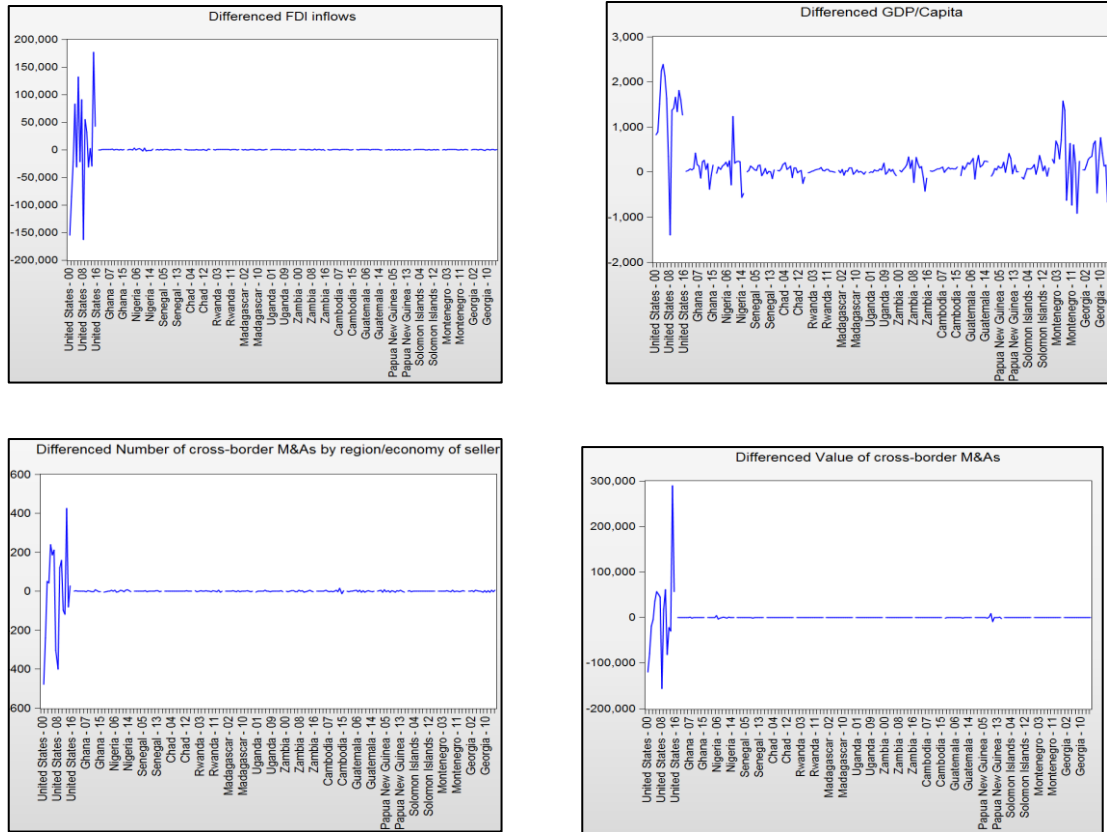


Figure 3.1 (c) Countries without local ownership requirements; Plot of Panel data in levels.

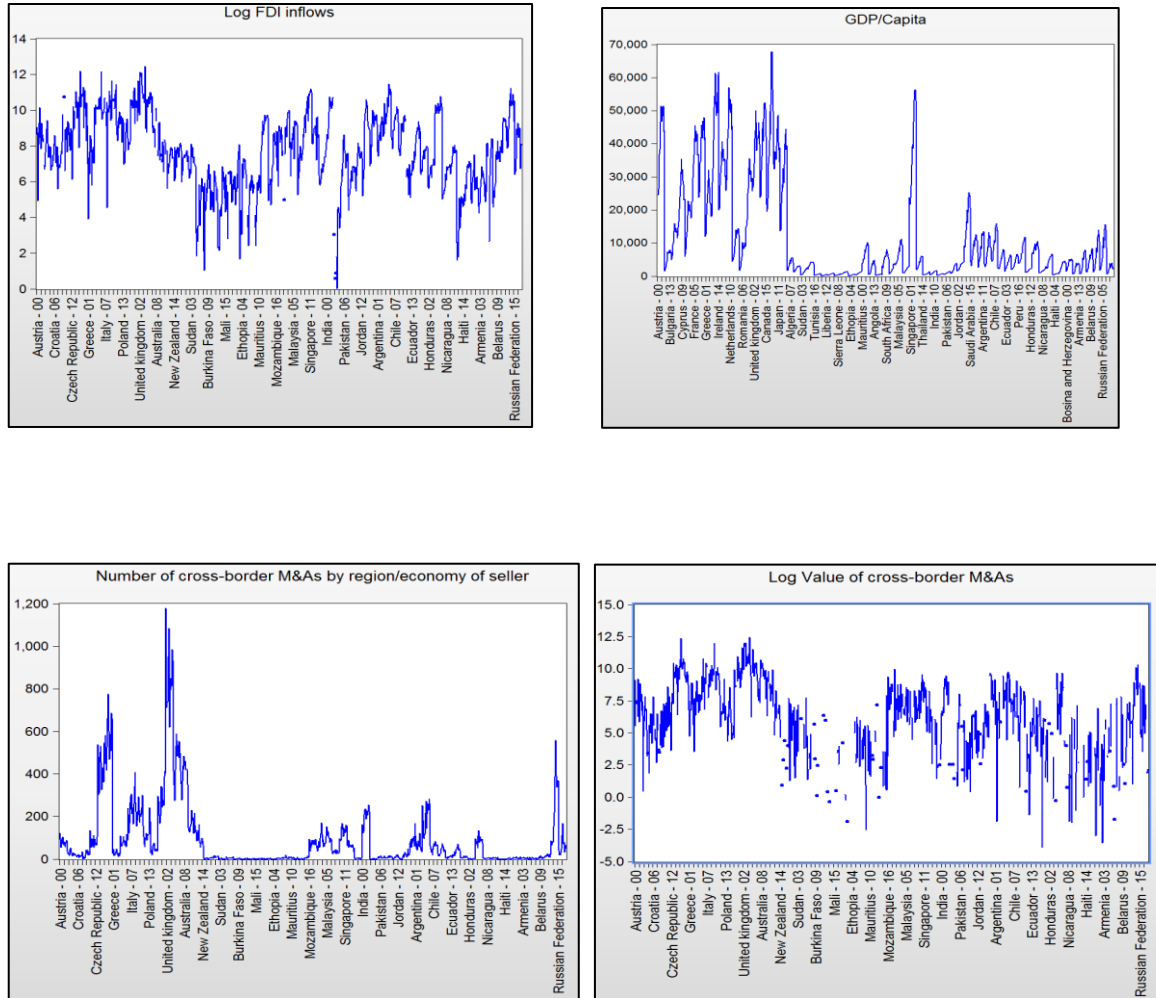
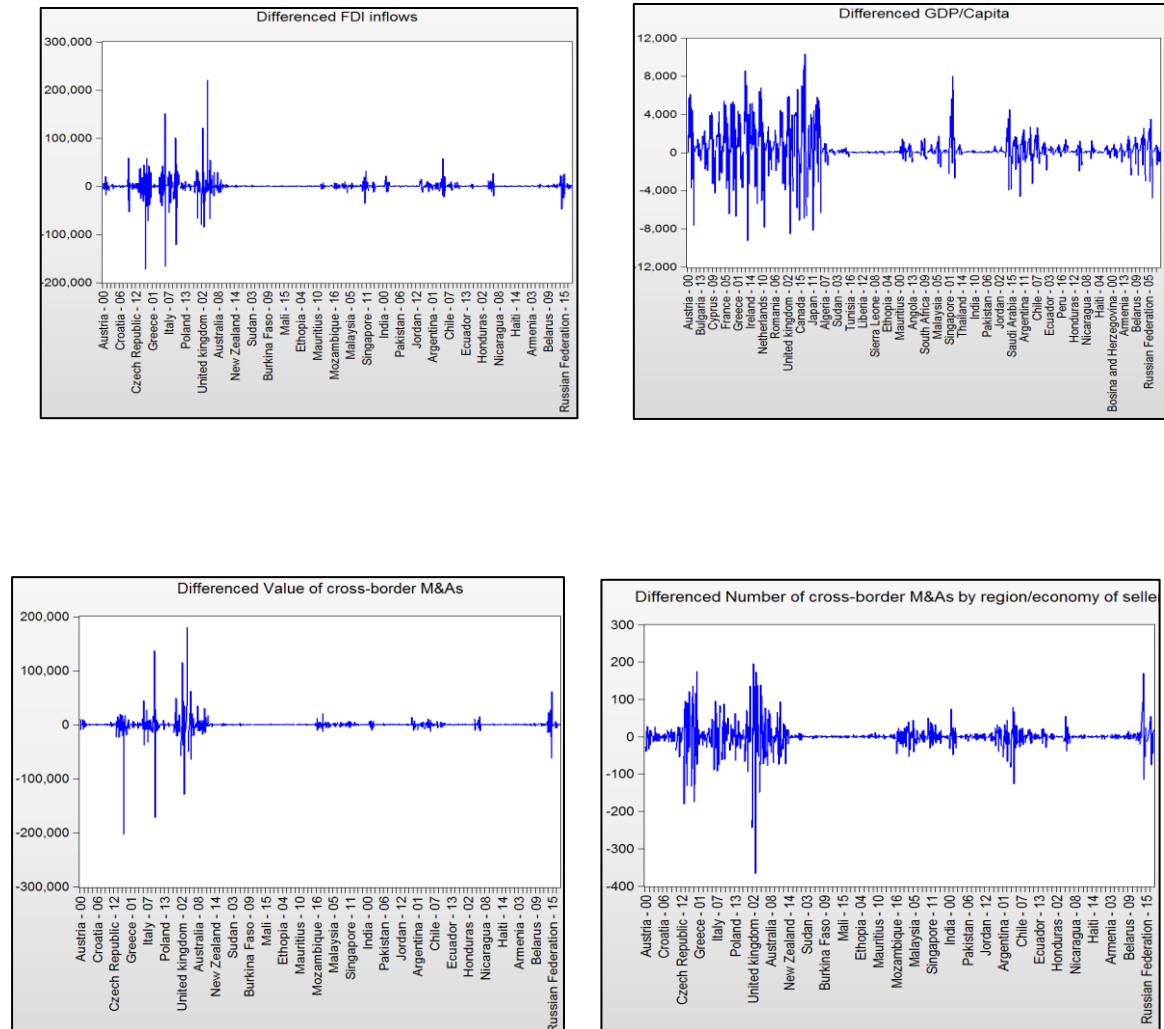


Figure 3.1. (d) Countries With local ownership requirements; Plot of Panel data 1st difference:



The graphical method alone, however, does not give irrefutable evidence that the data is indeed integrated of the same order. Therefore, the use of a more formal method to confirm if the panel data is indeed stationary was carried out in the following subsection. ADF and PP Fisher Chi-square test were employed in the study. The probability for Fisher tests were computed using an asymptotic Chi-square distribution and all other tests assume asymptotic normality.

The rule of thumb when testing for unit root test is that the null hypothesis assumes individual unit root process (Choi, 2001; Maddala & Wu, 1999). Thus, the operational null hypothesis for the panel data assumed the presence of unit root. To conclude either the data did not have unit root, the corresponding probability was checked to see if it was either above or below 5% and draw a conclusion. If a probability of greater than 5% is calculated, the null hypothesis was not rejected (the data has a unit root) and if a probability of less than 5% was calculated, the null hypothesis was rejected and an alternative would have to be considered. Table 3.2 shows the results for Augmented Dickey-Fuller (ADF) test and Philip-Perron (PP) results respectively. PP tests are not parametric, unlike ADF which selects the level of serial correlation. Therefore, PP test serves as a confirmatory test to ADF as it shows if results obtained in ADF are indeed correct. Analysing and commenting on the results, both ADF and PP tests.

Table 3.2. Panel unit root test: Summary

			Test	Statistic	Prob	Decision	Conclusion
Value of Cross-border M&As	Intercept	Levels	ADF	431.516	0.3241	Do not reject the null hypothesis	Panel data has a unit root
			PP	473.755	0.4525	Do not reject the null hypothesis	Panel data have unit root
		1 st difference	ADF	713.407	0	Reject null hypotheses	No unit root
			PP	968.984	0	Reject null hypothesis	No unit root
Infdi_flows	Intercept	Levels	ADF	139.332	0.3142	Do not reject the null hypothesis	Panel data has a unit root
			PP	266.122	0.1432	Do not reject the null hypothesis	Panel data have unit root
		1 st difference	ADF	441.964	0	Reject null hypotheses	No unit root
			PP	1054.72	0	Reject null hypothesis	No unit root
Number of cross Borders M&As	Trend & Intercept	Levels	ADF	109.223	0.907	Do not reject the null hypothesis	Panel data has a unit root
			PP	168.397	0.0651	Do not reject the null hypothesis	Panel data have unit root
		1 st difference	ADF	351.086	0	Reject null hypotheses	No unit root
			PP	815.971	0	Reject null hypothesis	No unit root
GDP per capita	Trend & Intercept	Levels	ADF	78.193	0.9999	Do not reject the null hypothesis	Panel data has a unit root
			PP	56.6146	0.07641	Do not reject the null hypothesis	Panel data have unit root
		1 st difference	ADF	275.822	0	Reject null hypotheses	No unit root
			PP	506.11	0	Reject null hypothesis	No unit root

Table 3.3 Panel unit root test: Summary

Countries without Local Ownership Requirements

			Test	Statistic	Prob	Decision	Conclusion
FDI Inflows	Trend & Intercept	Levels	ADF	34.4574	0.2629	Do not reject the null hypothesis	Panel Data has a unit root
			PP	32.5496	0.3424	Do not reject the null hypothesis	Panel Data has a unit root
		1 st difference	ADF	108.55	0	Reject the null hypothesis	No unit Root
			PP	135.584	0	Reject the null hypothesis	No unit Root
GDP per Capita	Trend & Intercept	Levels	ADF	20.1021	0.9139	Do not reject the null hypothesis	Panel Data has a unit root
			PP	18.7814	0.9445	Do not reject the null hypothesis	Panel Data has a unit root
		1 st Difference	ADF	71.3568	0	Reject the null hypothesis	No unit Root
			PP	75.4582	0	Reject the null hypothesis	No unit Root
Number of cross-border M&As	Trend & Intercept	Levels	ADF	76.4892	0.4541	Do not reject the null hypothesis	Panel Data has a unit root
			PP	78.2515	0.4351	Do not reject the null hypothesis	Panel Data has a unit root
		1 st Difference	ADF	128.12	0	Reject the null hypothesis	No unit Root
			PP	183.887	0	Reject the null hypothesis	No unit Root
Value of Cross-border M&As	Trend & Intercept	Levels	ADF	71.9643	0.2413	Do not reject the null hypothesis	Panel Data has a unit root
			PP	84.1128	0.2614	Do not reject the null hypothesis	Panel Data has a unit root
		1 ST Difference	ADF	133.557	0	Reject the null hypothesis	No unit Root
				195.328	0	Reject the null hypothesis	No unit Root

As shown in Table 3.1 and 3.2, panel data for both countries with and without local ownership requirement contained a unit root in levels as the corresponding probability was greater than 5%. Thus, a probability of more than 5% necessitates failure to reject the null hypothesis which claims the presence of unit root. However, after first difference, panel data for both countries with and without local ownership requirements under ADF and PP became stationary as the probability of 0.0000 was obtained. Eventually, a probability of less than 5% permits rejection of the null hypothesis which claims the presence of unit root. Therefore, if panel data becomes stationary after first differencing it implies that the data is integrated of the same order. Eventually, since the panel data is integrated of the same order, the used of other tests such cointegration analysis and Granger causality tests are justified. Hypothesis testing using Wald tests and T-tests was employed and the analysis was explained as follows.

3.4 Hypothesis testing

Hypothesis testing is a distinct method used in statistics to confirm the validity of an assumed outcome over its alternative (Gujarati, 2004). In econometrics, there are several methods used to test the validity of assumed outcomes namely descriptive statistics in which the mean, mode, and standard deviation can be used. To answer the questions stipulated in chapter one, each hypothesis was subjected to various tests as indicated in table 3.3. After confirming that the series was stationary, different tests were done using NumXL and the Eviews software. The results are presented in the following subsections. First, the panel data was subjected to Lag Order Selection Criteria (LOSC) in which the number of lags were obtained. Having identified the number of lags, pairwise granger causality tests were employed and hypothesis testing thereafter.

Granger causality test

In order to conduct a meaningful granger causality, test it is imperative to select the order in which the test is tested upon. Thus, to choose the lag order for the granger test, the Akaike Information Criterion (AIC) is taken into consideration. The AIC measures the

relative quality of statistical models for a given set of time series data (Asteriou & Hall, 2007). Therefore, given the panel data in consideration, the AIC can estimate the quality of the data. So, AIC provides a means for panel data model specification. In so doing, the study followed the Lag Order Selection Criteria (LOSC) as presented in Table 3.3.

Table 3.3. Lag Order Selection Criteria (LOSC).

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-31523.1	NA	1.35E+29	78.42568	78.44901	78.43464
1	-28511.4	5986.068	7.83E+25	70.97353	71.09019	71.01833
2	-28414.3	191.9211	6.40E+25	70.77192	70.9819	70.85257
3	-28365.1	96.937	5.89E+25	70.68917	70.99248	70.80566
4	-28257.6	210.4244	4.69E+25	70.4616	70.85823	70.61393
5	-28195	121.8573*	4.18e+25*	70.34577*	70.83573*	70.53394*

* indicates lag order selected by the criterion

LR: sequentially modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

The lower the Akaike Information Criterion (AIC) better the panel data (Granger & Newbold, 1974). Thus, results for lag order selection. Thus, results for lag order selection presented in Table 3.3 above confirmed that the criteria selected 5 lags. From Table 3.3 70.34577 under lag 5 is the lowest AIC. Therefore, lag order 5 is selected and granger causality test was conducted thereafter. Table 3.4 shows results of the pairwise granger causality test.

Table 3.4. Pairwise Granger Causality Tests

Null Hypothesis	Obs	F-statistic	Prob.
Local ownership requirements does not Granger cause FDI inflows	804	12.9583	3.00E-06

First, FDI inflows and local ownership requirements were subjected to pairwise Granger Causality test under the null hypothesis “does not granger cause”. The computed probability of 3.00 E-6 under *FDI Inflows and Local Ownership* is less than 5% significant

level, the null hypothesis that local ownership does not granger cause FDI Inflows is rejected.

Following the Granger Causality Test, a Wald Test was conducted. Table 8 contains the output of the Wald Test conducted.

Table 3.5 contains the output of the Wald Test conducted,

Hypothesis	Results
<i>Hypothesis 1a</i>	t-statistic = 3.493869, Probability = 0.0005 F-statistic = 12.20712, Probability = 0.0005 Chi-square 12.20712, Probability = 0.0005 Null hypothesis C(1) = 0, Normalized Restriction (=0) C(1) Val = 2404.228; Std.err. = 688.1277
<i>Hypothesis 1b</i>	t-statistic = 3.490962, Probability = 0.0005 F-statistic = 5.838836, Probability = 0.0005 Chi-square 5.838836 Probability = 0.0005 Null hypothesis C(1)=2 Normalized Restriction (=0) C(1) Val = 2404.228; Std.err. = 688.1277
<i>Hypothesis 1c</i>	t-statistic = -5.442859, Probability = 0.0000 F-statistic = 29.62472, Probability = 0.0000 Chi-square 29.62472, Probability = 0.0000 Null hypothesis C(1)=0 Normalized Restriction (=0) C(1) Val = -2267.309; Std.err. = 416.5658
<i>Hypothesis 1d</i>	t-statistic = 0.314537, Probability = 0.7532 F-statistic = 5.838836, Probability = 0.7532 Chi-square 5.838836 Probability = 0.7531 Null hypothesis C(1)=0 Normalized Restriction (=0) C(1) Val = 1.247313; Std.err. = 3.965550

ANOVA is used when determining if there is a statistical difference between the means of independent groups. This test was also used for Hypothesis 1a-d. Table 4.6 contains the output of the ANOVA results.

Table 3.6. NumXL ANOVA results summary

Hypothesis	Regression statistics	ANOVA	Regression Coefficients				
				Value	Std. Error	t-stat	P-Value
Hypothesis 1a	R Squared = 97.2%	F stat = 2853,8	Intercept	-1913.63	699.94	-2.73	0.30%
	Ad R squared = 97.1%	P-Value = 0.0%	Value of cross-border	0.74	0.03	28.34	0.00%
			Number of cross-border	18.48	0.24	28.34	0.80%
			GDP/Capita	1.8	0.24	7.65	0.00%
Hypothesis 1b	R Squared = 61,7%	F stat= 610,49	Intercept	2762.43	482.71	5.72	0.00%
	Ad R squared = 61.6%	P-Value = 0.0%	Value of cross-border M&As	0.72	0.03	23.44	0.00%
	Standard Error= 12794,69		Number of cross-border M&As	23.38	3.86	6.06	0.00%
			GDP/Capita	0.14	0.03	4.33	0.00%
Hypothesis 1c	R Squared = 64.5%	F stat=687.61	Intercept	-2318,58	383,54	-6.05	0.00%
	Ad R squared = 64.4%	P-Value=0.0%	Number of cross-border M&As	41.1	2.87	14.32	0.00%
	Standard Error= 10182.68		GDP/Capita	-0.11	0.03	-4.22	0.00%
			FDI inflows	0.45	0.02	23.44	0.00%
Hypothesis 1d	R Squared = 63.9%	F stat= 669.30	Intercept	9.69	3.7	2.62	0.40%
	Ad R squared = 63.8%	P-Value=0.0%	Value of cross-border M&As	0	0	14.32	0.00%
	Standard Error= 96.94		GDP/Capita	0	0	19.85	0.00%
			FDI inflows	0	0	6.06	0.00%

Hypothesis 1a

From the Wald test (Table 3.5 conducted, a probability less than 0.05 (5%) indicates that the null hypothesis is strongly rejected. Furthermore, the results from the ANOVA test (Table 3.6) show that the model under consideration follows a normal distribution and is statistically significant. At most 97% of the variation in the exogenous variables is explained by the model. Subsequently, the study

Therefore, we reject the null hypothesis which claims there will be lower levels on investment in countries that do not have local ownership requirements. Thus, investments are high in countries which do not have local ownership requirements.

Hypothesis 1b

The Wald test produced a probability of less than 5% the null hypothesis is strongly rejected. In addition to this, Regression analysis results in Table 3.6 shows different tests namely regression statistics, Analysis of Variance (ANOVA), residual Analysis and Regression Coefficients. The results under regression statistics, it is estimated that at most 61.7% of the variation in the variables is explained within the model. Subsequently, the analysis of variance (ANOVA) revealed that the regression model is statistically significant, thus, the model is statistically valid. After confirming that the model is statistically significant, it was imperative to comment on regression coefficients. The regression coefficients results revealed that all exogenous variables were statistically significant since their corresponding *t-statistics* are greater than 2 in absolute terms. Considering the results under regression coefficients, the study failed to reject the null hypothesis and conclude that higher levels of investment will indeed go to countries with lower local ownership requirements.

Therefore, we reject the null hypothesis which claims that lower levels on investment will go to countries with lower ownership requirements and thus conclude undeniably that countries with lower local ownership requirements and those without local ownership requirements attract more investments.

Hypothesis 1c

From table 3.5 the computed probability of less than 5% on three tests (t-statistic, F-statistic & Chi-statistic) are less than 5%. Furthermore, the results from table 3.6 show that the panel data follows a normal distribution and the model is statistically significant. The corresponding probabilities at 5% level of significance led to the rejecting decision, hence concluding that indeed MNCs will invest in countries that do not have local ownership requirements.

Therefore, the null hypothesis which claims that less MNC's will invest in countries that do not have local ownership requirements is rejected.

Hypothesis 1d

The higher the probability values in table 3.5 indicates that the null hypothesis is not rejected. Therefore, the null hypothesis which claims that MNC's will invest less in countries that do not have local ownership requirements is not rejected.

Table 3.4 Question 2 Data analysis output

Hypothesis	Data analysis technique	Result	Conclusion
Hypothesis 2a	Wald test	t-statistic = 1.158623, Probability = 0.2647 F-statistic = 1.342407, Probability = 0.2647 Chi-square 1.342407, Probability = 0.2466 Normalized Restriction (=0) C(1) Val = 5.323587 ; St. Err. = 4.594754	The higher the probability values which are greater than 5% for all three tests (t-statistic, F-test and Chi-square) indicate that the null hypothesis is not rejected. Eventually, as local ownership restrictions in South Africa increase over time levels of FDI eventually decreases.
Hypothesis 2b	Wald test	t-statistic = 4.133199, Probability = 0.0000 F-statistic = 17.08333, Probability = 0.0000 Chi-square 17.08333, Probability = 0.0000 Normalized Restriction (=0) C(1) Val = 4.337 ; St. Err. = 410.922144	The computed probability is less than 5%, therefore, the hypothesis which claims that local ownership restrictions in South Africa increased, South Africa's economic performance decreased relative to its peers is rejected. This shows that South Africa's despite increase in local ownership, investments in South Africa increased.

	Period	Sample Mean	Sample Std. Dev	Method	Value	Probability
Hypothesis 2a	2000-2007	3033.569	3020.192	t-statistic	2.840018	0.0250
	2008-2012	5829.709	2406.493	t-statistic	5.415927	0.0056
	2013-2016	4517.636	3093.079	t-statistic	2.920479	0.0615
Hypothesis 2b	2000-2016	3096.727	11298.92	t-statistic	5.052023	0.0000
	South Africa 2000-2016	4205.155	2961.044	t-statistic	5.854076	0.0000

Table 3.5. Question 2 Data analysis output;

Shows results for three-time periods (2000-2007, 2008-2012, 2013-2016). Thus, the results are explained in the following subsection.

- 2000-2007: more investments were made despite an increase in local ownership requirements in South Africa. A probability of 0.0250 during this period led to the reject of the claim that “As local ownership restrictions in South Africa increased over time, levels of FDI decreased”.
- 2008-2012: considering the results obtained, more investments were made during this period because the p-value obtained led to the rejection of the claim that “as local ownership restrictions in South Africa increased over time, levels of FDI decreased”.
- 2013-2016: this period marks the turning point of investments in South Africa. The results revealed that indeed fewer investments were made during this period since the computed p-value of 0.0615 led to the acceptance of the claim “as local ownership restrictions in South Africa increased over time, levels of FDI decreased”.

Question 2b.

The results in Table 3.5 revealed for South Africa vs other 20 countries discovered that during the period under consideration, indeed more investments are made despite the increase of local ownership requirements. This is shown through the rejection of the claim that as local ownership restrictions in South Africa increased, South Africa's economic performance decreased relative to its peers.

Table 3.5. Research Question 3 Results summary

	Mean	Median	Sample Mean	Sample Median	Sample Std. Dev	T-statistic	T-Statistic Probability
Hypothesis 3a	0.03245	0.02315	4.21538	6.11216	1.54652	54.1048	0.123143
Hypothesis 3b	0.653873	0.26545	4.35326	6.45264	2.98779	33.76853	0.165743
Hypothesis 3c	0.32121	0.3214	4.54323	4.43111	1.23191	34.48271	0.676378
Hypothesis 3d	0.23154	0.32143	3.87685	3.65468	1.45363	-11.3214	0.00154

Hypothesis 3a

The corresponding probability is greater than 5% and therefore it was shown that smaller initial investments were made in periods of stricter local ownership requirements in South Africa.

Hypothesis 3b

The research question that claims that smaller more frequent subsequent investments were made in periods of stricter local ownership requirements, is not rejected and the computed results show that stricter ownership requirements led to smaller, more frequent investments made in South African companies.

Hypothesis 3c

The computed probability of 0.676378 gives credibility to the non-rejection decision and thus, it is shown that MNCs stopped investing in periods of stricter local ownership requirements.

Hypothesis 3d

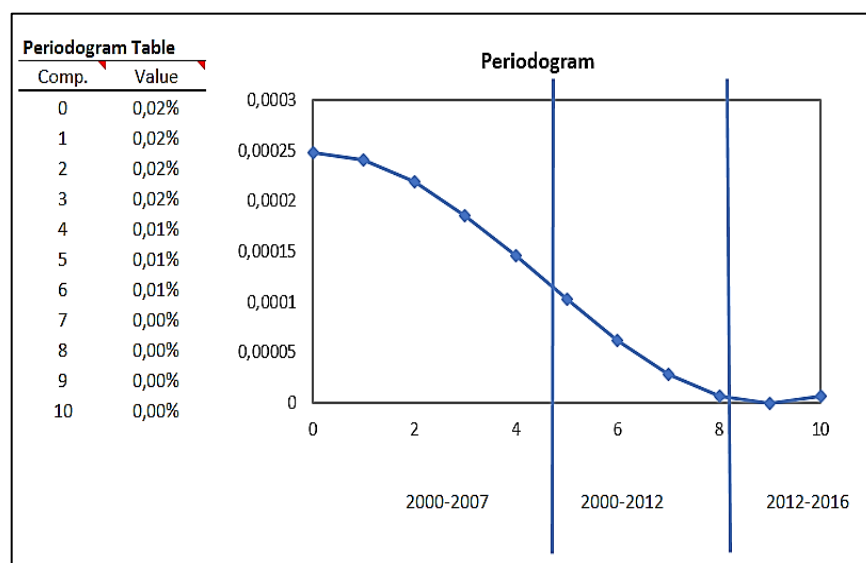
A probability of less than 5% leads to a strong rejection of the claim that MNCs divested in periods of stricter local ownership requirements.

Thus, the research confirmed that during times of increased local ownership requirements, foreign investors changed their investment behaviour. During times of increased equity restrictions, foreign investors:

- Question 3a: made smaller initial investments
- Question 3b: led to smaller, more frequent investments
- Question 3c: stopped investing

Unfortunately, the methodology employed could not determine whether investments were delayed. The methodology could only identify real options behaviours, such as those mentioned above.

Figure 3.3. Periodogram MNCs investing in South Africa Source



Periodogram shows the level of investments in South Africa from 2000-2016. As depicted in figure 3.3, indeed investments dropped significantly in South Africa. This follows stricter restrictions imposed in South Africa during the period. Also, investor confidence was distorted due to different economic challenges South Africa has been facing ever 2003 such as unrest political ideologies and unstable currencies. Thus, figure 3.3 confirms the findings from table 3.2 which concluded that there were lesser investments in times of stricter local ownership requirements in South Africa.

3.5 Conclusion.

This chapter consisted of three significant sections which are descriptive statistics, unit root test, and hypothesis testing. First, descriptive analysis was done to check the goodness fit of the model to check if the panel model was correctly specified. Second, unit root test was conducted second to check is the panel pool was integrated of the same order thus, stationary data. Thus, Dickey-Fuller test was used as the main test and Philips-Peron tests as a confirmatory test. Eventually, both methods revealed that the data series under consideration contain a unit root in levels and become stationary after first differencing. This implies that the series is integrated at the same order which is the order I (1). Last but not least, hypothesis testing using various method was employed in order to answer the research questions in the study. Different outcomes where obtained and commented upon thereafter. Ultimately, having attained the results as shown in table 3.2.

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22. APPENDIX 6 CERTIFICATION OF DATA ANALYSIS SUPPORT

(Additional assistance retained or not - to be completed by students who used Quantitative or Mixed methodology)

Please note that failure to comply and report on this honestly will result in disciplinary action

I hereby certify that (please indicate which statement applies):

- *I did not receive any additional statistical assistance (i.e. did not retain the services of a statistician) to run the data analysis for my research report:*
.....
- *I retained the services of a statistician in running the data analysis for my research report:* ✓

If a statistician was retained – ***please supply contact name and details of said statistician:***

NAME: Kudzani Shambare

EMAIL ADDRESS: kudzish@gmail.com

CONTACT NUMBER: +27 79 903 6750

I hereby declare that all statistical interpretations/ analysis and write-up of the results for my study was completed by myself without outside assistance

Name of student: Zane Rinke
.....

Signature: 
.....

Student number: 16391579
.....

Student email address: zrinke@gmail.com
.....