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Thesis

Title: The attraction of direct foreign real estate investments into Sub-Saharan Africa

Do urban planning regulations matter?

Name: **Max Meldgaard Van Gils**

Supervisor: Dr. Jeroen van Haaren

Co-Supervisor: Prof. Dr. Ronald Wall

Specialization: UCR

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Max Meldgaard van Gils

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Summary

Direct Greenfield Foreign Real Estate Investment (FREI) has the potential to fulfil a positive role in the development of urban Africa, by enhancing economic growth, improving the built environment and by creating a relatively large amount of jobs (Tibaijuka 2009; Dasgupta et al. 2014; Harvey 2014; EY 2015). However, inappropriate urban planning regulations and inadequate urban service provision might be deterring economic growth and FREI attraction (Collier and Venables 2013; Collier 2013; Alterman 2013; Brueckner and Lall 2015; Castells-Quintana 2015). Although the interest in the 'rising' continent is increasing (Watson 2013; KnightFrank 2015; JLL 2015; PWC 2015), the amount of FREI attracted by Sub-Saharan Africa (SSA) is still very small. The determinants of Foreign Direct Investment (FDI) and indirect FREI have been researched quite extensively[1], however Direct Greenfield FREI has received less attention (Rotherberger 2010). As many authors acknowledge (Laposa and Lizieri 2005; Holsapple et al. 2006; Rodríguez and Bustillo 2010; Rotherberger 2010; Fereidouni and Masron 2013; Salem and Baum 2016), direct FREI has both FDI and Foreign Portfolio Investment (indirect FREI) characteristics and especially the real estate specific locational factors are important differences from general determinants of FDI attraction. One real estate specific determinant that has been overlooked by international trade research thus far, is the impact that different legislative, regulatory and procedural aspects of urban planning[2] have on Direct Greenfield FREI. This research tries to add to the body of knowledge on the attraction of Direct Greenfield FREI in general and in the context of SSA in particular. Additionally, this research tries to fill the gap of knowledge that exists between the impact of urban planning regulations on urban and economic development in terms of the attraction of foreign investments.

In light of Africa's urban challenges, this research is interested in capital attraction that may be beneficial for urban centres in SSA. Since FREI can be a beneficial source of foreign capital for cities in Africa, the external goal of this research is to investigate how municipalities, particularly in SSA, can attract more direct greenfield FREI. In order to achieve these goals, the internal goal of this research is to research what determines FREI attraction in general and in SSA in particular as well as to investigate how different aspects of urban planning regulations impact FREI attraction.

This research uses Geographical Information System (GIS) and Zero-Inflated Negative Binomial Regression (ZINB) techniques on secondary quantitative data to obtain the determinants of the number of FREIs cities and countries attract. First a sample of 72 global cities is used to obtain the general determinants of FREI attraction and subsequently a sample of 31 African countries is used to obtain the region specific determinants of FREI. In all of the analyses the impact of different aspects of urban planning regulations will be investigated. The results show that urban planning does matter for FREI attraction. The global city analyses indicate that excessive population densities and inadequate basic urban service provision, apparent in many developing cities, deter FREIs.

The analyses on SSA indicate that basic urban planning regulations enable FREI attraction, however to stringent regulations as well opaque and lengthy procedures are limiting the amount of investment that is attracted. Urban population size and growth can increase the attractiveness

[1] See (Castro 1999; Kurtishi-Kastrati 2013) for an overview on FDI theories and (Worzala and Sirmans 2003; Lieser and Groh 2013) for an overview of theories related to indirect FREI.

[2] For the purpose of this research these aspects of urban planning are operationalised as Urban Planning Regulations.

for FREI when population densities are not too high and the regulatory quality and urban service provision are good. However, it also increases the odds of not receiving any investments when cities are poorly organised.

In all the analyses a higher level of internationalization had a positive impact on FREI attraction. The number of FDIs that cities/countries attract in other sectors increases FREI attraction. Related to this positive effect of general investment activity is the positive effect that the existence of a Special Economic Zones (SEZ) has on FREI attraction.

The institutional indicators show different results in the analyses of the different regions. Corruption seems to have a positive impact on FREI attraction on a global scale and a negative impact in Africa. This would indicate that slightly corrupt markets might be beneficial for foreign real estate investors, because this grants them unique access to profitable markets (Salem and Baum 2016). However, the excessive corruption levels, as are apparent in some African countries, do deter FREI attraction. As can expected, a higher level of income increases the possibility to attract FREI. Unexpectedly, in Africa a higher level of income does not seem to increase the amount of FREI that is attracted. Leading to the conclusion that in terms of institutional development and macro-economic environment SSA is different and the attraction of FREI in this region is determined by other factors.

For cities in SSA to attract more direct greenfield FREI municipalities need a good regulatory framework and increase basic urban service provision to increase the possibility to attract FREI. However, the more stringent urban planning regulations should be reduced because this seems to limit the amount that is attracted. The results indicate that the SEZ model functions well as a strategy to attract FREI. Therefore, a real estate specific adaptation of this model, with well-regulated areas that are integrated in the urban fabric and have less procedural barriers and a less stringent planning environment, might be a valid strategy to attract more FREI.

Keywords

FDI, Greenfield, FREI, Real Estate, Urban Planning, Investments, Sub-Saharan Africa, Urban Competitiveness, Urban Development, Zero-Inflated Negative Binomial, GIS.

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Foreword

With great joy and commitment have I worked on developing this thesis. This research is related to the forthcoming State of the African Cities 2017 report, which is being developed by UN-Habitat. They seek to research the potential role and effect of FDI flows in urban centres of the African continent. This research focuses on a particular productive and potentially beneficial source of capital namely, Real Estate Investments. In addition, urban planning is of great importance for the development of urban Africa and therefore, of particular interest for this research. There is an immediate need to generate capital for the development of Africa's urban centres and the role of urban planning is contested. This research tries to provide an overview of what makes a city or country attractive for Foreign Real Estate Investments and investigates how urban planning regulations impact these flows. I hope you will find the work interesting until the last page.

Max Meldgaard van Gils

Abbreviations

IHS	Institute for Housing and Urban Development
UCR	Urban Competitiveness and Resilience
UMD	Urban Management and Development
SSA	Sub-Saharan Africa
FDI	Foreign Direct Investment
FREI	Foreign Real Estate Investment[3]
GDP	Gross Domestic Product
ROI	Return On Investment
FPI	Foreign Portfolio Investments
M&A	Mergers & Acquisitions
REIT	Real Estate Investment Trust
MNE	Multi National Enterprise
MAT	Monopolistic Advantage Theory
PLC	Product Life Cycle
OLI	Ownership, Location and Internalisation
FAR	Floor to Area Ratio
UGB	Urban Growth Boundaries
GIS	Geographic Information Systems
UPR	Urban Planning Regulations
OLS	Ordinary Least Squares
PRM	Poisson Regression Model
NBRM	Negative Binomial Regression Model
ZINB	Zero-Inflated Negative Binomial
BIC	Baysian Information Criterion
AIC	Aikake Infromation Criterion
APAP	As Parsimonious As Possible
ACAP	As Complex As Possible
SEZ	Special Economic Zone
ODA	Official Development Assistance

[3] FREI and Direct Greenfield FREI are used interchangeably in throughout this thesis.

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Chapter 1: Introduction

1.1 Background

African Urban Challenge

Due to rapid rural-urban migration and high natural growth figures, Sub-Saharan Africa's (SSA) urban population is projected to grow at an unprecedented rate (Jedwab et al. 2014; United Nations 2014). The urban population is expected to triple by 2050 and some cities are projected to double within 15 years (United Nations 2014). Many of these cities in SSA already struggle to provide basic urban services for their citizens (Castells-Quintana 2015), the estimation that 62% of the region's population resides in slums exemplifies this (United Nations 2014). This is, at least partially, caused by "urbanization without growth" (Fay and Opal 1999) and the institutional failures that are correlated with this "poor country urbanization" (Glaeser 2014). These dynamics have resulted in cities where negative agglomeration externalities outweigh the benefits of urban agglomeration (Glaeser 2014; Castells-Quintana 2015). SSA needs economic growth to overcome these "Malthusian urban dynamics" and make cities function as "engines of growth" (World Bank 2008; UN-HABITAT 2012; Castells-Quintana 2015). The attraction of foreign capital can be a catalyst to achieve this economic growth (Solow 1956).

FDI for economic growth and urban development

To attract foreign capital, the integration in the global economic network and a cities' relative competitive position within it is of importance (Wall and van der Knaap 2011). Sassen (2012) describes that within the global city network few cities are central and function as control and command centers, while many cities are peripheral and excluded from these global capital flows. The attraction of Foreign Direct Investment (FDI) can change a cities' position in the hierarchy of the global city network, cities that were once peripheral can become hubs in the network (Wall & van der Knaap, 2011). FDI flows are an indicator of a city's integration in the global economy, the amount and type of FDI reveal information about its function and its hierarchical position within the global economic network (Wall and van der Knaap 2011; Gómez and Wall 2015).

The type and amount of FDI attracted by different economies matters for urban development paths as well. Large amounts of FDI in the resource sector will have a different impact on the socio-economic as well as the physical structure of a city, than for example FDI in the manufacturing sector (Gollin et al. 2015). Another important difference in the benefits that different types of FDI have is related to the distinction between greenfield FDI[4] and FDI in the form of Mergers and Acquisitions (M&A). These types of FDI may have significantly different impacts on a host economy (Ashraf and Herzer 2014). Greenfield FDI involves the creation of a new business facility and thus adds to a countries' capital stock, creates new jobs and widens the tax-base (Ashraf and Herzer 2014). M&A however involves the investment in existing firms which is less beneficial or even disadvantageous for a host economy (Herzer 2012).

Since the type of FDI inflow can influence a cities' function and position within the global network, as well as its local socio-economic and physical structures of a city, it is important for

[4] Greenfield FDI should not be confused with the urbanistic term "greenfield development".

municipalities in SSA to attract the right type of investments. Given the high unemployment rates and prevalence of poverty in SSA's cities (UN-Habitat 2014; Gollin et al. 2015), it is important for cities to attract FDI that creates a relatively large amount of jobs. Additionally, the low quality of the built environment, the immense urban growth and the negative agglomeration externalities that accompanies this (Glaeser 2014; Castells-Quintana 2015), make it imperative for cities in SSA to attract FDI that will contribute to the improvement of the built environment. Greenfield FDI in real estate creates a relatively large amount of jobs, compared to other foreign capital flows (Tibaijuka 2009; EY 2015). This form of foreign investment, flows directly in the development of new parts of cities or invests in existing parts (Tibaijuka 2009), therefore it can be expected that it has a positive impact on the quality of the built environment. There may also be potentially negative impacts of foreign real estate developments. Watson (2013) and Cain (2014), for example, doubt that large scale projects developed for or with foreign capital will become beneficial for the "impoverished masses" in SSA. These projects might actually divert funds form more urgent urban challenges such as local slum upgrading towards these internationally oriented projects. And research by Bardhan et. al. (2004), also shows that increased capital attraction can lead to higher rental prices, which might reduce affordability in cities. Direct foreign real estate investments might thus also have negative impacts and there are obvious limitations to the extent that direct greenfield Foreign Real Estate Investments (FREI) [5] can contribute to the upgrading of the built environment and the creation of jobs. Although the exact benefits of investment attraction, in this case FREI, might be difficult to determine (Bartik 2004; Donahue and McDearman 2016), it can be assumed that the positive effects outweigh the negative effects, especially given the economic function of real estate.

Economic role of real estate

Due to the increase in Foreign Real Estate Investments (FREI) and the "financialization" of real estate, real estate markets now perform a pivotal role between the global and local economy (Bardhan et al. 2004; Schwartz and Seabrooke 2008; Sassen 2014; Harvey 2014). Urban real estate investments can contribute to economic growth by functioning as a counter-cyclical storage of surplus capital and labour (Harvey 2014)**,** as well as by creating demand in other sectors such as finance, construction, design, furniture and raw materials (Tibaijuka 2009; Cushman & Wakefield 2014). Real estate investments have contributed to economic success of many countries in the past, e.g. in the USA and Western Europe after WW2 and in East and South-East Asia over the past three decades (Tibaijuka 2009; Harvey 2014). Due to its "recursive relationship" with macro-economics and its potential as a local answer to extreme poverty (Tibaijuka 2009), real estate markets are increasingly seen as a possible panacea for poverty alleviation as well as economic growth (De Soto 2000; World Bank 2008; Mooya 2011). There has been a lack of attention for the "complex circular processes" between urban real estate markets, the financial sector and economic growth as well as its broader impact on employment, incomes, savings, productivity, and asset formation (Tibaijuka 2009; Sassen 2012; Guironnet and Halbert 2014).

Urban real estate is often the largest fixed capital asset of an economy, a nations' wealth is captured in the capital accumulation in real estate (Lowe 2015). This wealth accumulation in real estate plays an important role in the global flow of capital (Sassen 2014). It is the inelasticity of supply combined with rising demand that can create a real estate market "boom",

[5] For the purpose of this research FREI is operationalized as direct greenfield foreign real estate investment. "FREI" and "direct greenfield FREI" are used interchangeably throughout this research. **(see section 2.3 and 3.1 for further explanation)**

which will increase the fictitious wealth accumulation (Cheshire et al. 2014; Harvey 2014). The restrictive aspects of urban planning are seen as one of the underlying causes of this inelasticity (Glaeser et al. 2006; Cheshire et al. 2014; Brueckner and Lall 2015).

Urban planning

Urban planning has an impact on the social, physical and economic structure of a city (Fainstein 2016). Its goal is to contribute to efficient land-use, social equity, economic growth, and mitigate negative agglomeration externalities. As such, it can be expected to play an important positive role in the attraction of FREIs. However, it is unclear how the diverse range of rules and requirements governing urban development impact FREI specifically.

Clear regulations may increase the transparency of real estate markets and reduce transaction costs which are important factors for the attraction of FREI (JLL 2014). Urban planning can create a more stable investment environment, which is important for the attraction of FREI (Adams et al. 2016). Although reduced access and transparency might reduce the amount of investments that are attracted, it can also inflate the prices, and thereby returns on investments, for those enjoying preferential access (Salem and Baum 2016).

Some researchers have argued that urban planning sometimes has a negative impact on social equity (Glaeser et al. 2005), affordability (Cheshire et al. 2014), economic growth (Gyourko et al. 2007), and even slum formation (Brueckner and Lall 2015). Sometimes there is a paradoxical discrepancy between the goals of urban planning and its effects (Cheshire et al. 2014). Much of the literature discussing the different impacts urban planning has on the socio-economic environment is focused on western contexts and is perhaps less relevant for the SSA context. However, many cities in SSA have similar planning acts in use, either because they date back to the colonial era (Collier and Venables 2013; Obeng-Odoom 2015), or because planning authorities have modelled them to those used in developed countries (Alterman 2013).

Some aspects of urban planning seem to be outdated and/or inappropriate (Collier and Venables 2013; Collier 2013; Brueckner and Lall 2015), while some are essential for the functioning of cities as well as the attraction of FREI (De Soto 2000; Mooya 2011; JLL 2014; Adams et al. 2016). Either way, a revision of different legislative, regulatory and procedural aspects of urban planning[6] in SSA could be beneficial, especially in light of the immense urban growth that lies ahead and the potential benefits of Direct Greenfield FREI attraction (Growth et al. 2009; Rotherberger 2010; Alterman 2013; EY 2015).

1.2 Problem Statement

International real estate investors, brokers, developers and their liaisons have recently shown an increased interest in African real estate markets (EY 2015). The numerous reports of private real estate companies on African prospects exemplify this increased interest in the 'rising' continent (JLL 2015; EY 2015; KnightFrank 2015; PWC 2015). Due to the perspective of Africa, as the last international property development frontier, FREI has started to make a significant impact on emerging African cities (Watson 2013). However, the amount of FREI that flows into the continent is still very small compared to other regions. It has long been overlooked by real estate investors as well as academic researchers (Rotherberger 2010). Also,

[6] For the purpose of this research these different of urban planning are defined as urban planning regulations. See section 3.1 for the exact indicators used to approximate these aspects of urban planning.

FREI flows are unevenly distributed across the continent, within and between cities there are winning and losing areas. In the words of Florida (2005), Africa is "spiky". The reasons why cities in SSA, attract less FREI than other regions as well as the differences within the continent have not received much academic attention and thus remain largely unclear.

It is also unclear how different aspects of urban planning regulations can be used by municipalities to improve their attractiveness for FREI. In many municipalities in Africa urban planning regulations are currently highly inadequate and often date back to colonial times (Collier 2013; Obeng-Odoom 2015). The complex land ownership structures and opaqueness of transactions might be deterring FREIs (Rotherberger 2010; Selod and Tobin 2013; JLL 2014). In addition, restrictive regulations and lengthy procedures have created direct and indirect "taxes" on development (Buckley and Mathema 2008; Collier and Venables 2013), which might be deterring FREI as well. However, some aspects of these restrictive regulations might also have positive aspects on real estate markets, because it increases the inelasticity of supply and thus inflates prices when demand rises as well as create a stable environment for investment attraction (Cheshire et al. 2014; Adams et al. 2016).

Some aspects of urban planning regulations might thus be deterring economic growth and FREI attraction in many countries in SSA, while some aspects or urban planning regulations might increase attractiveness of real estate markets for foreign investors. There has been a lack of research on this connection between urban planning and FREI and more specifically, how different legislative, regulatory and procedural aspects of urban planning might impact investment attraction differently. It is simply unclear which aspects of urban planning should be changed to increase FREI attraction into cities.

Given the potentially positive impact of FREI on employment, the built environment and the economic potential of real estate markets, this type of investment can potentially play a positive role in the development of Africa's urban centres. However, few studies have focused on this type of foreign investment flow and even less have incorporated urban planning as a determinant. Therefore, it is important to analyse what determines FREI attraction in general and in SSA in particular. And given the possible impact of urban planning regulations, it is important to gain an insight into how different aspects of urban planning affect FREI attraction.

1.3 Research Objective

In light of urban Africa's need to increase the urban quality and enhance economic growth under the immense pressure of rapid urban growth, this research is interested in capital attraction that may be beneficial for the development of urban centres in SSA. Direct greenfield FREI can be beneficial source of capital for these urban centres (Tibaijuka 2009; Mooya 2011; Harvey 2014; EY 2015), and urban planning regulations may potentially influence this process (Buckley and Mathema 2008; Alterman 2013; Collier and Venables 2013; Cheshire et al. 2014; Adams et al. 2016). This research will therefore focus on the determinants of FREI attraction in general and in SSA in particular. In addition, this research will investigate if urban planning regulations impact the attraction of FREI.

The external goal of this research is to provide an insight into how municipalities in SSA can attract more FREI and investigate if urban planning can help to achieve this. The internal goal of this research is to establish determinants of FREI attraction in general and for SSA in particular, as well as to investigate if and how different aspects of urban planning regulations impact FREI attraction.

1.4 Research Questions

Main question

What determines direct greenfield foreign real estate investment attraction and how is SSA different?

Sub questions

- What determines the attraction of FREI in general?
- What determines the attraction of FREI in SSA?
- How do different urban planning regulations impact FREI?

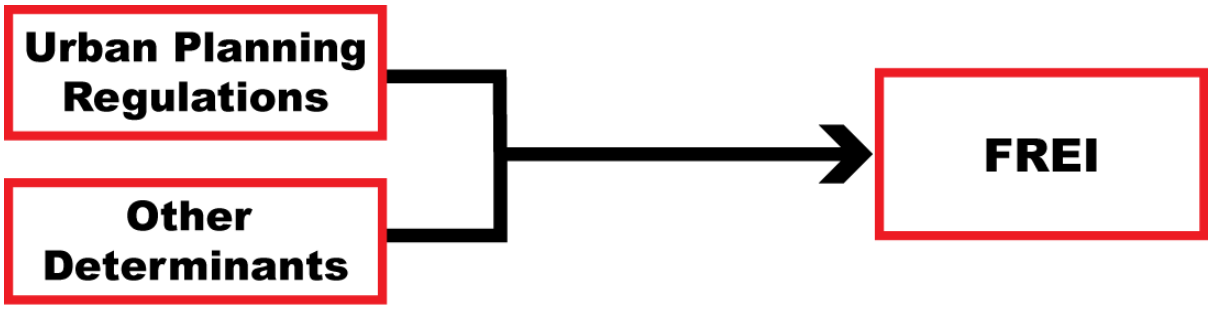


Figure 1.1 Provisional Conceptual Model

Source: Author, 2016

1.5 Significance of Study

Given the particular challenges cities in SSA will face in the coming decades (United Nations 2014), the increased interest of investors (EY 2015), and the trend in many developing cities to update their planning regulations (Alterman 2013), this research has contemporary relevance. Research on African real estate in general and FREI in particular can, compared to developed countries, still be regarded as a relatively new field of research (Rotherberger 2010) and comparative studies on the impact of urban planning regulations even more so (Alterman 2013; Monkkonen 2013). The relationship between urban planning regulations and FREI in SSA has, to the best of my knowledge, not been researched. Therefore, this research might add valuable new insights to the body of knowledge on real estate markets, FREI and urban planning regulations in general and particularly in the context of SSA. The results of this research can be useful for planning authorities as it enables them to improve regulations and provides insights how FREI attraction can be enhanced. The overview of different FREI determinants and a review of the attractiveness of African real estate markets might also be useful for international real estate companies and foreign investors.

1.6 Scope and Limitations

This research will use quantitative analyses to establish the determinants of FREI attraction of cities worldwide and SSA in particular as well as to investigate how different urban planning regulations impact this attractiveness. This broad geographical scope and the objective to obtain knowledge that is applicable for FREI in general and SSA in particular means a trade-off between the depth and the generalizability is made in favour of generalizability.

The main strategy is desk research and statistical analyses methods on secondary quantitative data are used to obtain generalizable statements. Data on all the different variables and indicators in the conceptual model will be combined in a statistical model and will be analysed by performing zero-inflated negative binomial regression techniques.

This type of research has certain limitations regarding the internal validity and the depth of knowledge that can be derived from the results (Van Thiel 2014). The abstractions of reality that are needed to operationalize the research question for quantitative statistical analysis has inherent limitations. The selection of variables, their workable definitions and the indicators chosen to measure them, are useful to delineate the scope of the research, but can also reduce the validity. The selection of indicators chosen for the different variables will measure only certain aspects of the broader theoretical construct. This can limit the internal validity of the research, since not everything in relation to the research question is measured. However, as Box and Draper (1987) argue, it is not the question if the model is "true" that is important, but if it is "useful". The parsimonious selection of indicators that are relevant for FREI will perhaps have a lower validity but can be more useful than a complex index of many indicators that tries to cover all aspects of FREI. The impact of all aspects of the different variables are better studied in an in-depth case study, however this would diminish the external validity and limit the ability to generalize the results.

The dependent variable, Direct Greenfield FREI, constitutes only a part of the total flow of foreign capital into African real estate markets. The independent variables might have a different impact on this type of real estate investment than for example foreign real estate investment through remittances or indirect FREI through securitized investment trusts. These other foreign capital flows in SSA's real estate markets are beyond the scope of this research, they are however, interesting avenues for further research.

The availability, the quality and comparability of data are of concern in this type of research, since sources are not uniform, collection methods and definitions might differ per city and they might change over time. Another important limitation is causality, statistical analyses can only show correlations and the causal effect is based on theoretical assumptions. And a certain level of omitted variable bias is hard to overcome. Certain cultural aspects for example are unable to be quantified in a way that would be useful for this research.

"All theory depends on assumptions which are not quite true"

Robert Solow

Chapter 2: Literature Review

2.1 Introduction

This literature review is divided in three main parts that as a whole tries to provide the theoretical framework for the research questions of this study. The first section **(2.2)** will provide a concise insight into the specific characteristics of urbanization in SSA and a brief overview of the potential and the barriers of efficient real estate markets in SSA. The second section **(2.3)** forms the core of this literature review. In this section different international investment theories will be reviewed to help formulate the theoretical model of FREI determinants that will form the basis of this research. The third section **(2.4)** will review literature on urban planning regulations to establish a theoretically grounded argument that urban planning regulations impact FREI attraction in general and in SSA in particular. In the conclusion **(2.5)** these parts will be combined in a theoretical model that encompasses different determinants of FREI attraction, which will be further operationalized in chapter 3.

2.2 Urban context of SSA

Urbanization in SSA

Many studies have shown the correlation between urbanization and economic development in countries (Henderson 2003). Theories on urbanisation often argue that an agricultural revolution must precede an industrial revolution (Rostow 1960) and that the rural-urban imbalance of income opportunity will subsequently trigger migration to urban areas (Desmet and Henderson 2015). However, urbanization in SSA so far has not been accompanied by industrialization to the same extent as we have seen in Europe and the USA in the late 19th century or in Asia during recent decades (Gyourko et al. 2013). It seems urbanization in many SSA countries is fuelled by other factors than industrialisation (Henderson et al. 2013; Gollin et al. 2015). Fay and Opal (1999) argue that wage differentials combined with 'underurbanization'[7] were important triggers of the urbanisation process in SSA during the 60's-80's. They show that, besides wage-differentials, ethnic and political tensions contributed to urbanization in Africa as well. This type of urbanization can have detrimental effect on the functioning of real estate markets. For example, the countries that have the highest slum prevalence, Sierra Leone, Sudan and the Central African Republic have all experienced rapid urbanization during wartime (Marx et al. 2013). This type of urbanization has led to urban real estate markets that do not function properly and this can be expected to have a negative impact on FREI attraction.

Another form of urbanization without industrialization that is apparent in SSA are "consumption cities" (Gollin et al. 2015). The growth of "consumption cities" is resource driven, Gollin et. al. (2015) describe how these cities are fundamentally different in their division of labour and socio-economic structures than "production cities"[8]. Resource driven cities differ from "production cities", which are mainly based on manufacturing and services, because of their labour-capital ratio. Gollin et. al. (2015) put this difference in perspective by using Angola as an example, they calculated that oil revenues constitute 50% of the countries' Gross Domestic Product (GDP) but it only employs 10.000 workers[9] of an 11 million strong

[7] Because of colonial policies, SSA was 'underurbanized' with regard to its socio-economic structures.

[8] Gollin et. al. base their terminology on Weber's (1956) "Produzentenstadt"

[9] Gollin et. al. exclude expatriates from their calculations

urban population. These different types of urbanization might help explain the differences in FREI attraction.

The majority of cities in SSA have not been able to reap the potential of positive agglomeration externalities[10]. Hendersons (1974) general equilibrium model of production and consumption in cities can be used as a framework to explain this. He regards a city size efficient when "the increasing per person resource costs offset the resource savings due to scale economies in traded good production" (Henderson 1974, p.640). It seems that in many cities in SSA this equilibrium is distorted and agglomeration costs outweigh the benefits and that therefore cities in SSA currently do not function as 'engines of growth'. Castells-Quintana (2015) argues that urban concentration in SSA has a negative effect on economic growth due to inadequate provision of basic urban services. Only when the majority of the urban population[11] has access to transportation, water, electricity and improved sanitation can the growth enhancing benefits of agglomeration outweigh the costs (Henderson 1974; Castells-Quintana 2015). The rapid urban population growth could increase pressure on the existing inadequate basic urban services and housing provision. The level of urban service provision, an indicator of infrastructural quality, is another locational factors that might influence FREI attraction. This indicates a 'catch 22' situation where cities need foreign capital to increase their urban service provision, but the urban service provision levels determine FREI attraction as well. However, a positive feedback loop may possibly be created as well. Increasing urban service provision might enhance agglomeration benefits which could lead to higher FREI attraction, which could subsequently lead to higher urban service provision and may thus reinforce agglomeration benefits.

It has been shown that urbanization and economic growth are correlated and no industrialized country has achieved economic prosperity without urbanizing (Henderson 2003; Bloom et al. 2008). Although urbanization in SSA is also triggered by similar rural-urban wage differentials (Fay and Opal 1999), a lack of productivity in the agricultural and industrial sectors, resource booms and internal conflicts have created urbanization patterns that differ from the rest of the world (Henderson et al. 2013; Jedwab et al. 2014; Gollin et al. 2015). The lack of basic urban services has created 'Malthusian urban dynamics' in many cities in SSA (Jedwab et al. 2014; Castells-Quintana 2015). As Castells-Quintana (2015) showed, investment in basic urban services might be crucial for the economic performance of cities and possibly for FREI attraction as well.

> "*For a country to be stable and to offer a basis for economic activity…*
> *there must be a minimum of housing…*"
>
> ***J. Tinbergen***

Potential of the residential real estate sector in SSA and its barriers

The perspective of economists on the role of the housing sector has shifted significantly since the end of WWII (Harris and Arku 2007). In the 1940's-1950's housing investment was regarded as a social cost, or a consumption good at best, with low productivity. Because it has a high import content it can have a negative effect on the balance of payments and contribute to inflation (Tibaijuka 2009; Dasgupta et al. 2014). Later arguments however, acknowledged its positive role on a nations' capital stock and as a countercyclical tool for the storage of

[10] For a recent overview on agglomeration economies and agglomeration externalities see (Behrens and Robert-Nicoud 2014; 2015)

[11] Castells-Quintana (2015) estimate a 70% threshold for reaping the growth enhancing benefits of urban concentration

surplus capital and labour (World Bank 2008; Tibaijuka 2009; Harvey 2014). In many countries, housing is the largest capital asset of household and also serves as collateral to access finance markets. In SSA as well, real estate accounts for an estimated 45%-75% of its wealth, however its usage as collateral is still small (Rotherberger 2010). In addition, adequate housing provision can increase human capital accumulation by increasing the welfare of residents and the provision of high quality workspaces can increase labour productivity (Harris and Arku 2007). Tibaijuka (2009) shows that the construction sector is often a significant part of a nations' GDP and that, due to multiplier effects, 1 job created in the housing sector creates 2 jobs elsewhere. She shows that this domestic multiplier effect is stronger for low-cost housing than for luxury housing, because it is less import intensive and requires more unskilled labour. So although SSA currently suffers from severe affordable housing shortages and is urbanizing at break neck speed, the grand task of housing provision itself could offer great growth enhancing benefits as well as offer prolonged employment opportunities for many people.

In light of these potential benefits and the challenge of housing provision it is important for cities to be attractive for residential FREI as well. Dasgupta et. al. (2014) showed that housing investments in relation to GDP per capita is S-shaped. It increases strongly when national income levels rise above $3000 per capita and then stabilizes at around $36000 per capita. This can be interpreted as an indicator of the reciprocal relationship between housing production and GDP growth. This study also showed that housing investments in SSA are on average lagging 8-9 years behind urbanization trends, this is reflected in the severe housing shortages in the region. These shortages create opportunities for FREI because the inelasticity of supply inflates the existing formal real estate prices, especially when income levels rise (Cheshire et al. 2014). However, the housing shortage may also have a negative impact on FREI attraction because of the negative agglomeration externalities that accompany it and the reduction of developable land that informal housing development can cause. Dasgupta et. al. (2014) also showed that low income countries with high housing investments burden the balance of payments and increase domestic debt. This can spur inflation and may increase currency risks which might deter FREI. Additionally, slum prevalence rates are a distinctive characteristic of SSA. Slums can undermine formal real estate markets and they lower the tax-base of municipalities, which reduces the ability to provide the highly needed urban services (Brueckner and Lall 2015).

Informality gap

The current housing shortage and the prevalence of slums that accompanies it, poses significant barriers to the functioning of real estate markets. Across the globe, informal settlements have become the dominant form of urbanization (Owen et al. 2013), even more so in SSA (United Nations 2014). Informal real estate markets influence the formal markets in SSA by limiting land supply, eroding the tax-base, and because it simply is a profitable alternative for the formal sector (Marx et al. 2013; Brueckner 2013; Brueckner and Lall 2015). Formal market mechanisms influence informal markets as well, inappropriately high building standards and insufficient municipal financial capability to provide sufficient developable land for affordable housing can cause informal settlement formation (Collier 2013; Collier and Venables 2013; Brueckner and Lall 2015). The informal and formal market competition thus creates a feedback loop that increases the informality gap (Brueckner 2013). The increased inelasticity informal markets can create on formal markets by limiting land supply might inflate prices in the formal sector. This might increase Return On Investments (ROI) for commercial developments and formal housing developments and thereby making a real estate market more attractive for foreign investors. However, it also limits the liquidity of the real estate market as a whole and

reduces the amount of developable land (Brueckner and Lall 2015), which may limit FREI attraction (Lieser and Groh 2013; EY 2015).

The lack of formal property titles is seen as the biggest barrier to enhance the liquidity of real estate markets in low income countries (De Soto 2000; Mooya 2011). Although many studies have shown that titling does not increase access to credit, it does seem to increase land values and increase liquidity, in the sense that it increases formalized market activity (Payne et al. 2007; Payne et al. 2009; Mooya 2011). So in line with De Soto (2000), formal property titling is essential, but titling is only a part of the solution, a combination of factors should be tackled (Gulyani and Talukdar 2008; Mooya 2011; Marx et al. 2013). For these informal areas to become a productive part of the urban fabric, property titling should be combined with, at least, urban service provision (Gulyani and Talukdar 2008; Marx et al. 2013; Castells-Quintana 2015). Formal property titling and efficient land management are crucial for the efficiency of real estate markets and might thus be a determinant of FREI (Tomlinson 2007; Mooya 2011; Brueckner and Lall 2015). The differences in land tenure systems and their enforcement might be an important difference between cities that can help to explain differences in FREI attraction (Goodfellow 2013).

SSA has been largely overlooked by real estate investors and academic researchers in recent decades (Rotherberger 2010). However the high GDP growth rates, rising middle classes and increased political stability has increased the interest of investors in recent years (EY 2015). The size of the markets might remain small, but the inelasticity of these markets has meant that supply has been unable to keep up with the rising demand (JLL 2015). Investors are therefore rewarded with high returns on investment (Buckley and Mathema 2007; Rotherberger 2010; JLL 2015). However, the opaqueness of the real estate markets, ambiguous titling systems and inefficient land markets might be limiting FREI attraction (Buckley and Mathema 2007; Durand-lasserve 2013; Brueckner and Lall 2015; Glaeser and Ward 2009). The effect of planning regulations related to land, building supply and their enforcement are of particular interest in this research and will be discussed in further detail in Section 2.4. The following section, will review different foreign investment theories in order to develop a general theoretical framework for FREI attraction.

2.3 FREI=FDI+FPI+RE

Conceptual discussion

Before offering a review of relevant theories and empirical literature on the determinants of FDI and FREI it is important to determine what is actually meant by these terms and what definition is used for the purpose of this research.

Foreign Direct Investment (FDI), is defined by the IMF (1995) as an investment made by an investor in one country to obtain a “long-lasting interest” in an enterprise located in another country. This long-lasting interest in a foreign enterprise is what makes FDI different from other foreign investments, such as Foreign Portfolio Investments (FPI). It involves a long-term commitment to the recipient and it implies that the investor obtains a certain degree of control, usually defined by a 10% share minimum (IMF 1995). Although most research focusses on the total amount of FDI, it can take two different forms, Greenfield and Mergers & Acquisition (M&A). These types of FDI may have significantly different impacts on a host economy (Ashraf and Herzer 2014). Greenfield FDI involves the creation of a new business facility and thus adds to a countries’ capital stock, creates new jobs and widens the tax-base. M&A however involves the investment in existing firms which is less beneficial or even disadvantageous for a host economy (Herzer 2012). Since Greenfield FDI can be more beneficial for a host economy

than M&A, this research will focus on Greenfield FDI. However, it is important to note that in the literature review, often the determinants of total FDI flows will be discussed.

FREI could easily be described as an investment, made by a foreign entity, in real estate located in another country. However, this simple definition overlooks one important distinction that can be made within international investment flows into real estate. FREI can be categorized in two distinct forms, direct and indirect FREI. With indirect FREI, a foreign entity invests into real estate through investment vehicles, such as property funds or Real Estate Investment Trusts (REITs). These investments often have a shorter timeframe than direct investments and indirect investors often have only a relatively small "passive interest" in individual real estate objects (Rotherberger 2010). Direct FREI can be seen as the part of the FDI that flows into real estate. However, determining what part of FDI can be considered to be invested into real estate can be difficult, since most direct investments have a real estate component. For example, FDI in manufacturing is partly an investment in the place of production and a FDI into the financial sector may include the acquisition of an office building. Rotherberger (2010) tries to overcome this complication by making a distinction based on investment motives, he regards only investments that aim at profiting from the acquisition or development of real estate as FREI. He defines Direct FREI, as the act of "an investor situated in one economy to make a long-term acquisition of real estate located in another, foreign economy, in order to profit from development, renting, leasing and/or sale of said real estate" (Rotherberger 2010, p.18). Similar to the difference between FDI and FPI, it is the degree of influence an investor has on the investment object that forms the distinctive characteristic (Holsapple et al. 2006). Although Indirect FREI flows play an important role in the global economic network, its role in SSA as a whole[12] is still minor (Rotherberger 2010; JLL 2015). Therefore, this research will focus on the determinants and effects of Direct FREI. Although Direct FREI can be seen as a part of FDI flows (Laposa 2007), its determinants are eclectic in nature and have FDI as well as FPI characteristics (Holsapple et al. 2006; Rodríguez and Bustillo 2010; Fereidouni and Masron 2013). As Dunning (2001, p.176) stated, "no single theory of international trade can satisfactorily explain all forms of cross-border transactions in goods and services". Therefore, the following sections will review different relevant theories in order to establish determinants that can explain Direct FREI flows.

FDI

The objective of this section is to establish FREI determinants from FDI theories. First the broader theoretical origins and context of FDI will be outlined and then theories relevant to FREI attraction will be discussed in more depth.

The roots of FDI theories lie in the classical international trade theory, which can be traced back to Ricardo's (1871) theory of comparative advantages and factor endowments. The neo-classical theories that built forth on this approach share its perfect market assumption. These theories disregard transaction costs and see different rates of return, labour costs and currency risks as the main determinants of international capital flows (Dunning and Rugman 1985; Assunção et al. 2011). These determinants are likely part of the motivation behind FREI, but they are insufficient to explain FREI in and outflows between countries that have similar rates of return, labour costs and currency risks. These neoclassical theories did not make the distinction between FPI and FDI and are also critiqued for their weak explanatory power for firm specific motivations (Castro 1999; Dunning and Rugman 1985; Kurtishi-Kastrati 2013).

[12] In South Africa it plays a bigger role and its role is growing in some other countries, e.g. Kenya and Nigeria. But overall the amount of indirect FREIs in the region remains relatively low (JLL 2015).

Hymer (1976)[13] can be regarded as the first to clearly make the distinction between FPI and FDI (Dunning and Rugman 1985).

Hymer (1976) uses a micro-economic approach to explain FDI determinants, by focussing his analysis on the Multi National Enterprise (MNE). According to Hymer (1976), the MNE is a principal agent of international investment flows and can be regarded as a "creature of market imperfections" (Dunning and Rugman 1985). In order to overcome the disadvantage of competing against domestic firms in foreign markets a MNE must have sufficient competitive advantage in other aspects, e.g. the ability to access to capital or technological and managerial skills (Hymer 1976). It is this unequal playing field, created by market imperfections, that forms the basis of Hymer's Monopolistic Advantage Theory (MAT). Its relevance for FREI in SSA is that the MAT might explain the competitive advantage that some foreign owned enterprises have over domestic firms by looking at superior efficiency in production methods combined with greater access to capital.

Caves (1971) described the distinction between different types of FDI. He described that these investments are driven by different investment motives and are attracted by different economic structures. He makes a distinction between horizontal direct investment, which involves producing the same good elsewhere, vertical direct investment, which involves adding a production stage to a firm's principal activity, and conglomerate diversification, which involves adding a new principal production process. FREI can be categorized under horizontal direct investment, since it depends heavily on local market structures because of its fixed nature. Therefore, there must be complementarity between the benefits of local production and rents that can be extracted in order for FREI to be successful (Caves 1971).

A theory that is related to horizontal FDI is Vernons (1966) Product Life Cycle (PLC) theory. He argues that the demand in the source country leads to innovation that can be exploited when similar demand rises in foreign markets. Because of trade barriers or transportation costs FDI will arise instead of export (Vernon 1966). Although the theory has been criticised for only explaining part of total FDI flows, it did show the importance of innovation in trade patterns within an imperfect market (Castro 1999). In the context of real estate markets in SSA, a lack of technologically advanced construction methods might be a trigger for a more advanced MNE to enter a market when demand for similar real estate products rises.

Dunning (1993) developed the "Eclectic paradigm", it can be seen as an approach to provide a general explanation for most FDI motives. It combines and elaborates different theories on FDI, such as Hymer's competitive (dis)advantage as described in the MAT and it integrates Buckley and Casson's Internalisation theory (Dunning 2001; Buckley and Casson 2009). Dunning classifies FDI motivations in Ownership, Location and Internalisation (OLI) advantages. Ownership specific advantages can be seen as the strengths of a particular enterprise, such as technological advancement, access to capital and brand image (Rotherberger 2010). Location specific advantages are more applicable for FREI motivations, since it regards the local characteristics of the area of investment (Rotherberger 2010). The location specific determining factors can be categorized under production cost, infrastructure, human capital and economic stability (Assunção et al. 2011). Internalisation specific advantage deals with the choice of an investor whether or not to invest directly. The choice to invest directly is explained by a reduction in risk and transaction costs (Buckley and Casson 2009). Dunning (1993) further categorised internationalization motives of MNEs into Resource seeking, Market seeking, Efficiency seeking and Strategic asset seeking. Market seeking behaviour can be seen as the

[13] Hymer's dissertation was completed in 1960, however it was not published until 1976. By then his ideas were already widely accepted.

most relevant explanation for direct FREI and might help explain its determinants. Market seeking behaviour, similar to horizontal FDI, is driven by the characteristics of the host market, since it aims at supplying this market. Government regulations and transaction cost are seen as important influences for this type of FDI (Castro 1999). Hansson and Hedin (2007) added a fifth behavioural motive to Dunnings internationalisation motives that might be useful to explain FREI attraction as well, namely network seeking behaviour.

Knickerbocker (1973) was the first to empirically show the importance of business networks in the international distribution of economic activity. He argued that once FDI had been initiated by a "leading" MNE, more will follow. This Oligopolistic theory, is explained by the "follow the leader principle" and an additional adaptation from this principle is the "follow the client principle" (Castro 1999; Hansson and Hedin 2007; Masron and Fereidouni 2012). These principles share some similarities with agglomeration theories that are explained from the perspective of new economic geography. Agglomeration theories also state that competing firms and firms that service these companies tend to cluster together (Cheshire et al. 2014). The "follow the client/leader" principles could help to explain the uneven distribution of MNEs in SSA and their clustering in certain hotspots. This clustering of foreign companies can drive up local real estate demand (Laposa and Lizieri 2005). The amount of MNEs and FDI in other sectors might thus be a useful indicator for a cities attractiveness regarding FREI (Masron and Fereidouni 2012).

Theories of "new" trade and endogenous growth, that were developed in the 1980's, state that this agglomeration and specialization can lead to ever increasing return to capital (Krugman 1983; Romer 1986; Markusen and Venables 1998),. This is in contrast with the, at that time, commonly used neoclassical Solow model (1956), which stated that return on capital would diminish over time and eventually reach a "steady state". These "new" perspectives used determinants such as human capital accumulation and openness of an economy in addition to more classical indicators such as market size, transport cost and factor endowments (Assunção et al. 2011). These perspectives emphasize the importance of human capital and focus on the effects of knowledge and technology spill-overs that FDI can have on a host economy (de Mello 1997; Borensztein et al. 1998). Sassen (2012) empirically showed the effect this shift from industrial to knowledge based economies has had on FDI flows. She showed that global FDI flows shifted from manufacturing and resource sectors towards knowledge driven service sectors (Sassen 2012). It can be argued that this shift has increased the demand for office space and may have contributed to the increase in FREIs (Laposa and Lizieri 2005; Rotherberger 2010). In addition, Bardhan et al. (2004) found that the Balassa-Samuelson effect, which states that an increase in trade of tradable goods leads to an increase in the price of non-tradable goods, applies to real estate prices as well. They found that an increase in trade was correlated with an increase in urban residential rents. This can be seen as another argument that increased international economic activity is an important determinant of FREI.

The "Uppsula model" emphasizes the importance of networks and the "psychic" distance between source and host countries (Vahlne and Johanson 2013). Vahlne and Johanson (2013) argue that the "Uppsala model" differs from the eclectic paradigm in the sense that it does not try to explain FDI from an economic theory perspective, but rather from a "dynamic capabilities" perspective on a firm level. The dynamic "Uppsala model" shares characteristics with theories that have their roots in Friedmanns (1986) "world city hypothesis", which regard FDI flows and MNE concentration as an indicator of a cities' integration in the "global economy" and the "global city network" (Alderson and Beckfield 2004; Sassen 2005; Taylor 2010; Wall and van der Knaap 2011). These studies emphasize the importance of global connectivity for cities, this connectivity may be an important determinant of FREI attraction as well.

A final set of determinants for FDI attraction can be found in the neo-institutional theories. The stability of the political system, quality of legal frameworks and protection of property rights are all found to have an significant impact on FDI attraction (La Porta et al. 1997; Asiedu 2002; Asiedu 2006; Assunção et al. 2011; Kurtishi-Kastrati 2013). Bloningen (2005) argues that institutional determinants such as legal protection, corruption and the correlation between poor institutional quality and infrastructural quality are non-controversial determinants of FDI attraction. In a study on FDI determinants in Africa, Asiedu (2006) found that institutional variables such as political risk, corruption, rule of law were all significant determinants. In another study she showed that the determinants of FDI in SSA might be different compared to other regions. The results of her analysis suggest that there is an "adverse regional effect", since countries, all else equal, receive less FDI if they are located in SSA (Asiedu 2002). These institutional studies show the importance of regulatory and political factors for FREI attraction.

By no means is this review of FDI determinants complete[14], the aim of this review however is to distil the determinants[15] that might be relevant for direct greenfield FREI attraction. The review of FDI literature revealed that real estate received relatively little attention compared to other sectors (Bardhan and Kroll 2007; Rotherberger 2010). Which is peculiar because the real estate component of FDI is substantial and it can have a relatively large positive impact on employment generation (Rotherberger 2010; EY 2015). Bardhan and Kroll (2007) estimate that one third of every FDI flows into real estate. Rotherberger (2010) calculated, with a more conservative estimation, that from 2005-2008 20% of the total FDI flow consisted of FREI. A possible explanation for this lack of attention is that the amount of FDI that flows into real estate is underestimated due to practical problems with classification and standardization (Lim et al. 2006). In FPI theories however, the role of real estate has long been acknowledged (Worzala and Sirmans 2003), therefore this next section will review FPI theories.

FPI

Given the relatively large amount of attention real estate has received in FPI theories, compared to FDI theories, this section will look briefly at FPI theories to search for additional determinants. This is in line with several authors that argue that FREI is "hybrid" in nature and has characteristics of FDI as well as FPI (Lim et al. 2006; Laposa 2007; Rodríguez and Bustillo 2010; Fereidouni and Masron 2013).

The Portfolio theory, developed by Markowitz (1952; 1959), in essence states that the diversification of assets may generate higher returns while at the same time reduce risks. It relates to investment portfolios, which Markowitz (1959) describes as a wide range of stocks, bonds and real estate assets which as a whole provide an investor with security and opportunity. Because of this focus on a combination of investment objects and "financialized" or indirect investment approach it is less suitable for the focus of this research, which is Direct FREI. However, given the relatively large amount of research on international investment flows into real estate it is worth to review and distil determinants which might be relevant for explaining direct FREI determinants.

Most of the real estate related research from the portfolio perspective tries to assess its diversification benefits (Worzala and Sirmans 2003). Within this approach there are two portfolio groups to research, mixed portfolio assets that include investment such as bonds,

[14] For a comprehensive overview of FDI determinants see for example Bloningen (2005) Assunçao et. al. (2011) and Kurtishi-Kastrati (2013)

[15] See **Figure 2.2** for an overview of the determinants of FREI derived from this literature review

stocks and other financial assets and those that focus on real-estate-only portfolios (Worzala and Sirmans 2003). Rugman (1976) showed that investments in real assets, such as warehouses, can reduce portfolio risk and can do so better than financial assets. Ross and Webb (1985) build forth on this by looking specifically at real estate assets in investment portfolios and find that real estate has less systemic risk than financial assets. These finding can be seen as an exemplification of the countercyclical function of real estate (Harvey 2014). Some studies have empirically shown the relation between stock markets and real estate investments (Quan and Titman 1997; Moshirian and Pham 2000). These studies show that a decline in stock market returns in source countries might be a determinant of FREI. However, the most important determinants from FPI theories are currency risks, institutional quality and market size (Keogh and D'Arcy 1999; Worzala and Sirmans 2003; Lim et al. 2006; Rodríguez and Bustillo 2010; Fereidouni and Masron 2013).

As argued before, FPI theory alone is insufficient to determine direct FREI attraction since it often focuses on the investor's perspective and an aggregate view, which is more suitable to research indirect FREI flows, rather than direct FREI flows (Holsapple et al. 2006; Rotherberger 2010). The concentration of FREI in a relatively small number of core markets also seems to contradict the Portfolio theory of diversification (Lizieri and Pain 2014; Fuerst et al. 2015). Therefore, this next section will review recent literature that specifically focusses on the determinants of FREI in order to finalize the theoretical framework of the determinants of direct FREI.

FREI

Since the 1990's the international flow of capital into real estate has experienced rapid growth (Moshirian and Pham 2000; Rotherberger 2010; Sassen 2014). The increased global connectivity and the "financialization" of real estate has made this formerly non-tradable good tradable (Bardhan et al. 2004; Bardhan and Kroll 2007; Sassen 2014; Harvey 2014). To finalize the theoretical framework this section will review relevant literature on the international flow of capital into real estate and particularly focus on determinants of a cities' or countries' attractiveness.

Moshirian and Pham (2000) proposed a model to explain the increase of Direct FREI outflows from the US. They showed that US financial wealth, FDI in the manufacturing and banking sector, the amount of bilateral trade, foreign current account balance and the amount of foreign financial liabilities contributed to the increase in Direct FREI outflows. They also showed the countercyclical function direct FREI has, by establishing the correlation between US stock market decline and an increase in FREI outflows.

Rodriguez and Bustillo (2010) researched the determinants of FREI inflows in Spain. They developed three models, a "financial model", a "demand for service" model and an "eclectic" model, which combined the variables of the former two models. They found that both macroeconomic variables from the financial model, such as GDP per capita and long term interest rates, as well as location specific determinants, such as tourist agglomeration and house prices, were determinants of FREI. They also emphasized that the economic situation of the source countries played an important role, which is in line with Moshirian and Pham's (2000) study.

Ross (2011) developed a model that took both host and source country determinants into account. He incorporated macro-economic variables of Australia as well as the UK for his theoretical model on Direct FREI determinants in Queensland, Australia. He argued that the

exchange rate, GDP per capita, national savings, inflation, cost of capital and 10-year bond yields of both countries are to be incorporated when examining FREI determinants.

Izati and Kepili (2011) developed a theoretical model for FREI determinants by expanding Dunnings (1993) "eclectic" paradigm. They divided the determinants in three categories: Real estate factors, macro-economic factors and social factors. Under real estate factors they hypothesized that property related taxes, lending rates and debt markets are determinants. They concluded from FDI literature that market size, trade openness and real exchange rates are important macro-economic influences. As social factors they regarded real estate transparency and business freedom to be possible determinants.

Fereidouni and Masron (2013) investigated real estate market specific determinants for FREI attraction in 31 developed and emerging countries during the 2000-2008 period. They found that, controlling for market size, infrastructure and political stability, a higher level of transparency, lower interest rates and higher property prices have a positive effect on FREI attraction. They also hypothesized that pro landlord policies would attract FREI, however they found no evidence to support this over the whole sample. Only when they split the sample into developed and emerging countries, the quality of infrastructure and pro-landlord policies became significant for emerging countries. In an earlier study Masron and Fereidouni (2012) found FDI inflows in other sectors to be a significant determinant for FREI as well. This is in line with the "Follow the leader/client principle" as well as "global city" theories and emphasizes the interdependence of real estate and international economic activity.

Lieser and Groh (2013) undertook a comprehensive study of 47 countries from 2000-2009 to determine a countries' attractiveness for international real estate investments. They identified six determining drivers of a countries attractiveness; (1) Economic activity, (2) real estate investment opportunities, (3) depth and sophistication of capital markets, (4) investor protection and legal framework, (5) administrative burdens and regulatory limitations, and (6) socio-cultural and political environment. They untangled these drivers in a total of 31 indicators of which 22 were statistically significant **(See figure 2.1).**

Statistically significant

Level 1	Economic Activity	Real Estate Investment Opportunities	Depth and Sophistication of Capital Markets	Investor Protection and Legal Framework	Admin. Burdens and Regulatory Limitations	Socio-cultural and Political Environment
Level 2 Indicators	1.1 Size of Economy (+)	2.1 Institutional Property Estimation (+)	3.1 Stock Market Liquidity (+)	4.1 Investor Protection (+)	5.1 Taxation and Capital Gains Taxation (-)	6.1 Human Development (+)
	1.2 GDP per capita (+)	2.2 Degree of Urbanization (+)	3.2 IPO Market Activity (+)	4.2 Security of Property Rights (+)	5.2 Ease of Obtaining a Construction Permit (+)	6.2 Crime (-)
	1.3 GDP Growth (+)	2.3 Urban Population (+)	3.3 M&A Market Activity (+)	4.3 Quality of Legal Enforcement (+)	5.3 Ease of Registering Property (+)	6.3 Bribery and Corruption (-)
	1.4 Work Force (+)	2.4 Quality of Infrastructure (+)	3.4 Debt and Credit Market (+)	4.4 Regulatory Quality (+)	5.4 Ease of Starting a Business (+)	6.4 Political System & Stability (+)
	1.5 Inflation (-)	2.5 Development of Service Sector (+)	3.5 Access to Private Capital (+)		5.5 Ease of Closing a Business (+)	
	1.6 Innovation and Technology (+)		3.6 REIT Market (+)		5.6 Foreign Exchange Controls (-)	

Positive/negative sign depending on the nature of the effect on real estate investment activity

Figure 2.1

Variables and indicators of commercial FREI attractiveness

Source: Lieser and Groh, 2013

The importance of financial and capital markets could indicate to the intricate relationship between finance and real estate, as well as the "follow the leader/client" principle. However, the importance of financial and capital markets in this model can also be explained by their focus on Indirect FREI. The third and fourth most important drivers indicate that institutional quality remains highly important for FREI. Although Lieser and Groh (2013) do not explicitly focus on urban planning regulations the indicators they chose share some overlap with it. Indicators such as property rights, legal enforcement, the ease of registering property and obtaining a construction permit could be regarded as indicators for urban planning regulations as well.

Fuerst et al. (2015) examined the institutional and real estate specific drivers of FREI as well. They focused on the potential institutional legal and economic barriers and found that a good macro-economic environment, a well-developed financial market and a transparent credit market are crucial. The index of credit depth of information had the largest impact in their model, this would emphasize the importance of transparency, which is in line with the focus of JLL (2014). Similar to Lieser and Groh's (2013) study, the focus on Indirect FREI might put more emphasis on the financial and capital determinants than is relevant for this study. Since Direct FREI in SSA is less dependent on local financial and capital markets (Rotherberger 2010).

In a recent study, Salem and Baum (2016) investigated the determinants of direct FREI for selected countries in the Middle East and North African (MENA) region. They found that market size was the most influential significant determinant for FREI, which confirms prior research on FREI determinants (Rodríguez and Bustillo 2010; Fereidouni and Masron 2013; Lieser and Groh 2013; Fuerst et al. 2015). They also showed that human development and especially political stability were important determinants. The finding that the availability of real estate investment trusts (REITs) has a negative impact on FREI is in contrast with the results of Lieser and Groh (2013). This might be caused by Salem and Baum's (2016) focus on direct instead of indirect FREI. As Salem and Baum (2016) themselves argue, the result might be caused by the fact that REITs could function as an alternative for Direct FREI.

As argued by other authors, FREI determinants are "eclectic" or "hybrid" in nature (Holsapple et al. 2006; Laposa 2007; Rotherberger 2010; Fereidouni and Masron 2013). Based on the literature that has been reviewed, it can be concluded that the macroeconomic environment, locational factors, international economic activity, and institutional factors are important determinants. These four drivers will be further untangled in chapter 3. First the next section will review studies that focus on the effect that urban planning regulations have on a city and its economic activity in particular. Thereby arguing that urban planning regulations should be added as the fifth driver in the theoretical framework of FREI determinants in SSA.

2.4 Effect of Urban Planning Regulations on FREI in SSA

Urban planning in SSA, to say the least, has a troublesome history. Most of the formal or statutory planning systems that are in use across the region were first implemented by colonial powers. These planning regimes were often highly selective and only meant to segregate and organise the efficient extraction of resources (Mabogunje 1990; Obeng-Odoom 2015). The focus of this research however is not on the gross inequity of urban planning in SSA[16], but on its effect on FREI attraction. One could say, quite eerily, that urban planning in SSA was

[16] For a comprehensive study of the injustice of urban planning in Africa see Mabogunje (1990) and Obeng-Odoom (2015)

developed for purposes similar to the focus of this research. As Saffier (1970)[17] stated, "the aim of traditional town planning in many African countries, supported by both colonial and independent governments, was essentially to provide for the physical accommodation of development, meaning the orderly fitting in of externally initiated investments on an adhoc and piecemeal basis".

Efficient supply of developable land is essential for affordable housing provision and thus Africa's urban challenge (Tomlinson 2007; Growth et al. 2009), but it is also a determinant for FREI attraction (Rotherberger 2010). Due to the plurality of property right systems, land ownership structures in SSA are highly complex and might be deterring FREI attraction in some cities. In SSA a mixture of pre-colonial customary land systems, colonial private land systems and post-colonial state owned land systems can be found (Mabogunje 1990; Rakodi and Leduka 2002; Rotherberger 2010; Collier and Venables 2013), often blended within the same city (Selod and Tobin 2013; Brueckner and Lall 2015). Although customary land rights are officially acknowledged by many African states as legal property, in reality they often lack official registration and documentation and thereby statutory protection (Rotherberger 2010). Protection of property rights and well organised titling systems are essential for the efficiency of real estate markets (Tomlinson 2007; Mooya 2011). Therefore, it is assumed that the regulatory quality and transparency as well as the efficiency of registration processes play an important role for the attraction of FREI. And given the opaqueness of customary land transactions, the lack of statutory protection and the domestic competitive advantage it can be hypothesized that this form of land tenure will deter FREI attraction and freehold landownership will enhance FREI attraction. This was also shown in a different regional context with regard to socialist versus market oriented land markets. In the context of Eastern Europe, it was found that the transition from socialist to market-oriented land markets increased the real estate market activity (Bertaud and Renaud 1997; Dale and Baldwin 1999; Laposa and Lizieri 2005). With a steep transition curve that was driven by market forces filling the gap between the areas with low activity in "command economies" and areas with stable high activity in market economies (Dale and Baldwin 1999).

The implementation of private land systems governed by legal and administrative property regulations were first implemented by colonial powers (Mabogunje 1990). Urban planning regulations have played an important role in facilitating the "commoditization of urban land" in SSA (Mabogunje 1990, p.140). In the recent decades international development agencies have also advocated the privatization of land, under the presumption that formal private property titling would reduce poverty and spur economic growth (De Soto 2000). However attempts to formalize transactions and properties seem to have been "universally unsuccessful" (Rakodi and Leduka 2002, p.3). It is estimated that only 10% of land in SSA is currently owned under private freehold titles while most is distributed on either leasehold or customary terms (Rotherberger 2010). Although the legal requirements and processes of registration of freehold tenure might increase transaction costs, these costs are, at least for foreign investors, most likely outweighed by the benefits of property right security. However, the procedural barriers, which are also associated with formal private property systems, might impact FREI attraction negatively. Excessively lengthy and complex processes for obtaining a construction permit and registering property might deter FREI. Malpezzi and Mayo (1997) showed that procedural barriers in Malaysia increased the cost of real estate projects significantly. The process of converting rural to urban land could take up to 7 years, which could already double the cost of a project. Additional procedural barriers for obtaining site plan approvals and building specifications could increase the delay up to a total of 12 years (Malpezzi and Mayo 1997). In

[17] As quoted in Mabogunje (Mabogunje 1990, p.140)

countries with high currency risks, these delays can be detrimental for the viability a FREI. De Soto (2000) studied similar complex and lengthy bureaucratic processes in different countries. In Egypt for example, it involved 77 bureaucratic procedures with 31 private and public agencies to develop a project on state-owned land, which in total could take up to 14 years (De Soto 2000). These lengthy processes are an obvious barrier for FREI and should therefore be included as a determinant for FREI attraction.

In addition to these procedural barriers, the land-use regulations themselves might impact FREI attraction as well. Cheshire et al. (2008; 2012; 2014) argue that supply restricting regulations put an indirect fee on top of marginal construction costs. They calculated that planning restrictions imposed an additional regulatory "tax" on the development costs of offices, ranging from 50% in New York to 400%-800% in London (Cheshire and Hilber 2008). They argue that this would deter investments in these areas (Cheshire et al. 2012). These implicit "taxes" on development cost are imposed by supply restricting measures such as Urban Growth Boundaries (UGBs) and density controls such as a maximum Floor to Area Ratio (FAR)[18] (Cheshire et al. 2014; Brueckner and Lall 2015). Buckley and Mathema (2007) also argue that planning restrictions can cause differences in supply elasticity and thereby affect prices in SSA. They calculated that housing supply in Accra is seven times less elastic than in Dar es Salaam. Whether this inelasticity has a positive effect on FREIs due to its impact on rising real estate prices or that it has a negative impact due to the implicit "regulatory tax" and increased procedural barriers is a question this research will focus on.

Another aspect that should be taken into account is that different aspects of urban planning can have a different impact in different regions. For example, in low density urban areas in Western Europe density restrictions could impact FREI attraction negatively, because of the "implicit tax" mentioned by Cheshire and Hilber (2008). Perhaps it has the exact opposite effect in SSA, where excessive population density causes negative agglomeration externalities that could deter investment as well as limit the supply of developable land (Castells-Quintana 2015; Brueckner and Lall 2015). Either way it can be expected to have an impact on investment patterns.

The enforcement of planning regulations in SSA however, is as ad hoc as its implementation. Planning regulations in SSA have often been more "honoured in the breach than in the observance" (Mabogunje 1990, p.154). Goodfellow (2013) showed that even though countries may have similar official planning regulations, their impact differs based on their enforcement. Goodfellow (2013) argues that the level of planning enforcement is determined by the "political bargaining" power of stakeholders. Kusiluka (2012) showed that informal institutions and networks are of greater importance in SSA real estate markets, and this might be perceived as corruption. Comparative research on urban planning regulation is limited, rarely focused on SSA and often the lack of enforcement is not taken into consideration (Monkkonen 2013). Not taking this lack of enforcement into account can create biased results of the impact of planning regulations. Therefore, the enforcement of planning regulation and the level of corruption should be taken into account when assessing FREI determinants.

"A law without penalty is just poetry"

Carlos Morales-Schechinger

[18] Sometimes called Floor Space Index (FSI)

2.5 Conclusion

Direct greenfield FREI can be useful and productive source of capital for municipalities everywhere. Even more so for SSA, regarding the current state of the African cities. Urban mismanagement in general and urban planning regulations in particular might be one of the underlying causes of the limited attraction of FREI. Research on the determinants of FREI in Africa is still small, as is research on urban planning regulations. The link between FREI and urban planning regulations this research will examine has, to the best of my knowledge, not yet been researched and will thus add to the body of knowledge on these topics.

Direct greenfield FREI can be seen as the part of FDI that is invested in real estate, however not all theories on the determinants of FDI are applicable to this specific flow of capital. Only determinants of "market-seeking" or "horizontal" investments are relevant. This is because real estate investments aim at servicing the local or host market. Therefore, locational, institutional and macroeconomic factors, such as market size, corruption, political stability and infrastructural as well as institutional quality are assumed to be important for investors. An additional determinant for FREI comes from several theories that emphasize the importance of networks (Friedmann 1986; Sassen 2005; Wall and van der Knaap 2011; Vahlne and Johanson 2013). These determinants are categorized as internationalization. Besides the FDI related determinants some real estate specific and portfolio characteristics apply to FREI attraction as well (Holsapple et al. 2006; Laposa 2007; Rotherberger 2010; Rodríguez and Bustillo 2010; Fereidouni and Masron 2013). So cost of capital, rental prices and currency risks are included as determinants of FREI as well.

The effect of urban planning regulations on societies has received increased attention in the past two decades. Its potentially negative effects on affordability, social equity and economic growth have been established (Cheshire et al. 2014), however it is important not to overlook the value of well-organised cities (Adams et al. 2016). There seems to be a thin line between under- and overregulation. The link between urban planning and FREI however, has not yet been researched. Based on the literature review four aspects of urban management will be taken into account in order to determine if it affects FREI attraction and are categorized as Urban Planning Regulations. Namely, land ownership structures, supply restrictions, procedural barriers and the enforcement of regulations. The main concepts and how they will be translated into empirically measurable indicators will be discussed in the next chapter.

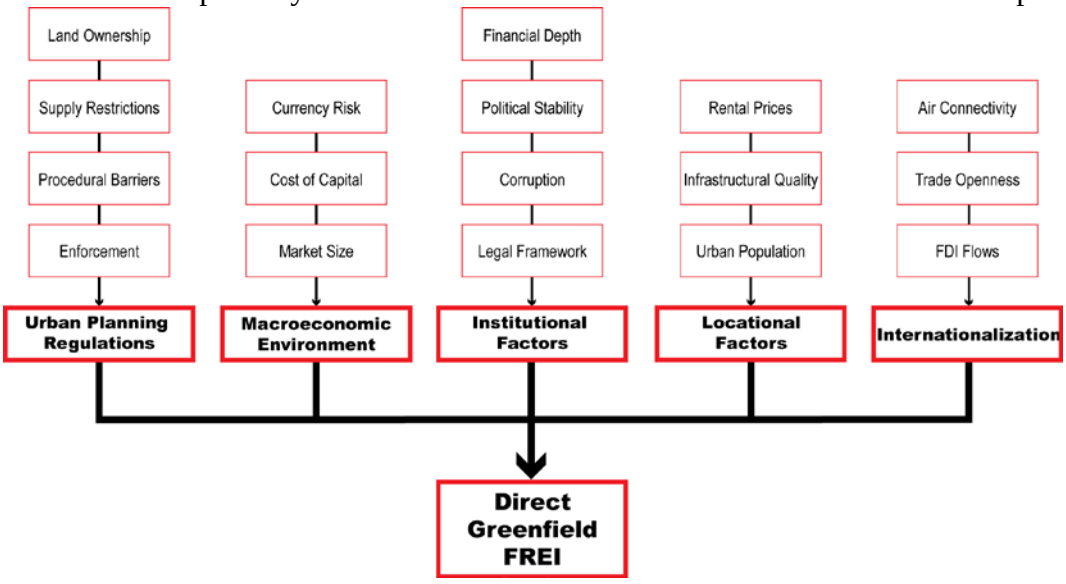


Figure 2.2 Conceptual model based on literature review

Source: Author, 2016

Chapter 3: Research Design and Methods

3.1 Operationalization

In this part the transition from theoretical concepts towards empirical research is made. To make the theoretical constructs of the research questions and the conceptual model measurable, these are defined and clarified more explicitly and untangled into variables and indicators that can be given values.

Revised research questions

What determines ***FREI*** attraction and how is SSA different?

- What determines the attraction of ***FREI*** in general?
- What determines the attraction of ***FREI*** in SSA?
- How do different ***urban planning regulations*** impact ***FREI***?

Direct Greenfield Foreign Real Estate Investment

Foreign Real Estate Investment (FREI) can take a variety of forms that are driven by different motives and have different determinants. A common motive is diversification, this view applies to institutional investors and wealthy individuals seeking return on investment. Institutional investors invest in properties to achieve relatively low risk returns on investments and wealthy individuals more often invest in foreign markets through indirect or "securitized" investment vehicles such as REITs (Lorenz 2005). Although these investments are a part of the total capital flows in foreign real estate, the indirect investment vehicles play a minor role in SSA (Rotherberger 2010). FDI, and its real estate component, plays a larger role in SSA's real estate markets (Rotherberger 2010). This research therefore focuses on Real-Estate investments from an FDI perspective. Within the FDI flows there are two types, Mergers and Acquisition (M&A) and Greenfield. Since the underlying goal of this research is to promote economic growth by adding to the capital stock and creating new jobs, this research focuses on greenfield FDI in real estate. Based on Ashraf and Herzer's (2014) distinction between M&A and Greenfield FDI and Rotherberger's (2010) real-estate specific modification of FDI this research focuses on **Direct Greenfield Foreign Real Estate Investment**, which for the purpose of this research is defined as:

The act of an entity, situated in one economy, to invest in the creation of real estate located in another, foreign economy, in order to profit from development, renting, leasing and/or sale of said real estate

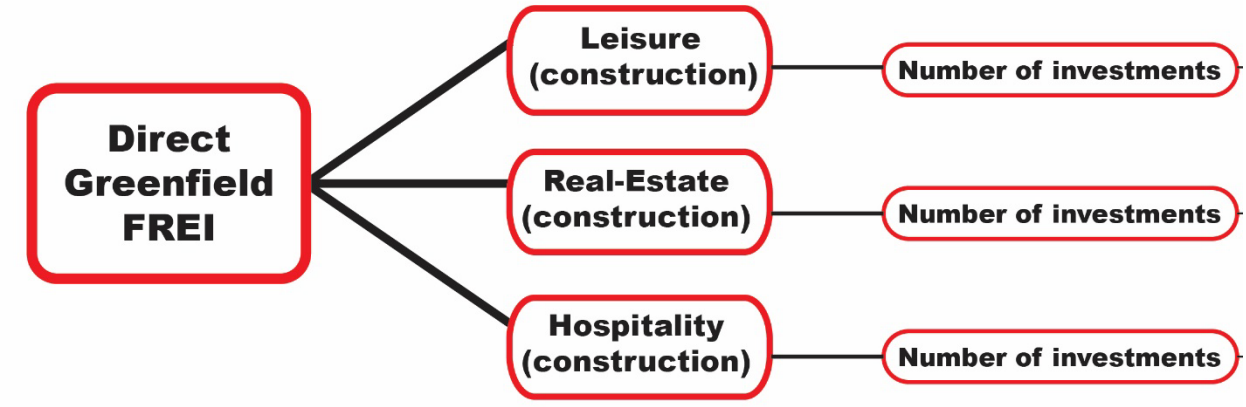


Figure 3.1 Tree Diagram Direct Greenfield FREI

Source: Author, 2016

Urban Planning Regulations

Urban planning is a very broad concept, Fainstein (2016) describes it as the "design and regulation of the uses of space that focus on the physical form, economic functions, and social impacts of the urban environment and on the location of different activities within it". The operationalization of this definition poses some practical problems regarding the amount of variables and indicators this would have to be untangled into. Besides these practical problems it raises some concerns about the internal validity of the research as well, because researching this definition would mean more would be measured than intended in the research objective. This research is mainly focussed on the effect that certain regulatory, legislative and procedural aspects of urban planning have on the elasticity of real estate supply as well as the transparency and accessibility of these markets. Therefore, it is more focussed on the legislative, regulatory, procedural and restrictive aspects of urban planning rather than the design or more strategic aspects of urban planning. Urban land-use regulations are the more restrictive part of urban planning, which can reduce the elasticity of the supply of real estate (Brueckner and Lall 2015). Monkkonens (2013) definition of urban land-use regulations is more useful for the purpose of this research. He defines urban land-use regulations as "the diverse range of rules and requirements governing housing and urban development" (Monkkonen 2013, p.256). This research defines the different legislative, regulatory and procedural aspects of urban planning as urban planning regulations. Since this research does not focus specifically on housing, as Monkkonen's study does, this research will use the following definition of **Urban Planning Regulations**:

The diverse range of rules and requirements governing urban development.

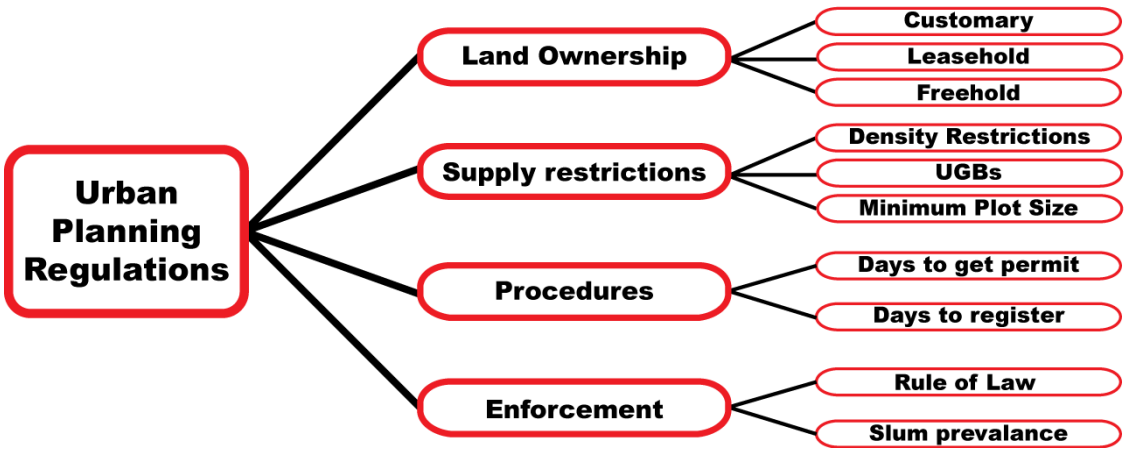


Figure 3.2 Tree Diagram Urban Planning Regulations

Source: Author, 2016

3.2 Operationalization Matrices

Concept	Variable	Indicator	Data source
Direct Greenfield FREI *Sources:* **(Rotherberger, 2010; EY, 2015)**	Construction FDI (industry activity)	Number of investments	fDi Markets database
Urban Planning Regulations *Sources:* **(Malpezzi and Mayo, 1997; Monkkonen, 2013; Alterman, 2013; Brueckner and Lall, 2015)**	Land Ownership	Dummy Freehold possibility (1=yes 0=no)	WB survey/GPG
	Supply Restrictions	Population Density (p/km2)	Passport database
	Procedural Restrictions	Days to register property Days to construction permit	WB DB database WB DB database
	Planning Enforcement	Regulatory Quality (estimate)	WB WGI database
Macro-economic Environment *Sources:* **(Asiedu, 2002, 2006; Rodriguez 2011; Lieser and Groh, 2013)**	Market size	GDP/Capita (US$ 2015 fixed)	Passport database
	Currency Risk	Inflation rate (%)	Passport database
Locational Factors *Sources:* **(Dunning, 1993; Rodriguez 2011; Masron and Fereidouni, 2013; Lieser and Groh, 2013)**	Population	Population size ('000)	Passport database
	Infrastructural Quality	Internet access (% of households)	WB WDI database
	Rental prices	Housing expenditure (US$ 2015 fixed) Housing index (2005=100)	Passport database Passport database
Institutional Factors *Sources:* **(D'arcy and Keogh 1999; Lieser and Groh, 2013; Fuerst and Baum; Selem and Baum, 2016)**	Corruption	Control of corruption (estimate)	WB WGI database
	Political Stability	Political stability (estimate)	WB WGI database
	Financial Depth	Domestic credit (% of GDP)	WB WDI database
Internationalization *Sources:* **(Vahne and Johansson, 2013; Masron and Fereidouni 2012; Bardhan et al., 2004,2007; Asiedu, 2002,2006, JLL, 2014)**	FDI flows	Number of inflow FDIs* **(excluding FREI)*	fDi Markets
	Trade barriers	Days to Import + Days to Export	WB WDI database
	Air connectivity	Passengers per year	Passport database

Figure 3.3 Operationalization matrix for Global cities sample

Source: Author, 2016

Concept	Variable	Indicator	Data source
Direct Greenfield FREI *Sources:* **(Rotherberger, 2010; EY, 2015)**	Construction FDI (industry activity)	Number of investments	fDi Markets
Urban Planning Regulations *Sources:* **(Malpezzi and Mayo, 1997; Monkkonen, 2013; Alterman, 2013; Brueckner and Lall, 2015)**	Land Ownership	Dummy Freehold possibility (1=Yes 0=No)	WB survey/GPG
	UK town & planning act	Dummy UK TPA influence (1=Yes 0=No)	UN-habitat
	Procedural Restrictions	Days to register property Days to construction permit	WB doing business WB doing business
	Planning Enforcement	Slum prevalence (%) Regulatory Quality	WB WDI database WB WGI database
Macro-economic Environment *Sources:* **(Asiedu, 2002, 2006; Rodriguez 2011; Lieser and Groh, 2013)**	Market size	GDP/Capita (US$ 2015 fixed)	WB WDI database
	Currency Risk	Inflation rate (%)	WB WDI database
Locational Factors *Sources:* **(Dunning, 1993; Rodriguez 2011; Masron and Fereidouni, 2013; Lieser and Groh, 2013)**	Population	Population size Rate of Urbanization (%)	WB WDI database WB WDI database
	Infrastructural Quality	Internet access (% of households)	WB WDI database
Institutional Factors *Sources:* **(D'arcy and Keogh 1999; Lieser and Groh, 2013; Fuerst and Baum; Selem and Baum, 2016)**	Corruption	Control of corruption (estimate)	WB WGI database
	Political Stability	Political stability (estimate)	WB WGI database
	Financial Depth	Domestic credit (%of GDP)	WB WDI database
Internationalization *Sources:* **(Vahne and Johansson, 2013; Masron and Fereidouni 2012; Bardhan et al., 2004,2007; Asiedu, 2002,2006, JLL, 2014)**	FDI flows	Number of inflow FDIs* **(excluding FREI)*	fDi Markets
	Trade openness	Days to Import + Days to Export	WB WDI database
	Foreign visitors	Tourist arrivals per year	WB WDI database

Figure 3.4 Operationalization matrix for (Sub-Saharan) African countries sample

Source: Author, 2016

3.3 Research Strategy

This research uses a "desk research strategy" to perform geographical and statistical analyses on secondary quantitative data. This approach is taken because of the broad geographical scope of the research. This research intends to obtain the general determinants of FREI by looking at cities across the globe and comparing these determinants to those analysed in (Sub-Saharan) African countries. Therefore, this research conducts several geographical analyses on the distribution of FREI for global cities, African cities and Sub-Saharan cities. The statistical

analyses are conducted on a city level for the global perspective and on a country level for the (Sub-Saharan) African region. Hereby this research aims to provide useful knowledge that can be generalizable for FREI in general and establish the determinants for SSA in particular. Given the geographical and time variant scope of the research, this strategy is suitable for the goals of this research.

3.4 Sample size and Selection

Global cities from the passport database

The general determinants of FREI attraction are explained by analysing the cities that are available in the Passport database. This analysis will focus on a city level because this is a more appropriate level of measurement both for the impact of Urban Planning regulations as well as FREI flows, since most of the FDI flows are attracted by urban centres (Wall and van der Knaap 2011). This city level analyses will focus on one city per country, which are available in the Passport database. It is a relatively representative sample of cities globally; however, it does not include any cities in low-income countries[19]. Since only 4 SSA cities are included and 27 countries in the SSA region are classified as low-income countries, this regression cannot be representative for SSA. Its purpose is to benchmark the general global determinants of FREI, which can then be compared to the determinants which are obtained through the analyses of African countries.

(Sub-Saharan) African Countries

To obtain determinants of FREI for the African and Sub-Saharan African region, separate regressions are performed. For this analysis as much countries as data availability allows are included in the sample. Only Sudan and South-Sudan can be excluded beforehand since these countries have formed after 2006 and an analysis of these countries during the 2006-2014 period would give biased results. For the Sub-Saharan analysis Algeria, Egypt, Libya, Morocco and Tunisia are excluded in order to obtain the specific determinants of FREI in SSA. Since this analysis is performed on a country level, instead of the more appropriate city-level, the internal validity might be slightly lower, but the results will be more reliable.

3.5 Data Collection Methods

This research uses different existing datasets to develop the statistical model. For the 5 main concepts that will be analysed, the different proxies that will be used can be found in the operationalization matrices (**Figures 3.3 and 3.4)**. The main datasets that will be used are fDi Markets datatset from the Financial Times for the FDI related data, the Passport database from Euromonitor International for the city-level indicators, and several World Bank datasets for other indicators.

An obvious limitation of this approach is the availability of data. Some of the variables and indicators mentioned in the conceptual model are unavailable on a city level as well as for many countries in Africa. Therefore, this research will only collect data on city-level for a select number of African cities, more specifically, those African cities that are included in the Passport database. However, on a country level the data will be collected, through aforementioned sources, for the country-level analysis of Africa.

[19] As defined by the World Banks latest classification.

3.6 Data Analysis Methods

3.6.1 GIS

Geographic Information Systems (GIS) provide an opportunity to visualize data in an attractive way and overlay different local characteristics and indicators to obtain certain patterns in data that could otherwise easily be overlooked. Similar to the motive of local real estate investment decisions, FREI decisions are driven by the "location, location, location" motive as well, and GIS software enables the comparison of geographical and locational factors (Greer and Kolbe 2003). Therefore, the geographical analysis are performed with GIS software to map the distribution of investments and compare different determinants of FREI per city and country.

3.6.2 Statistical analysis

To explain determinants of FREI in general and in Africa and SSA in particular, this research performs regressions on the variables described in the conceptual model (**fig. 2.2**). In the model FREI is determined by Urban Planning Regulations (UPR), Macro-economic Environment (ME), Locational Factors (LF), Institutional Factors (IF) and the level of Internationalization (INT). For this research the formula can be written as:

FREI=f(*UPR,ME,LF,IF,IN)*

The statistical data analyses focus on the number of FREIs cities/countries attract, in other words, count data. Linear regression models have serious limitations when assessing count data (Winkelmann 2008). When linear regressions are incorrectly used for count data it can lead to "inefficient, inconsistent and biased estimates" (Long and Freese 2006). Instead, Poisson regression models or other, specifically designed modifications of this model should be used to analyse count data (Long and Freese 2006; Winkelmann 2008; Burger et al. 2009). Based on Flowerdew and Aitkin's (1982) work, Burger et. al. (2009) summarized three main motives to choose Poisson-type models over log-transformed linear Ordinary Least Squares (OLS) models; (1.) It estimates the original data and not the biased log-transformed data; (2.) OLS models do not function well with heteroskedastic variables, in contrast to Poisson models and; (3.) Poisson-type regression models can deal with the 'zero problem' that log transformed OLS regressions face, which either omits zero values or gives them low values, which can seriously distort the results (Flowerdew and Aitkin 1982). The exact specification of the different Poisson type models that are used for this research is based on the model fit tests performed on the different datasets. This will be discussed in further detail in the next chapter.

By performing regressions on different geographical scales with representative samples, this research tries to obtain externally valid and generalizable results that are useful to understand FREI determinants in general and in SSA in particular, as well as provide an insight into how different urban planning regulations influence FREI flows. A more general issue with this research strategy is the validity of the statistical analyses in general, as Box (1976) mentions, "all models are wrong". It should be interpreted as an indicator that can be used to affirm theory and approach reality, not as an absolute truth. By keeping the models as parsimonious as theoretically possible the research can obtain results that are a valid and economical description of a particular phenomenon (Box 1976).

"All models are wrong, some are useful"

George Box

Chapter 4: Research Findings

4.1 Introduction

In this section the results of the different geographical and statistical analyses that were used to answer the research (sub-)questions will be presented, interpreted and discussed. To answer the different research questions this research focuses on three different geographical scales. The global analysis is meant to obtain an insight into the general determinants of FREI attraction. The sample from the passport database is representative for main cities across the globe, except those located in low-income countries. Any results from this analysis can thus not be generalized for the whole of Africa and especially not for Sub-Saharan Africa. Therefore, separate analyses will focus on African countries and Sub-Saharan countries. This will provide an insight into the determining factors of FREI attraction as well as factors that cause the lack of FREI attraction in these regions. In all of these analyses the particular interest of this research will be taken into account, namely how different urban planning regulations impact FREI attraction. The next section **(4.2)** will briefly discuss the data collection process and the final sample selection. Section **4.3** will describe the main variables and indicators of interest that have been used to analyse the determinants of FREI. Thereafter each section will use descriptive and inferential analyses to provide answers for each research sub-question.

4.2 Data collection and Sample selection

The conceptual model has been operationalized into several measurable indicators which will be used to assess the determinants of FREI attraction in general **(see figure 4.1)** and for (Sub-Saharan) African countries in particular **(see figures 4.2 and 4.3)**. Comparative studies of urban planning regulations are scarce for a reason (Malpezzi and Mayo 1997; Monkkonen 2013), comparing restrictive regulations such as Floor to area ratios (FARs), Urban Growth Boundaries (UGBs) and minimum lot sizes poses some serious practical issues, such as intra urban differences and language barriers. Therefore, more general proxies have been chosen to measure different aspects of Urban planning regulations. In line with several authors on the subject (Bertaud and Malpezzi 2001; Angel 2001; Malpezzi and Mayo 2003; Bertaud and Malpezzi 2014), the indicators on building permits and property registration from the World Bank Doing Business database provide a good proxy for planning regulations. Population density is used as a proxy for excessively regulated or unregulated urban areas, where low density is a sign of excessive regulation and high density indicates a lack of regulation (Bertaud and Malpezzi 2014). Of course it is important to keep in mind that other factors such as population size, income, geographical characteristics and cultural preferences impact population density as well. In this research population size and income level is controlled for, however geographical characteristics and cultural preferences are not specifically controlled for. Some authors on comparative urban planning studies have somewhat arbitrarily categorized different planning regimes or real estate markets along the lines of socialist versus market-oriented regimes (Schwartz and Seabrooke 2008; Bertaud and Malpezzi 2014). However, because the external goal of this research is to determine how municipalities in SSA can attract more FREI a more concrete proxy is used, namely a dummy variable of the possibility of a foreign investor to obtain freehold title of land ownership. This aspect of urban planning could be altered by local governments and this more concrete indicator can be more useful for the purpose of this research than a more abstract categorization.

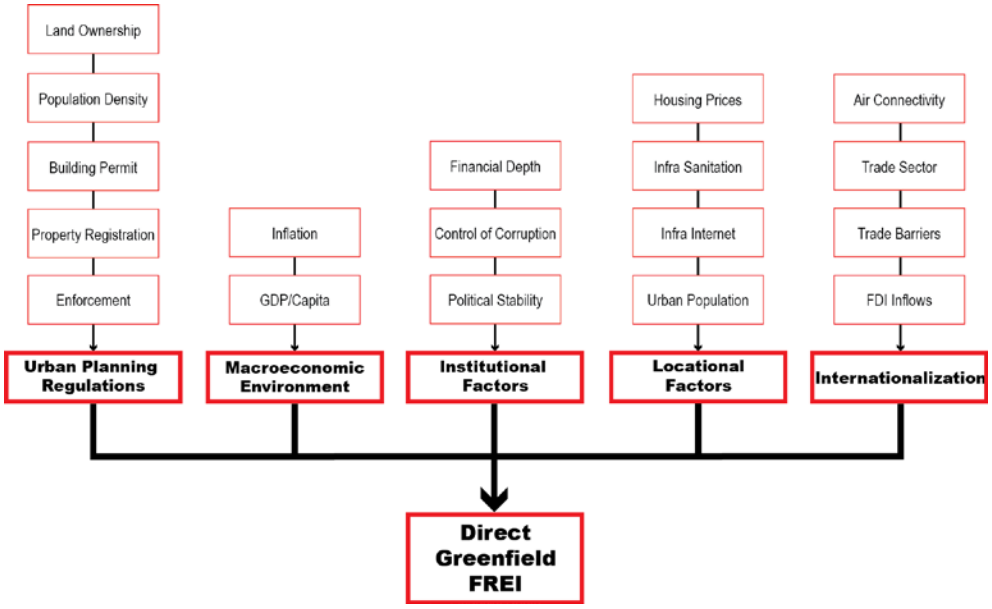


Figure 4.1 Operationalized indicators for Global cities analyses

Source: Author, 2016

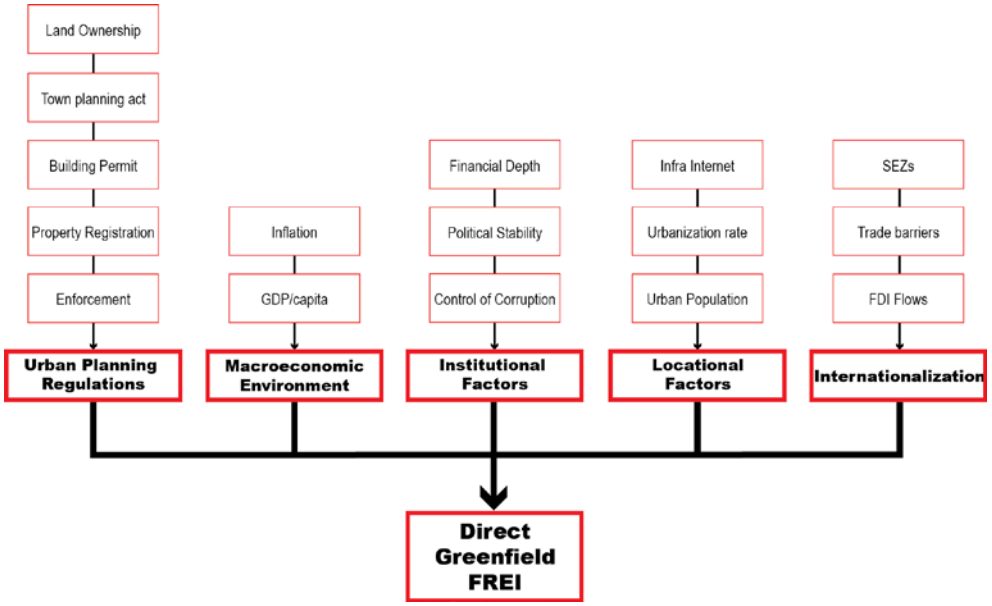


Figure 4.2 Operationalized indicators for African country analyses

Source: Author, 2016

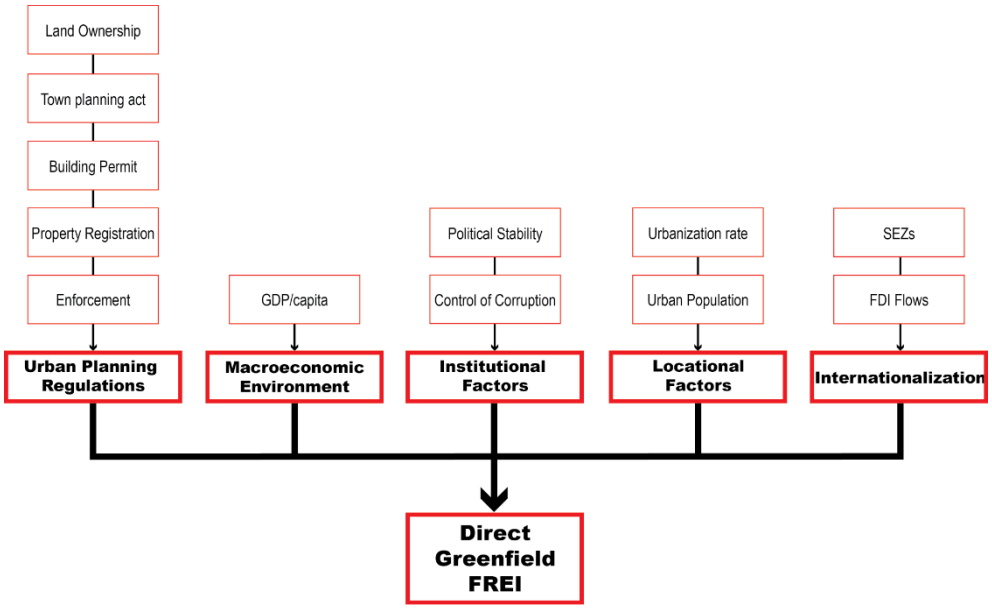


Figure 4.3 Operationalized indicators for SSA country analyses

Source: Author, 2016

The sample selections are the result of a balanced decision between the data availability of indicators for all cities/countries over all years. First, from the Passport database the largest city of each country that contained urban data was selected. Because of a lack of data availability for all indicators Baku, Jerusalem, Taipei and Minsk were excluded from the sample. For the global city analysis this resulted in a sample of 72 cities for which most data was available for the 2006-2014 period **(see figure 4.4).**

Figure 4.4 Final Global city sample, **source: Author , 2016**

Because the analysis for the African region is on a country level, certain indicators in the conceptual model have been altered **(see difference between Figure 4.1, 4.2 and 4.3).** For example, population density cannot be used as a similar proxy for urban planning regulations on country level as it can on a city level. Some other indicators of interest have been added based on particular results of the literature review and analyses of the global cities. For example, the influence of the 'town and country planning act' of 1947 remains great in former British colonies (Mabogunje 1990; Obeng-Odoom 2015). Therefore, a dummy is included to proxy this influence on urban planning. The Special Economic Zone dummy variable is added because of the indication that internationalization and especially the attraction of other foreign investments had a great positive impact on FREI attraction. Eventually, by a similar process of availability of data for all indicators over the 2006-2014 period, the country sample for Africa resulted in 31 countries and 27 countries for the SSA sample **(see figure 4.5).**

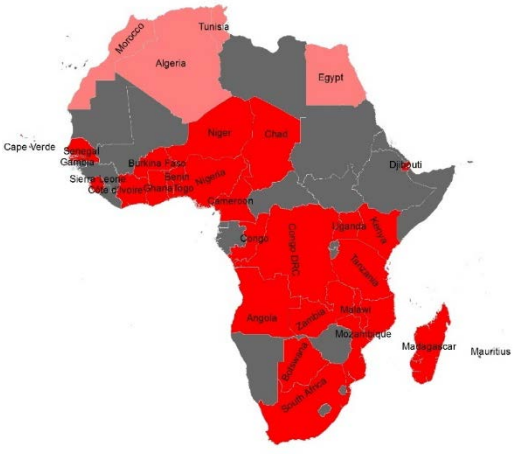


Figure 4.5 (Sub-Saharan) African country sample

Source: Author, 2016

4.3 Description of dependent and independent variables

The dependent variable of this research is direct greenfield FREI, in the geographical analysis both the capital (value) inflow of investments and the number (count) of investments will be discussed. The statistical inferential analyses however, will only look at the count data, in other words, the number of investments. The statistical distribution of FREI and the indicators of the main variable of interest, Urban Planning Regulations, will be the focus of this section.[20] As the tables below show, this research focuses on the number of FREIs during the 2006-2014 period. As can be expected, the maximum and mean of FREIs is higher for the global cities sample and lowest for the SSA sample. Regulatory Quality estimates from the World Governance Indicators database shows similar results, higher mean and maximum for global cities sample and lowest for the SSA sample. Another striking difference is the amount of time that is required to obtain a building permit. In the global city sample, the lowest score is only 27 days, where in the SSA sample the minimum is almost four times as long and the maximum is higher as well. Property registration shows a similar trend and is, on average, almost twice as long in SSA as the average of the 72 cities in the global city sample.

Table 4.1 Description of variables of interest Global analyses | **Source: Author, 2016**

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	648	2010	2.58398	2006	2014
Number of FREIs	648	1.78086	3.09431	0	32
UPR_Population Density	648	1516.54	1619.64	82.7	10045.6
UPR_Regulatory Quality	648	.455937	.875264	-1.80582	1.97094
UPR_Days to Obtain Permit	576	177.989	89.3941	27	529
UPR_Days to Register Property	576	42.6832	52.0947	1	398
UPR_Freehold Landownership Possibility	648	.833333	.372966	0	1

Table 4.2 Description of variables of interest Africa analyses | **Source: Author, 2016**

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	279	2010	2.58663	2006	2014
Number of FREIs	279	.888889	2.54708	0	26
UPR_Regulatory Quality	279	-.448946	.510577	-1.5823	1.00071
UPR_UK Town Planning Act	279	.387097	.487961	0	1
UPR_Special Economic Zone	279	.290323	.454727	0	1
UPR_Days to Obtain Permit	272	194.851	83.5839	86	599
UPR_Days to Register Property	272	80.2066	65.2226	10	335
UPR_Freehold Landownership Possibility	279	.548387	.498547	0	1

Table 4.3 Description of variables of interest Sub-Saharan Africa analyses | **Source: Author, 2016**

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	243	2010	2.58732	2006	2014
Number of FREIs	243	.353909	.9782	0	9
UPR_Regulatory Quality	243	-.456047	.522981	-1.5823	1.00071
UPR_UK Town Planning Act	243	.444444	.49793	0	1
UPR_Special Economic Zone	243	.259259	.439133	0	1
UPR_Days to Obtain Permit	236	202.38	84.9774	106.3	599
UPR_Days to Register Property	236	82.2042	68.551	10	335
UPR_Freehold Landownership Possibility	243	.518519	.500688	0	1

[20] A full summary of the characteristics of all indicators can be found in Annex 4

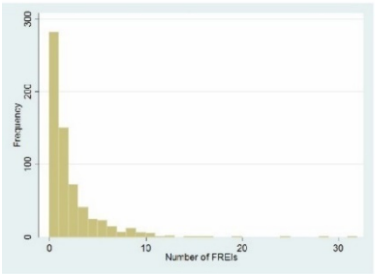
4.4 Choice of statistical model

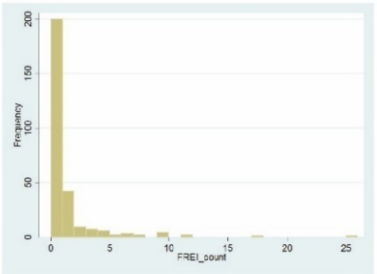
As mentioned above, this research focuses on the number of investments, which is a nonnegative integer, or in simpler words count data. Therefore, regressions based on a Poisson distribution fit this type of data better than a linear regression. The standard Poisson Regression Model (PRM) however assumes equidispersion and thus rarely fits due to the overdispersion which is often present in count data and it can only take observed heterogeneity into account (Long and Freese 2006; Burger et al. 2009). As **table 4.1 4.2 and 4.3** show, all datasets are overdispersed, since the standard deviation is higher than the mean. Not correcting for this overdispersion could lead to spuriously large z-values and small p-values (Cameron and Trivedi 1998). To correct for the overdispersion a modified Poisson model, the Negative Binomial Regression Model (NBRM), is often used (Burger et al. 2009). This model incorporates unobserved heterogeneity by specifying the variance as a function of the mean as well as a dispersion parameter (Burger et al. 2009). A likelihood ratio-test of this dispersion parameter is used to assess whether a NBRM is preferred over a standard PRM.

Number of FREIs	Freq.	Percent	Cum.
0	282	43.52	43.52
1	150	23.15	66.67
2	72	11.11	77.78
3	41	6.33	84.10
4	25	3.86	87.96
5	23	3.55	91.51
6	15	2.31	93.83
7	7	1.08	94.91
8	12	1.85	96.76
9	6	0.93	97.69
10	5	0.77	98.46
11	1	0.15	98.61
12	2	0.31	98.92
14	1	0.15	99.07
15	1	0.15	99.23
16	1	0.15	99.38
19	1	0.15	99.54
24	1	0.15	99.69
28	1	0.15	99.85
32	1	0.15	100.00
Total	648	100.00	

FREI_count	Freq.	Percent	Cum.
0	200	71.68	71.68
1	42	15.05	86.74
2	9	3.23	89.96
3	7	2.51	92.47
4	6	2.15	94.62
5	2	0.72	95.34
6	3	1.08	96.42
7	2	0.72	97.13
9	4	1.43	98.57
11	2	0.72	99.28
17	1	0.36	99.64
26	1	0.36	100.00
Total	279	100.00	

Number of FREIs	Freq.	Percent	Cum.
0	192	79.01	79.01
1	37	15.23	94.24
2	6	2.47	96.71
3	3	1.23	97.94
4	2	0.82	98.77
5	1	0.41	99.18
6	1	0.41	99.59
9	1	0.41	100.00
Total	243	100.00	





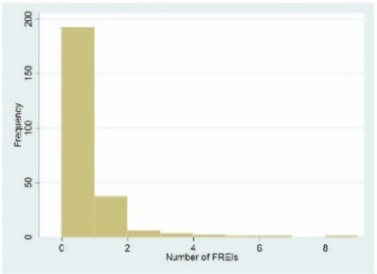
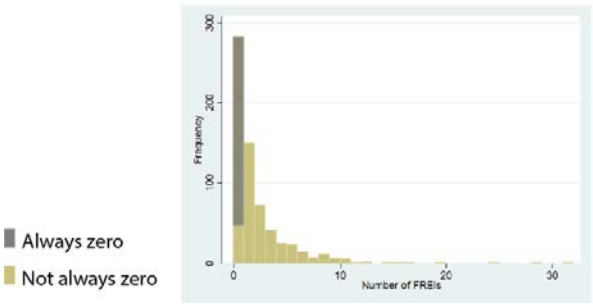


Table 4.4 Global Sample **Table 4.5 Africa Sample** **Table 4.6 SSA Sample**

Figure 4.4.1 Zero-Inflated Model **Source: Author, 2016**



Although both the PRM and the NBRM can technically deal with zero's, in contrast to the log-normal model, they may underestimate the amount of zero's when the data has an excessive amount of zero's (Long and Freese 2006; Burger et al. 2009). As **table 4.4, 4.5 and 4.6** show, the data on FREIs contain a lot of zero's and these might be underestimated with the normal NBRM. To deal with the excess zero's a Zero-Inflated Negative Binomial (ZINB) model can be used (Long and Freese 2006). This model considers the existence of two separate groups in the data, the always zero group and a not always zero group **(see figure 4.4.1).** The not always zero group is regressed with the NBRM and to determine the probability of being categorized in the always zero-group a logit

model is used. By assessing the zero's separately, the zero-inflated model can correct for the high amount of zero's. The focus of this research is also to determine why SSA has attracted less FREI than other regions and why within SSA some areas are more successful than others. Because the Zero-Inflated model also assesses the probability of not receiving any investment it is especially useful for the purpose of this research. With this model we can estimate the different indicators that reduce and increase the probability of not receiving any investments as well as assessing what indicators contribute to greater or lesser number of investments. To assess whether a Zero-Inflated model is preferred over a normal PRM or NBRM the Vuong statistic is often used (Burger et al. 2009; Wilson 2015). This research employs the counfit function in Stata to assess the best model fit, this function uses the Baysian Information Criterion (BIC), Aikake Information Criterion (AIC) as well as the Vuong Statistic to assess which type of Poisson model is preferred (Long and Freese 2006).

4.5 General determinants of FREI

To obtain the general determinants of FREI this part of the research analyses the impact of different relevant indicators on FREI attraction in cities worldwide. The first section (**4.5.1**) will show the geographical distribution of FREI in terms of capital inflow, number of investments and review a specific other aspect of FREIs, namely the differences FREIs have regionally regarding the creation of jobs. The second part (**4.5.2)** will describe the results of the different ZINB regressions.

4.5.1 Geographical distribution of FREI

The total inflow of direct greenfield FREI into the 72 cities of this sample is approximately 272,6 Billion US$. However, as you can see in **figure 4.6**, these capital flows are distributed highly uneven. London for example, attracts approximately 15% of the total FREI in this sample and the top 30 cities account for 90% of the total capital flows. A somewhat surprising fact is that two African cities are in the top 3, Tunis and Cairo. Together with London these top 3 cities attract approximately 86,5 Billion US$, almost a third of all investment capital. The four Sub-Saharan cities (Johannesburg, Lagos, Nairobi and Douala) attracted a relatively small amount of capital. The four cities combined attracted less than 1% of the total capital flows. Another somewhat surprising result is the investment intensity in Eastern Europe.

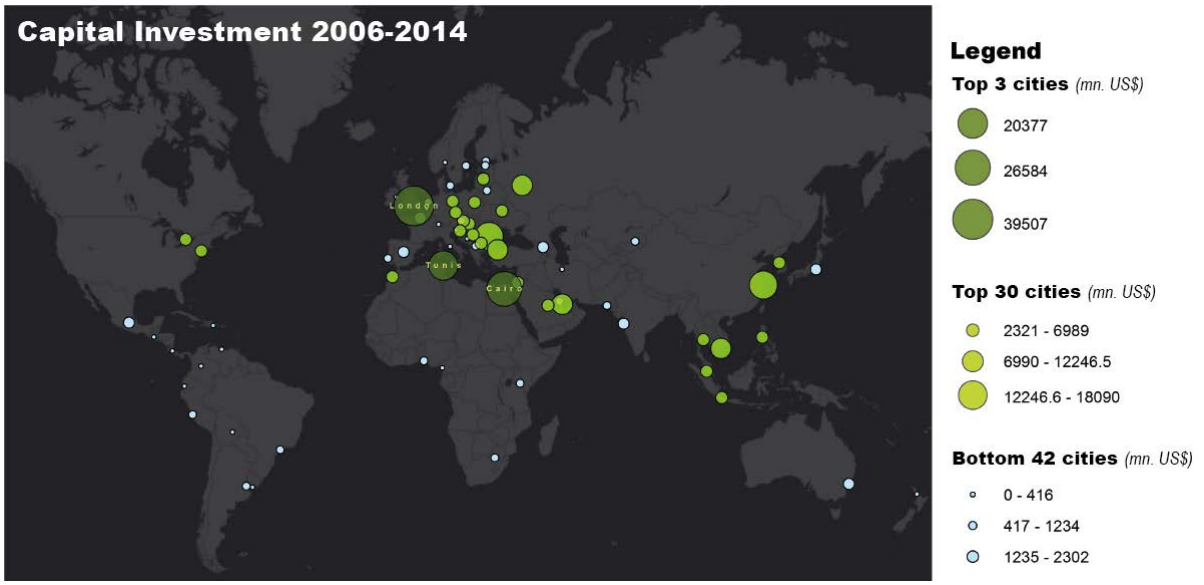


Figure 4.6 Geographical distribution of capital flows across the 72 cities in global sample.
Source: Author, 2016

The mapping of the number of investments however shows a different distribution **(see figure 4.7).** The investment intensity in eastern Europe is even stronger in terms of the number of investments. Bucharest received the most investments during this period, with 104 FREIs it attracted 10% of all investments. And also some Latin-American cities score better in terms of the number of investments. Cairo is the only African city in the top 30, which account for more than 4/5TH of all investments. When the number of investments are controlled for population size the investment intensity shifts even further towards the Middle-East and Eastern Europe.

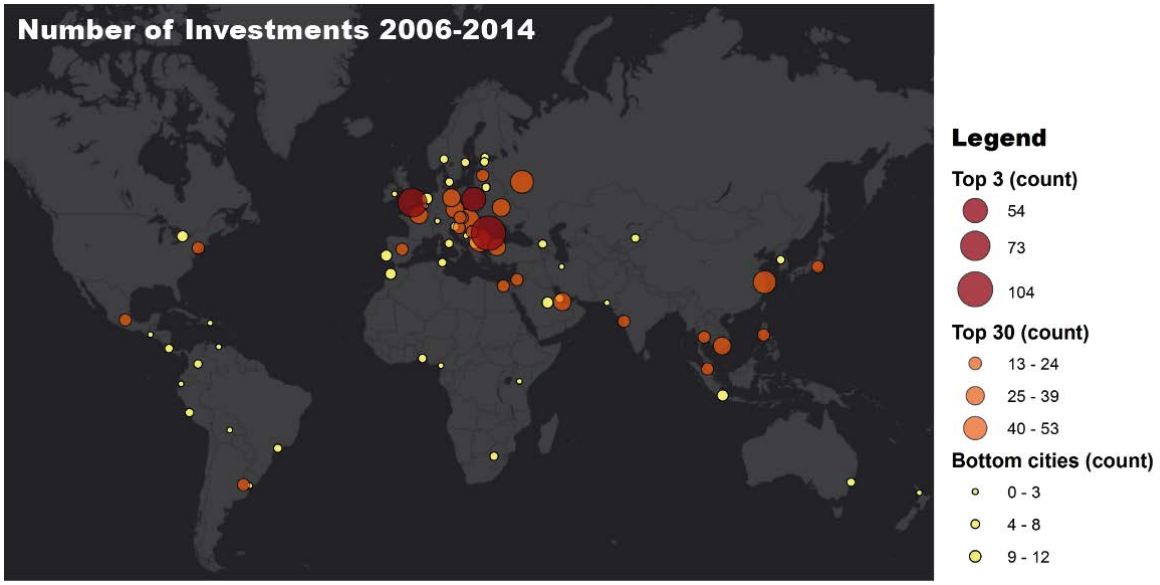


Figure 4.7 Geographical distribution of investments across the 72 cities in global sample.
Source: Author, 2016

The amount of jobs that are generated by these FREIs seems to differ highly per region as well. As **figure 4.8** shows, the amount of jobs created per million US$ invested is highest in Latin-America and Eastern Europe and lowest in the Middle-Eastern and African Region. Tunis, attracts the third most capital of all cities in the sample, however these investments generated the least amount of jobs per million invested. For the generation of jobs, it seems that it is more important to attract a higher number of investments instead of a higher capital value of investments. For example, Bucharest received approximately 15,6 billion US$ over the 2006-2014 period, which was spread over 104 investments, this generated more than 210.000 jobs. During that same period Tunis received 20.4 billion US$, but spread over only 6 investments which only generated approximately 10.000 jobs.

A higher number of investments can be seen as an indicator of how well an international real estate market functions. Although capital attraction is also an important goal for cities SSA to develop housing and provide the needed urban infrastructure, it seems to be more important to attract more, perhaps lower value, investments than a few large ones. Therefore, it is important to have efficient markets which will more easily facilitate market and investment activity.

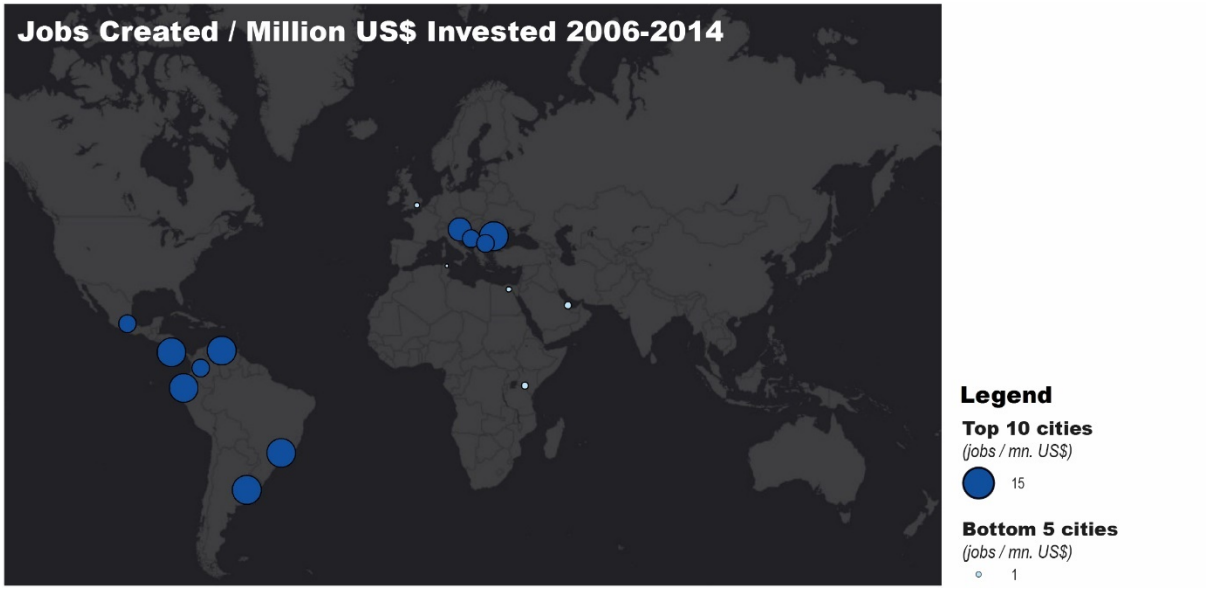


Figure 4.8 Jobs created per million US$ invested
Source: Author, 2016

4.5.2 ZINB models

This section will present the results of the inferential statistical analyses that are used to explain the uneven distribution of FREIs depicted in the previous section. These analyses will be used to obtain the general determinants of FREI attraction of the cities included in this sample and give an insight into how urban planning regulations impact these investments. Following Box' (1976) statement that parsimony should be pursued, the first two models are As Parsimonious As Possible (APAP) with model 1 having the largest number of observations (N) and model 2 having a slightly smaller N due to some missing data from the World Bank Doing Business database. The latter two models include as much indicators as possible to see what other factors impact FREI attraction, again model 3 has a slightly larger N than model 4 due to the same missing data.

As mentioned before, this research uses a modified Poisson model, the Zero-Inflated Negative Binomial regression model. As can be seen in **table 4.7,** this model calculates estimates for two groups, the always zero-group and the not-always-zero group. The first section shows the count equation of the factor change in expected count for those not-always zero and the coefficients show the factor change in expected count for unit increase in the independent variable (X). The second section under "inflate", shows the binary equation, which calculates the probability of being categorized in the always zero group and the coefficients show the factor change in odds of always zero.

The statistically significant indicators are highlighted. In the count equation, which measures the impact on the amount of FREI attracted, red is used to indicate a significant negative impact and green a significant positive impact. In the binary equation, which measures the probability of not receiving any investments, blue is used to highlight an significant increase in the odds of never receiving FREI and yellow is used to highlight a significant decrease in the odds.

Table 4.7 ZINB regressions, Source: Author, 2016

	(1)APAP *Number of FREIs*	(2)APAP+UPR *Number of FREIs*	(3)ACAP *Number of FREIs*	(4)ACAP+ UPR *Number of FREIs*
UPR_Regulatory Quality	-0.0410	-0.0275	-0.0275	-0.0609
	(0.13)	(0.14)	(0.12)	(0.11)
UPR_Freehold landownership possibility	0.3477	0.3764	0.0821	0.0804
(Yes=1 No=0)	(0.25)	(0.28)	(0.22)	(0.24)
UPR_Population Density	**-0.0002*** **	**-0.0002*** **	**-0.0002** **	**-0.0003*** **
(people / km2)	(0.00)	(0.00)	(0.00)	(0.00)
INST_Control of Corruption	**-0.5508*** **	**-0.5183** **	**-0.5462*** **	**-0.4719** **
	(0.21)	(0.24)	(0.21)	(0.23)
INST_Political Stability	**0.3967*** **	**0.3779** **	**0.4667*** **	**0.4983*** **
	(0.14)	(0.17)	(0.18)	(0.19)
INT_Number of FDIs	**0.0089*** **	**0.0095*** **	**0.0105*** **	**0.0137*** **
(excluding FREIs)	(0.00)	(0.00)	(0.00)	(0.00)
LOC_Population Size	-0.0000	0.0000	0.0000	0.0000
	(0.00)	(0.00)	(0.00)	(0.00)
MACRO_GDP / Capita	-0.0000	-0.0000	-0.0000	-0.0000
	(0.00)	(0.00)	(0.00)	(0.00)
UPR_Days to obtain Building Permit		0.0002		-0.0004
		(0.00)		(0.00)
UPR_Days to Register Property		0.0010		-0.0001
		(0.00)		(0.00)
INT_Trade Barriers			-0.0081	**-0.0099* **
			(0.01)	(0.01)
INT_Trade Sector / GDP			-0.0015	-0.0023
			(0.00)	(0.00)
INT_Airpassengers			-0.0000	-0.0000
			(0.00)	(0.00)
LOC_Housing Expenditure			0.0000	-0.0000
			(0.00)	(0.00)
LOC_Infra Santation			0.0106	**0.0163** **
			(0.01)	(0.01)
LOC_Infra Internet			**-0.0081* **	-0.0081
			(0.00)	(0.01)
MACRO_Inflation			0.0112	-0.0037
			(0.03)	(0.03)
INST_Financial Depth				**-0.0053** **
				(0.00)
Constant	0.5391*	0.4777	0.5542	0.5897
	(0.28)	(0.39)	(0.98)	(0.87)
Inflate				
UPR_Regulatory Quality	-0.0578	**-1.3088* **	-0.3762	**-1.3772*** **
	(0.48)	(0.74)	(0.24)	(0.45)
UPR_Freehold landownership possibility	**2.3931** **	**2.8018** **	**5.1192*** **	**3.3565** **
(Yes=1 No=0)	(0.96)	(1.09)	(1.75)	(1.61)
UPR_Population Density	0.0004	**0.0006** **	0.0000	0.0005
	(0.00)	(0.00)	(0.00)	(0.00)
INST_Control of Corruption	-1.6147	-0.9381	-1.0643	-1.2117
	(1.04)	(0.66)	(1.01)	(0.90)

INST_Political Stability	2.7807	**1.6184****	**3.1558****	**2.5322***
	(2.69)	(0.69)	(1.55)	(1.35)
INT_Number of FDIs	-0.4163	**-0.4835*****	**-0.4577*****	**-0.3808****
(excluding FREIs)	(0.28)	(0.15)	(0.13)	(0.16)
LOC_Population Size	0.0001	**0.0002****	0.0002	0.0003
	(0.00)	(0.00)	(0.00)	(0.00)
MACRO_GDP / Capita	-0.0001	-0.0000	**-0.0005*****	**-0.0003*****
	(0.00)	(0.00)	(0.00)	(0.00)
UPR_Days to obtain Building Permit		-0.0066		-0.0002
		(0.00)		(0.01)
UPR_Days to Register Property		**-0.0236*****		**-0.0381***
		(0.01)		(0.02)
INT_Trade Barriers			0.0034	-0.0095
			(0.02)	(0.02)
INT_Trade Sector / GDP			0.0341	**0.0311****
			(0.02)	(0.01)
INT_Airpassengers			-0.0000	0.0000
			(0.00)	(0.00)
LOC_Housing Expenditure			-0.0002	-0.0000
			(0.00)	(0.00)
LOC_Infra Santation			**-0.1266*****	**-0.0822*****
			(0.05)	(0.03)
LOC_Infra Internet			**0.0902*****	0.0520
			(0.03)	(0.04)
MACRO_Inflation			-0.0511	-0.1105
			(0.09)	(0.19)
INST_Financial Depth				-0.0273
				(0.03)
Constant	1.3054	3.6196***	8.9606***	9.7314**
	(1.89)	(1.36)	(3.33)	(4.22)
lnalpha				
Constant	-0.2661	-0.3428*	-0.4331***	-0.6041***
	(0.21)	(0.19)	(0.17)	(0.18)
Observations	648	576	646	555
AIC	2088.32	1802.45	2075.36	1731.42
BIC	2173.32	1902.64	2222.89	1899.86

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.010

Count Equation, Not always zero

The indicators that are significant in the count equation of the most parsimonious model, Population Density, Control of Corruption, Political Stability and the Number of FDIs remain robust in the other, more complex, models. As expected, political stability and the number of FDIs in other sectors have a positive effect on the number of FREIs in a city. This is in line with many FDI theories that a stable political environment has a positive impact on investments (Asiedu 2006; Myers 2015). The number of investments in other sectors is in line with many theories as well, the world city hypothesis of Friedmann (1986) and other related theories such as Alderson and Beckfields (2004) world city system and Sassens (2005) global city concept. The follow the leader / client hypotheses apply to this finding as well, investments in other sectors will require real estate developments which can create an attractive opportunity for foreign real estate investors (Knickerbocker 1973; Masron and Fereidouni 2012). The agglomeration theories which state that cities which are successful in attracting investments will subsequently attract more investments apply to this finding as well (Laposa and Lizieri

2005; Masron and Fereidouni 2012; Cheshire et al. 2014). The more complex model incorporates trade barriers as measured by the number of days required to import and export goods. The negative impact of trade barriers emphasizes the importance of internationalization in the pursuit of FREI attraction.

A somewhat surprising finding, that is in contrast with other findings (Asiedu 2006; Lieser and Groh 2013), is that a higher control of corruption has a negative impact on FREI attraction. As Salem and Baum (2016, p.137) hypothesise, a certain degree of corruption might provide some investors "preferential access to profitable markets". In contrast to indirect FREI, Direct FREI requires a higher degree of interaction between investor and place of investment and thus this preferential access might be more profitable than markets which are fully transparent and where competition is more equal. Unequal access to real estate markets can thus create a monopolistic advantage, which Hymer (1976) also showed to be an important determinant of FDI. This can also be seen in the type of markets that are successful in attracting FREI, for example Eastern Europe attracts more Direct FREI than Western Europe. Related to these results is the negative sign financial depth shows in the most complex model 4. This is also in line with Salem and Baums (2016) result that the existence of REITs show a negative sign for Direct FREI since this could function as an alternative mode of investment. The fact that higher internet access has a significant negative impact as well, could also be related to this difference between direct and indirect FREI.

Although the higher technological infrastructure has a negative impact, the more basic infrastructure measured by percentage of population with access to improved sanitation has a significant positive effect on FREI. Besides the more general importance for health and human capital it emphasizes the importance of basic urban services for establishing the prerequisites of a good investment climate. Population density reduces the amount of FREI attracted by a factor 0.9998 per unit increase in person / km2, or approximately 2% decrease of FREI per 100 people / km2 increase. The significant negative impact of excessive population density, a measure of unregulated cities, may be related to the importance of improved sanitation as well. For example, the 3 most densely populated cities in the sample, Lagos, Karachi and Nairobi, have a high degree of informality and low quality of basic urban services (United Nations 2014). This indicates that a certain degree of regulation or formalisation of informal markets could be beneficial for enhancing FREI attraction. It also puts the emphasis many urbanists nowadays put on the "compact city" concept in another perspective, the negative impact of excessive population density indicates that these cities should build outwards instead of upwards. This is in line with Angel et. al.'s (2011) proposition that we should "build for growth" and that urban containment regulations such as urban growth boundaries are not appropriate for rapidly urbanizing countries.

Binary Equation, odds of always zero

In the most parsimonious model 1 only the Freehold land ownership dummy is significant and this indicator stays significant in all the other models. The Freehold ownership possibility actually increases the probability of never receiving FREI by a factor of 10, this is perhaps surprising given the importance many authors and development organisation such as the World Bank and UN-Habitat give to privatising land-markets (De Soto 2000; Payne et al. 2007; World Bank 2008; Payne et al. 2009; Mooya 2011). This would indicate that cities / countries that do not receive any investments would not benefit from privatising their land markets. Pinckney and Kimuyu (1994) already reported that research on the impact of land formalisation on investment attraction had shown contradictory results. Their research indicated that formalisation did not impact investment attraction. Other researcher found similar weak

impacts of land formalisation on economic growth (Payne et al. 2007; Payne et al. 2009; Mooya 2011).

The parsimonious model 2 includes indicators on planning restrictions, measured by the time required to obtain a building permit and register property. In this model the indicators on regulatory quality, population size, population density and property registration seem to be interacting and have become significant. This may indicate that larger cities with higher population density and weaker property registration systems, which is related to lower regulatory quality, have higher probability of not receiving any investments. This is in line with Mooya (2011) and Payne et. al. (2007) whom concluded that property systems and especially the titling processes are of importance for efficient real estate markets. As well as Brückner and Lall's (2015) description of the negative impact that unregulated growth of informal settlements can have on the urban economy. Even though the possibility of freehold land ownership is not beneficial for FREI attraction the regulatory environment does seem to increase the chance of receiving investment. Perhaps it is not the tenure form or type of ownership that is of importance as long as the process and procedures surrounding it are clear and well-organised. The most complex model 4, indicates a similar estimation where also the basic infrastructural indicator, access to improved sanitation facilities, a higher income level and higher regulatory quality reduces the odds of not receiving any investments at all. This emphasizes the importance of institutional capacity to capture part of the higher income levels and capital attraction to reinvest in the development of the basic urban infrastructure. This could help create a feedback loop that increases positive agglomeration externalities and mitigate the negative externalities and thereby enabling and spurring FREI attraction (Castells-Quintana and Royuela 2014; Castells-Quintana 2015).

4.6 Determinants of FREI in (Sub-Saharan) Africa

In order to obtain the determinants of FREI attraction into (Sub-Saharan) Africa and determine how Sub-Saharan Africa differs in this respect, this section will review the distribution of FREI across the continent and apply NBRM and ZINB regression models to attain the determinants of FREI attraction as well as the lack there of. As with the previous section, which reviewed the general determinants, the impact of different aspects of Urban Planning Regulations (UPR) are of special interest in these analyses. Based on the importance of internationalization in the analysis of the global city sample a Special Economic Zone (SEZ) dummy is included in the analysis of FREI determinants in Africa. Based on the literature review, which stated that the UK town and country Planning Act of 1947 has had an important impact on urban planning and functioning of cities in the former British colonies (Mabogunje 1990; Obeng-Odoom 2015), a UK planning act dummy is included as well. Because of the general rule of thumb that regression models need a surplus of 10-15 observations per indicator (Long and Freese 2006; Wooldridge 2011), the amount of indicators for the Africa models is lower than in the global city sample and the SSA models contain the least indicators.

4.6.1 Distribution of FREI into Northern and Sub-Saharan Africa

The distribution of FREI in Africa is highly skewed towards North-Africa. The North-African countries, Morrocco, Algeria, Tunis, Libya and Egypt attract more than 80% of all FREI capital inflow into the continent. In other words, the 5 northern countries attract approximately 4 times as much capital as the remaining 49 countries. The number of investments is, although less than the capital investment, also skewed towards the 5 North-African countries, which attract almost 2/3rd of all investments.

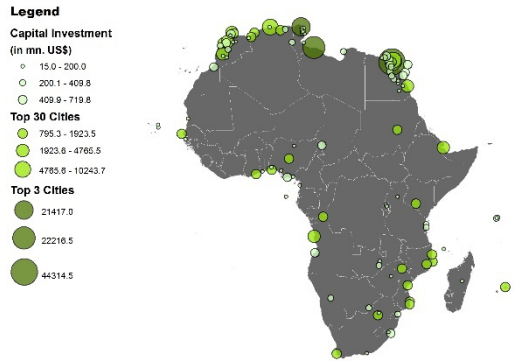


Figure 4.9 Capital attraction

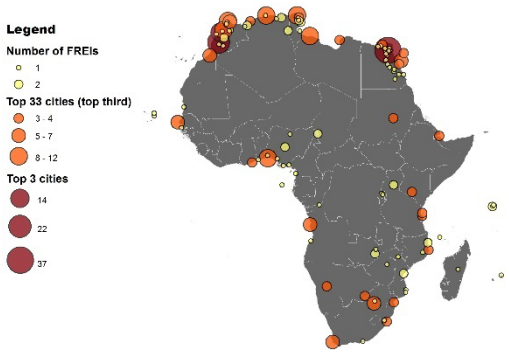


Figure 4.10 Number of FREIs

Source: Author, 2016

This distribution of investments is similar to related research on FDI attraction in Africa which also showed a concentration of investments in the "FDI-corridors" Casablanca-Tripoli and the Nile-Corridor (Wall et al. Forthcoming; Adb; et al. 2016).

Figure 4.11 and 4.12 show the concentration of investment in these corridors. Where you can clearly see that capital is even more concentrated in fewer places than the number of investments, which also highlight other "investment corridors" in SSA such as the Gauteng-Maputo corridor and the Accra-Lagos corridor and a small highlight on the Tanzanian coastal region.

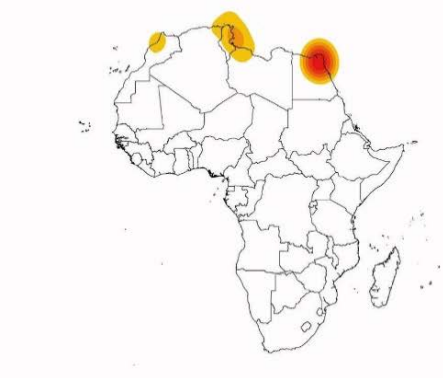


Figure 4.11 Concentration of Capital flows

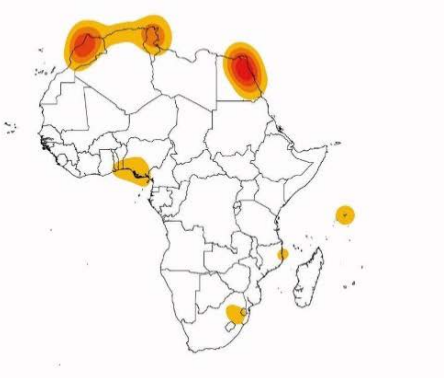


Figure 4.12 Concentration of FREIs

Source: Author, 2016

The distribution of FREIs across SSA is less concentrated, the top 3 cities account for approximately 1/4th of all invested capital, compared to the top 3 cities of the whole of Africa that attract more than 1/3rd. However, only 54 cities in SSA attract any FREI, which means that a lot of cities and regions in SSA do not attract any FREIs.

The two cities with the highest capital attraction, Luanda and Djibouti **(see figure 4.11),** are located outside the main investment corridors as characterized in the African Economic Outlook (Adb; et al. 2016). Luanda has seen an incredible real-estate boom during the 2006-2014 period and ranked number 1 on the Mercer cost of living ranking for many consecutive years. This was related to high oil-prices during this period, which have dropped significantly

during recent years. The low commodity prices are having a detrimental effect on the Angolan economy which has not diversified its income and still relies heavily on its oil exports (Gollin et al. 2015). Therefore, the investments are not expected to continue and a significant price adjustment in Luanda's real estate can to be expected.

Djibouti however has remained slightly under the radar, but is profiting from its strategic location as the main port for Ethiopia and, more recently, for South-Sudan (AfDB; et al. 2012). Also the presence of foreign army bases of the US and Japan make the city attractive for FREI. The increased investments in infrastructure between Djibouti and the East-African hinterland as well as China's recent plan to set up a military outpost all contribute to the expectation that the increase of FREI attraction will continue.

Another country that stands out is Mozambique, this is mainly due to the massive investments by the Belgian company Pylos. Which invested in several shopping malls across the country. The distribution and concentration of the number of FREIs **(figure 4.14 and 4.16)** show the investment intensity in the Accra-Lagos and Gauteng-Maputo corridors.

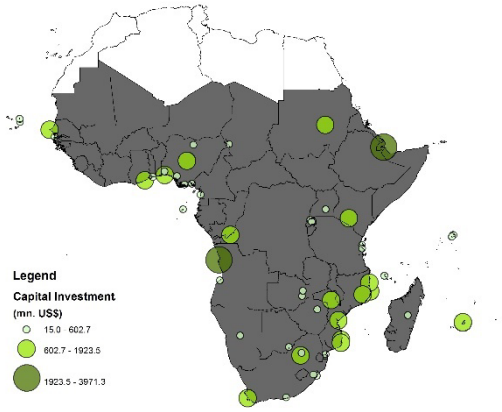


Figure 4.13 Distribution of Capital flows

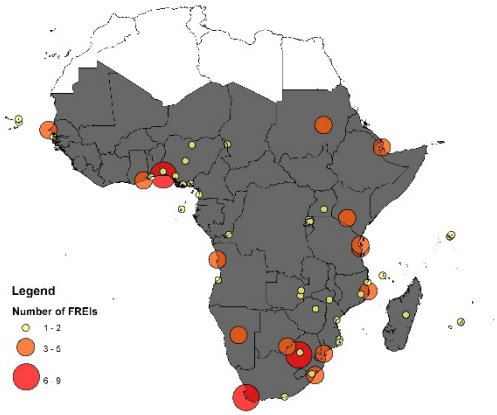


Figure 4.14 Distribution of FREIs

Source: Author, 2016

The clustering of capital flows is highest in the 4 hotspots described above, Djibouti, Luanda, the Accra-Lagos corridor, the Gauteng-Maputo corridor stretching all the way to the port-city Pemba in Northern Mozambique, which has seen a rise in touristic activity as well as reaping the benefits of infrastructural investments, among which a new airport hub.

The clustering of the number of FREIs shows a similar distribution, a significant difference however is the emergence of the corridor that stretches from Pemba-Lake Victoria. There seems to be quite some activity in the main East-African cities, Kigali, Kampala, Nairobi, Mombassa, Dar es Salam and Zanzibar. Together they might be forming an additional investment corridor. However, a fine grained integration of the Kenyan and Tanzanian economies is not very likely. They will more likely be competing for the role as gateway to the East-African hinterland. With Tanzania increasing its competitive role with the construction of the 10 billion US$ Chinese port in Bagamayo, just north of Dar es Salam. This new port will be in direct competition with the port of Mombassa (PWC 2014). The increased competition

and investment in both Kenya and Tanzania may lead to increased attraction of FREIs as investment in other sectors and infrastructure investments are expected to increase.

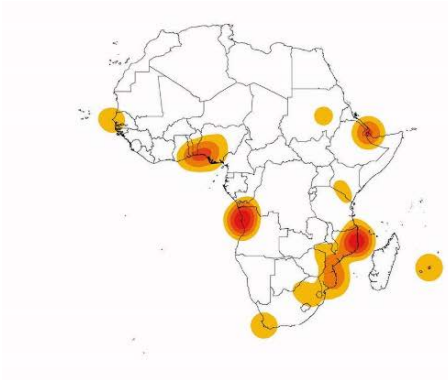


Figure 4.15 Concentration of Capital flow

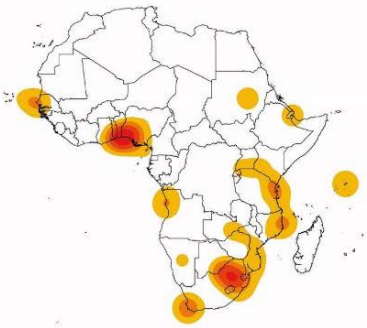


Figure 4.16 Concentration of FREIs

Source: Author, 2016

4.6.2 Statistical models

For the statistical analyses of the African country sample and the Sub-Saharan country sample two different models are used. The model fit tests showed conflicting results, based on the Vuong statistic, the ZINB models were preferred over NBRM, but based on the BIC statistic the NBRM was preferred[21]. Given the high amount of zeros there is good reason for using the zero-inflated model and many researchers use only the Vuong-test to reason their choice for the zero-inflated model (Burger et al. 2009; Wilson 2015) However, there are some concerns about the misuse of the Vuong statistic as a valid reason to choose ZINB models over NBRM (Wilson 2015). Therefore, both models are used and based on the likelihood ratio test, the Africa sample uses a panel NBRM and the SSA sample uses a clustered NBRM.

As mentioned before, the SSA models are more parsimonious than the African sample and both include the UK town planning act dummy and the Special Economic Zone (SEZ) dummy. Similar to the global sample, the first models of both Africa and SSA have the largest N and the second models include all Urban Planning Indicators, for which some years were missing and thus have a slightly smaller N.

[21] Modelfittests can be found in the annex

Table 4.8 ZINB and NBRM for Africa and SSA

	1. ZINB (Africa)	1.NBRM (Africa)	2. ZINB (Africa)	2. NBRM (Africa)	3. ZINB (SSA)	3.NBRM (SSA)	4. ZINB (SSA)	4. NBRM (SSA)
	Number of FREIs	*Number of FREIs*	*Number of FREIs*	*Number of FREIs*	*Number of FREIs*	*Number of FREIs*	*Number of FREIs*	*Number of FREIs*
UPR_Regulatory Quality	**1.328****	**1.057****	1.274	0.984			0.919	0.696
	(0.59)	(0.54)	(0.78)	(0.63)			(0.88)	(0.61)
UPR_Freehold Landownership Possibility	-0.408	**-0.962****	0.166	-0.816			0.356	-0.739
	(0.32)	(0.49)	(0.44)	(0.59)			(0.49)	(0.46)
UPR_UK Town Planning Act	**-2.716*****	-0.868	**-2.407*****	-0.892	**-1.607****	-0.162	**-1.446*****	**-1.045*****
	(0.38)	(0.58)	(0.43)	(0.62)	(0.69)	(0.41)	(0.40)	(0.32)
UPR_Days to Obtain Permit	-0.002	-0.004	**-0.008*****	**-0.007****			**-0.005****	-0.002
	(0.00)	(0.00)	(0.00)	(0.00)			(0.00)	(0.00)
UPR_Days to Register Property	**0.004***	0.002	**0.005****	0.003			**0.006****	0.001
	(0.00)	(0.00)	(0.00)	(0.00)			(0.00)	(0.00)
MAC_GDP / Capita	**-0.000*****	-0.000	**-0.000*****	0.000	**-0.000****	-0.000	**-0.000*****	-0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
LOC_Urban Population Size	**0.000****	0.000	0.000	0.000	**0.000*****	**0.000*****	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
LOC_Urban Growth Rate	0.151	**-0.346****	0.022	**-0.289***	**0.313***	-0.067	0.255	-0.039
	(0.18)	(0.15)	(0.17)	(0.17)	(0.17)	(0.17)	(0.16)	(0.19)
INT_Number of FDIs	**0.017****	**0.010***	**0.019***	**0.010***	**0.018*****	**0.021***	0.012	0.015
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
INS_Control of Corruption	**1.722****	0.294	**1.716****	0.307	**1.479***	0.008	0.997	0.307
	(0.73)	(0.51)	(0.78)	(0.55)	(0.84)	(0.52)	(1.08)	(0.66)
INS_Political Stability	-0.531	-0.302	**-0.666****	-0.428	0.193	0.345	0.082	0.039
	(0.35)	(0.33)	(0.32)	(0.34)	(0.49)	(0.31)	(0.56)	(0.41)
UPR_Special Economic Zone			0.618	0.318			**0.641****	**0.861****
			(0.52)	(0.52)			(0.26)	(0.43)
MAC_Inflation			0.014	0.015				
			(0.02)	(0.03)				
MAC_Infra Internet			-0.014	**-0.030****				
			(0.02)	(0.02)				
INT_Trade Barriers			0.007	0.002				
			(0.01)	(0.01)				
INS_Domestic Credit Depth (% of GDP)			-0.005	0.006				
			(0.01)	(0.01)				
Constant	1.477**	1.957**	2.198**	2.063*	-0.600	-1.258*	0.162	-0.083
	(0.74)	(0.94)	(0.96)	(1.17)	(0.58)	(0.74)	(0.68)	(1.09)
Inflate								
UPR_Regulatory Quality	4.058		2.161				2.132	
	(4.57)		(2.40)				(2.57)	
UPR_Freehold Landownership Possibility	0.364						-0.230	
	(2.90)						(1.58)	
UPR_UK Town Planning Act	**-28.640****				**-22.563*****			
	(13.74)				(1.56)			
UPR_Days to Obtain Permit	0.012							
	(0.01)							
UPR_Days to Register Property	-0.004							
	(0.01)							

MAC_GDP / Capita	-0.005		-0.001		**-0.003*** **		**-0.002***	
	(0.01)		(0.00)		(0.00)		(0.00)	
LOC_Urban Population Size	0.000		0.000		0.000		**0.000***	
	(0.00)		(0.00)		(0.00)		(0.00)	
LOC_Urban Growth Rate	3.855				**2.643*** **		**1.492*** **	
	(3.89)				(0.72)		(0.58)	
INT_Number of FDIs	-0.456		**-0.424*** **		-0.448		-0.478	
	(0.41)		(0.16)		(0.58)		(0.32)	
INS_Control of Corruption	2.371		1.477		0.784		0.330	
	(7.38)		(1.19)		(2.10)		(1.65)	
INS_Political Stability	-0.092		-0.502		1.553		1.369	
	(5.17)		(0.96)		(2.43)		(1.54)	
INT_Trade Barriers			0.014					
			(0.02)					
UPR_Special Economic Zone							**-30.522*** **	
							(2.55)	
Constant	-5.840		2.877*		-3.993		-0.347	
	(8.75)		(1.74)		(3.43)		(4.18)	
lnalpha								
Constant	-0.292***		-0.270		-0.099	0.643	-0.352	0.405
	(0.10)		(0.19)		(0.35)	(0.39)	(0.56)	(0.38)
ln_r								
Constant		1.391**		1.189**				
		(0.65)		(0.50)				
ln_s								
Constant		1.369		0.830				
		(0.94)		(0.71)				
Observations	271	271	270	270	242	242	235	235
AIC	483.39	525.00	509.85	526.29	330.04	349.98	311.25	319.72
BIC	566.24	575.43	603.41	594.66	389.35	381.38	390.82	368.15

Standard errors in parentheses
* p<0.10, ** p<0.05, *** p<0.010

Count Equation, not always zero group

The results of the NBRM and ZINB models are similar for nearly all indicators, only the urban growth rate indicator shows conflicting results. It has a negative impact in the NBRM and a positive impact in the ZINB models, where the indicator is significant in the NBRM of the African sample and in the ZINB model 3 of the SSA sample. Strictly following the significance levels this result would indicate that the urban growth rate would be positive for FREI attraction to countries in SSA and negative for countries in Africa as a whole. This would indicate that North-African countries with rapid urban growth attract less FREI than countries with slower growing urban areas. However, the difference in result are most probably caused by the difference in the way the zero-inflated model corrects for excess zeros **(see figure 4.4.1).** The NBRM includes the areas that do not attract any investment in the count equation where the ZINB model excludes these regions from the count equation. As the "inflated" results indicate, urban population size and growth rate have a negative impact on the probability of not receiving any investments. The ZINB model is able to separate the negative impact that urban population size and growth may have on areas that do not attract any FREI from the positive effect it can have for areas that are able to attract FREI.

Some signs of indicators differ only between the African analyses and the SSA analyses, which can tell us something about how FREI attraction between North and Sub-Saharan Africa differs. The political stability indicator shows a negative and significant sign in the Africa sample and a positive yet insignificant sign in the SSA sample. Keeping in mind that from the Africa sample, 2/3rd of all investments went to the Arab North-African countries, the political

instability related to the "the Arab Spring" might explain the negative correlation of political stability and FREI attraction to Africa as whole.

The SEZs have a significant positive impact in the SSA regressions and the regulatory quality has a significant positive impact in the African sample. This could indicate that in general, the regulatory quality is important for attracting FREI and that in SSA, where the average regulatory quality is lower **(see table 4.2 and 4.3),** SEZs can function as pockets of better regulated areas which attract investments and can thereby push demand for real estate. Which is similar to what Laposa and Lizieri (2005) found in Eastern Europe. The positive impact of the time required to register property is similar to the result in the global sample and might be seen as an indication that well-functioning property registration systems have a positive impact on FREI attraction.

The other additional urban planning indicator, the UK town planning act dummy, shows a significant negative impact on the amount of FREI attracted in both geographical scopes and types of models. This indicates that countries which were influenced by this strict urban planning regime are being limited in the amount of FREI they attract. The negative impact of the time to obtain a building permit emphasizes the limiting effect restrictive urban planning regulations may have on FREI attraction in Africa. In fact, a 10-day increase of the time required to obtain a building permit reduces the amount of FREI attracted by approximately 8%. And having been influenced by the town and country planning act, reduces the amount of FREI attracted by a factor 3 in the 4th model and a factor 14 in the parsimonious model 1.

In contrast to the global sample, a higher degree of control of corruption has a significant positive impact on FREI attraction in the African samples. This would indicate that some corruption might be beneficial for Direct FREI because of the preferential access, as hypothesised by Salem and Baum (2016), but that excessive corruption, as is apparent in some African countries, does deter FREI attraction. The current GDP / Capita levels impact FREI attraction negatively, which is also in contrast to the global sample. This might have two reasons; firstly, GDP growth is more important than current income levels given the long term commitment of direct real estate investors (Rotherberger 2010). And secondly, many economies in Africa that have higher GDP / Capita levels are resource based and are not diversified and may therefore attract less FREI, since FREI is more correlated to service related sectors than resource related sectors (Laposa and Lizieri 2005; Masron and Fereidouni 2012; Gollin et al. 2015).

The number of FDIs shows a significant positive sign in the SSA sample, the African sample as well as the global sample. Confirming the "follow the leader / client" hypotheses and related theories, as described in **section 4.5.2.** Similarly, a higher percentage of households that has access to internet has a negative impact on FREI in the global sample, the African sample and the SSA sample. This might also indicate that investment in communication technology is not as beneficial for Direct FREI as it is for Indirect FREI and FDI in general.

Binary Equation, odds of always zero

Often the result in the binary equation shows the opposite sign of the estimation in the count equation. This is the case for both the number of FDIs and the SEZ dummy, they show a significant positive sign in the count equation and have a significant negative impact on the probability of always receiving zero FREI. Once more adding to the importance of investments in other sectors and internationalization of cities /countries for the attraction of FREI.

The UK town planning act and GDP / Capita however show a similar sign in the count equation as in the (inflated) binary equation, which means that it has a limiting impact on the areas that

do attract FREI but also reduce the chance of not receiving any investment all. This would indicate that countries which have been influenced by the UK town and country planning act have a greater odd of receiving investment, but the restrictive planning regime might be limiting the amount.

As mentioned in the count equation section, the urban growth rate should perhaps be interpreted with caution, since the NRBM show a different sign. However, all ZINB models show a similar sign in the binary equation. Therefore, this section might be interpreted with slightly more certainty for SSA, since they are highly significant for the SSA sample. The results indicate that a high urban growth rate increases the odds of not receiving any investments. This is most likely related to the lack urban service provision and the negative agglomeration externalities that accompany the "poor country urbanization" (Glaeser 2014; Castells-Quintana 2015).

4.7 Impact of Urban Planning Regulations on FREI attraction

By interpreting the impact and visualizing the differences, this section will review the different aspects of urban planning regulations that have a significant impact on FREI attraction in further detail. The first part will discuss the results from the analyses of the 72 global cities, the second part will take a closer look at the results from the African and SSA country analyses.

Global city analyses

In the global cities analysis population density is taken as a proxy for overregulated and unregulated urban planning regimes. **Figure 4.17** shows the density of the cities included in the analysis, a general trend that can be seen in the population density data is the impact of income and population size. In general, higher income level countries tend have to lower densities and a larger population size tends to lead to a higher average density. The data also indicate a strong regional / historical component. The three cities with the lowest density are all former Soviet states. This is in line with Bertaud and Renaud (1997), whom found that the socialist planning regime and lack of market forces reduced the average population density of cities in the former Soviet states. The three cities with the highest density are located in the developing countries, Nigeria, Pakistan and Kenya. In these cities, planning enforcement is low and large parts are unregulated. According to the UN (2014) the percentage of the population in these countries that resides in slums is approximately 50%. It seems that these unregulated overcrowded parts of cities are having a negative impact on FREI attraction and that the cities with a relatively low density, caused by a historical lack of market forces, attracts more FREI **(See table 4.7).**

Figure 4.17 Population density global cities Source: Author, 2016

The significant positive impact of greater access to improved sanitation supports the notion that a higher prevalence of slum areas, which often lack adequate sanitation, is related to lower levels of FREI attraction. Brückner and Lall (2015) and Hammam (2013) also noted that inadequate urban planning regulations, slum formation and low investment levels in public services reduce the availability and supply of developable land. This lack of investment in housing and public services thus may create an unattractive environment for FREI. This is in line with Colliers (2013) notion that an "effective city"[22] depends on the coordination between three investment processes, namely: investment in infrastructure, enterprise investment in productive capital, and household investment in housing.

The binary equation of the ZINB regression **(zero-inflated part of table 4.7)** also showed significant and robust results that the possibility of Freehold Landownership increased the probability of not receiving any investments. For the most parsimonious model, which had the lowest coefficient, the probability increased with a factor 10.[23] Although this result could partially be biased, simply due to the fact that more cities in the sample have the possibility of foreign freehold landownership **(see figure 4.18),** a similar negative significant result was found in the negative binomial regression on the African countries, where the dummy has a more equal dispersion. It seems that privatization of land in already unattractive cities actually increase the probability of not receiving any investments. In contrast, better regulatory quality and property registration do increase the odds of attracting FREI. And thus it seems that whether or not the land can be owned in freehold, is not important, but that the effectiveness of the processes that govern the land and property titling processes are important.

[22] A city that reaps the major potential of economies of scale and scope (Collier 2013)

[23] An example of the coefficients and their exponents can be found in the annex

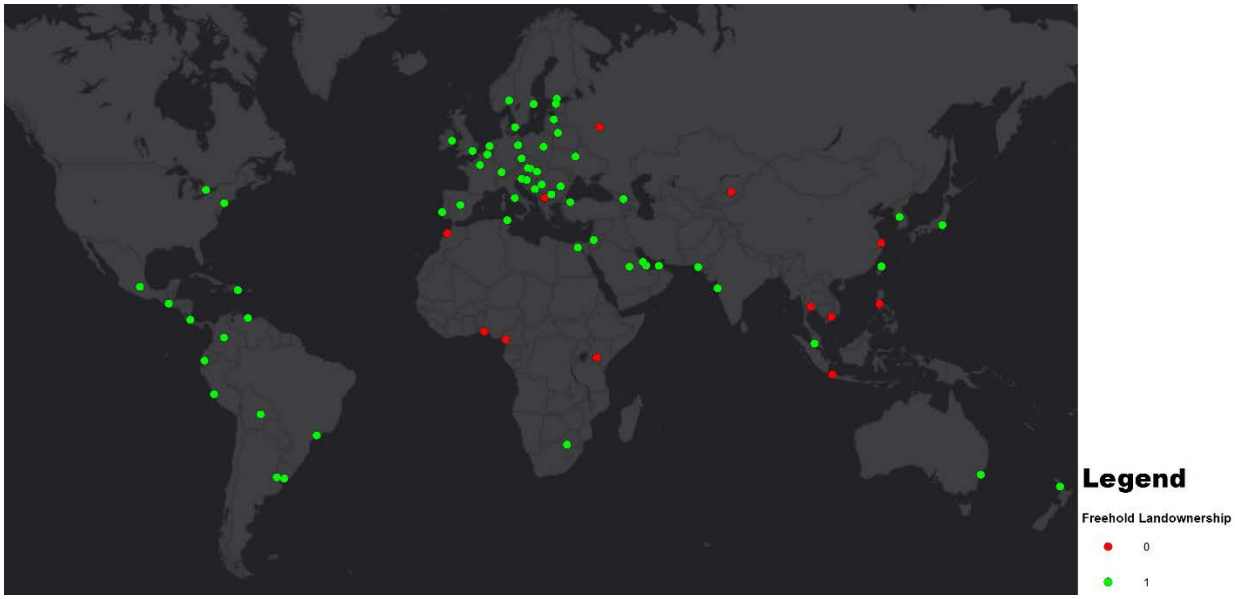


Figure 4.18 Freehold Landownership possibility (1=Yes 0=No) **Source: Author, 2016**

(Sub-Saharan) African country analyses

Both the UK town and country planning act and the time required to obtain a building permit have a significant negative impact on FREI attraction in the Africa model as well as the SSA model **(see table 4.8).** Collier and Venables' (2013) notion that the town and country planning act set inappropriately high standards with regard to the income levels across Anglophone Africa might be an explanation of this negative impact. Others have also argued that this planning disjunction is related to poor economic performance and slum formation (Mabogunje 1990; Brueckner and Lall 2015; Obeng-Odoom 2015). As the results indicate, it might thus also be limiting the amount of FREI that is attracted in these regions.

The fact that the time required to obtain a building permit also shows a negative impact on FREI attraction supports the line of thought that to stringent planning regulations might be limiting investments. In fact, the country with the longest building permit procedures, Cote D'Ivoire, does not receive any FREI **(see figure 4.18).** However, as shown by the results of the global city analyses, the lack of enforcement or absence of regulations does deter investment. The binary equation also supports this, since the Town and Country planning act dummy reduces the odds of not receiving any investments almost to 0. It thus seems that there is a precarious balance between over and under regulation of the urban environment. While the existence of basic planning regulations reduces the chance of not receiving any investments it can simultaneously limit the amount that is attracted.

The regulations should thus be simple, transparent and appropriate for the context and limited to the bare necessity. However in many African countries urban planning regulations are not functional, equitable, nor in line with the "social contract"[24] and this creates a necessity to breach them (Mabogunje 1990; Brueckner and Lall 2015). The positive significant impact of higher regulatory quality also corroborates the idea that planning regulations should be appropriate for their context. The significance of regulatory quality in combination with the significance of control of corruption also shows the importance of clear and equitable regulations. This is in line with Goodfellow's (2013) explanation that enforcement of planning regulations is essential to make urban plans successful and that the level of corruption is an

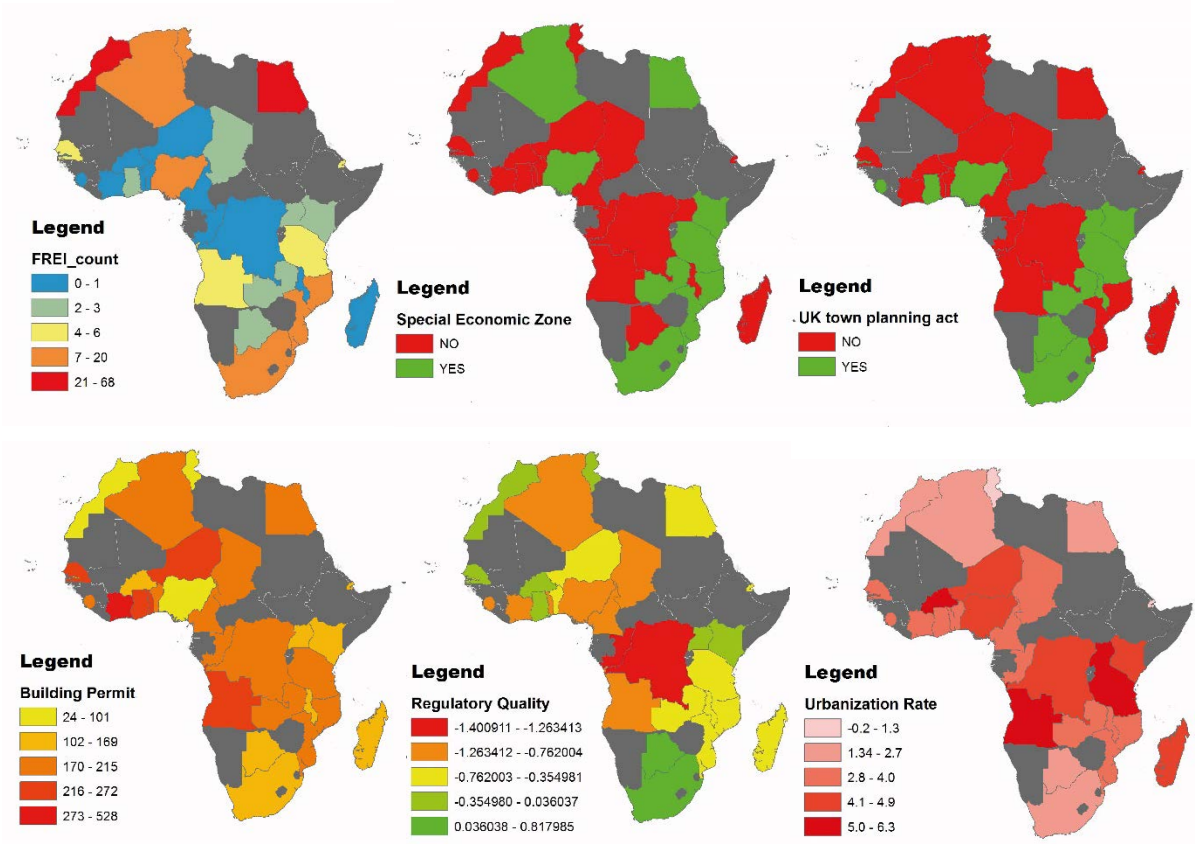
[24] In the sense of Rousseau's idea of legitimate authority

important determinant of this enforcement. Goodfellows' research can also be seen as an explanation for the geographical distribution and concentration of FREI.

The existence of a Special Economic Zone (SEZ) has a significant positive impact on FREI attraction in the SSA models, in the count equation as well as the binary equation. In fact, **figure 4.19** shows that none of the countries that attract very few (0-1) FREIs, have a SEZ. SEZs have shown to increase the amount of FDI in other sectors and thus might indirectly be contributing to the increase in FREI (Zeng 2015). Whether the FREIs go directly into the SEZs or that these zones have an indirect positive effect on FREI by attracting more FDI in other sectors is beyond the scope of this research. However it does have a positive impact and this might be because they function as well-regulated exceptions in the SSA investment landscape (Zeng 2015). Therefore, the SEZ development model can be seen as a valid strategy to, albeit perhaps indirectly, attract FREI.

The urban growth rate seems to have a positive effect for countries that are in the not always zero group but it increases the odds of not receiving any investments in the always zero group. So countries with high urban growth rates should focus on the factors that decrease the odds of not receiving any investments such as higher regulatory quality (**see Table 4.7**), FDI in other sectors and SEZs **(see Table 4.8).** Also, for countries with a higher income level that have been influenced by the Town and Country Planning Act as well, the odds of not receiving any investment is almost 0. In these particular countries a higher urban growth rate is expected to have a positive impact on FREI attraction. Based on these indications the high urban growth rate of for example Tanzania could have a positive impact on FREI attraction since, it has been influenced by the Town and Country planning act, has SEZs and an average level of regulatory quality and time to obtain building permits **(See figure 4. 19).**

Figure 4.19 Comparative maps of significant urban indicators **Source: Author, 2016**



4.8 Most Important Findings

This section tries to sum up the findings as concisely as possible and conclude by answering the sub research questions. The global city analyses were done to provide an insight into the general determinants of FREI and are therefore used to answer the first Sub research question as well as a part of the third sub research question:

What determines FREI attraction in general?

How do Urban Planning Regulation impact FREI attraction?

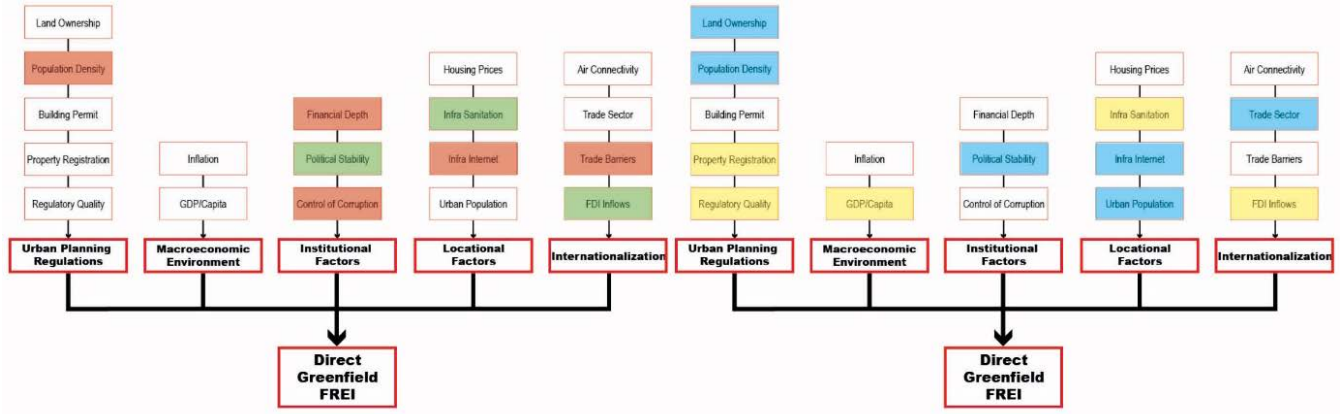
As **figure 4.20** shows, population density has a negative impact on the amount of FREI attracted. As discussed in section 4.5.2 and 4.7, it is hypothesized that this can be ascribed to the negative impact that overcrowding and unsanitary conditions have in cities with large population and high level of informality (Hammam 2013; Collier 2013; Brueckner and Lall 2015). On the lower part of the density spectrum, cities that have a lower population density due to the lack of market forces and state planning now benefit from their previously untapped development opportunities (Laposa and Lizieri 2005).

The institutional factors all show significance and a slight corrupt environment seems to be beneficial for Direct FREI by providing preferential access to profitable markets (Salem and Baum 2016). Political Stability shows a significant positive impact on FREI attraction in the global analyses while financial depth shows a negative correlation, which is in line with Salem and Baums (2016) findings. Presumably the negative impact of financial depth and the negative impact of internet access are both related to the fact that this research focusses on Direct FREI instead of Indirect FREI, for which these indicators are usually positive (Lieser and Groh 2013; Salem and Baum 2016). The significant positive impact of higher access to improved sanitation corroborates with the hypothesis that the overcrowded and unsanitary cities are less attractive for investors (Castells-Quintana 2015).

The strong positive impact of investment in other sectors as well as the negative impact of trade barriers emphasize the importance of internationalization for FREI. These finding are in line many theories, such as the Uppsala model (Vahlne and Johanson 2013), Friedmann's (1986) and Sassens (2005) World/Global city concepts as well as different theories related to competitiveness and agglomeration effects (Jacobs 1969; Duranton and Puga 2004; Cheshire et al. 2014).

The results of the Binary Equation (**see Figure 4.20**) show which indicators have a significant impact on the odds of not receiving any investments. The results of this equation shows that higher regulatory quality, property registration, income levels and FDI in other sectors increase the chance to receive investments and are thus important general determinants for FREI attraction.

Count Equation **Binary Equation**



Significant Negative Impact number of FREI **Significant positive impact odds always 0**
Significant Positive Impact number of FREI **Significant negative impact odds always 0**

Figure 4.20 Overview of significant determinants of FREI from the global city analyses Source: Author, 2016

The African and Sub-Saharan country analyses were done to provide an insight into the specific determinants of FREI in this region and how Northern and Sub-Saharan Africa differ. Therefore, these analyses are used to answer the second Sub research question as well as part of the third sub research question:

What determines FREI attraction in (Sub-Saharan) Africa?

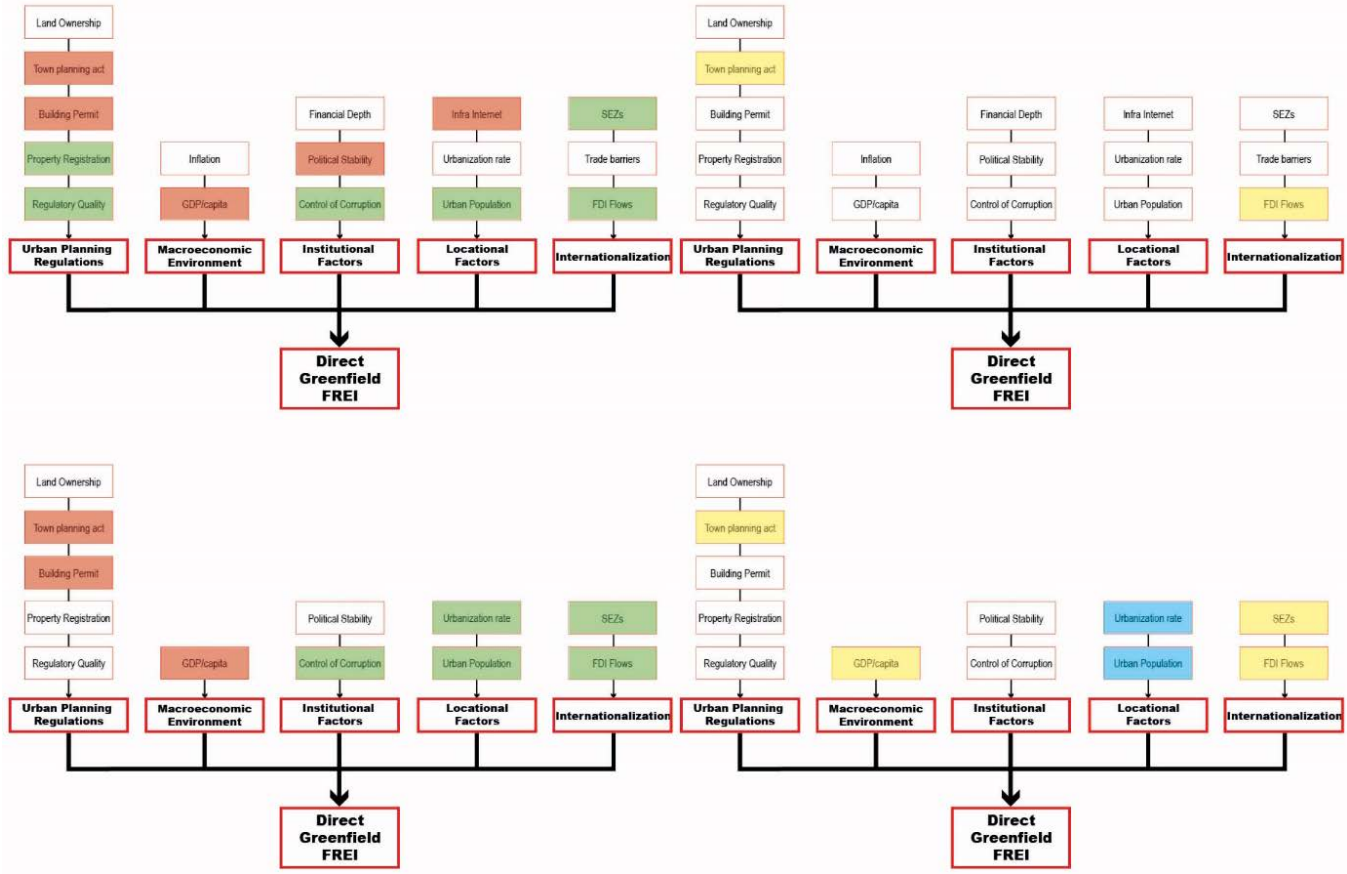
How do Urban Planning Regulation impact FREI attraction?

The negative impact of internet access and positive impact of FDIs in other sectors are similar to the results of the global analyses. The significant positive sign of SEZs might be linked to this importance of investment in other sectors for FREI attraction as well, since the SEZs are designed to attract foreign investments (Zeng 2015). In the count equation, which estimates the impact of the independent variables on the amount of FREI attracted, the urban population size and growth is positive. For the Binary count, or countries that do not attract FREI, it is negative. This indicates that population size and growth reinforce FREI attraction to areas that already attract FREI but deter investment into areas that do not attract FREI. Which could be regarded as a corroboration of the negative impact population density and unsanitary conditions have on FREI attraction in the global city analyses. Since cities with better regulatory quality and property registration attract more investment and have lower odds of not receiving any FREI.

In the African country analyses however, the institutional indicators of FREI attraction show significance in the exact opposite direction to the results in the global analyses. Here a lower level of corruption does have a positive impact, which would indicate that a little corruption might be beneficial in general but that excessive levels of corruption, which are apparent in many African countries, do deter FREI. The negative sign of political stability is only significant when the North-African countries are taken into account. Since they attract such a large part of the investments and the 2006-2014 period was extremely turbulent in this region it can be hypothesized that the Arab Spring caused this indication and it remains to be seen if FREI attraction will stay immune to the political uncertainty in the region over the long-term.

In the Sub-Saharan models, the time required to obtain a building permit and the Planning act dummy are the only indicators that have a significant negative impact on FREI attraction. This indicates that the restrictive urban planning regulations are limiting the amount of FREI that is attracted.

Count Equation **Binary Equation**



Significant Negative Impact number of FREI **Significant positive impact odds always 0**
Significant Positive Impact number of FREI **Significant negative impact odds always 0**

Figure 4.21 Overview of significant determinants of FREI in African (top) and Sub-Saharan African (bottom) countries. **Source: Author, 2016**

Figure 4.22 tries to provide an overview of all indicators used in the different statistical models and show which have contradicting results (grey), which are robust (outlined) throughout the models and which scored either significantly positive (green) or negative (red) in at least one of the models. This will be used to answer the main research question. Which will be discussed in the next chapter.

Count Equation **Binary Equation**

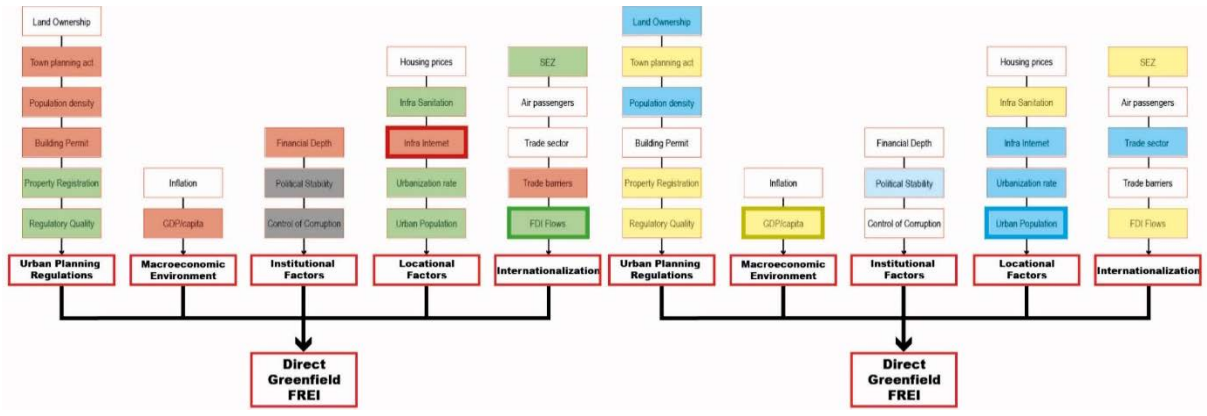


Figure 4.22 Overview of significant determinants of FREI from all analyses. **Source: Author, 2016**

Chapter 5: Conclusions and recommendations

FREI has a relatively large positive impact on employment compared to other foreign capital flows (Tibaijuka 2009; EY 2015). This form of investment attraction flows is directly invested in the development of new parts of cities or invests in existing parts (Tibaijuka 2009; Dasgupta et al. 2014), therefore it can be expected that it has a positive impact on the quality of the built environment. Real estate investments have also shown to enhance economic growth because of its recursive relationship with macro-economics (Tibaijuka 2009; Dasgupta et al. 2014; Harvey 2014). This would indicate that the attraction of FREI could be, at least a small contribution, to overcome part of Africa's urban challenge. The external goal of this research therefore, is to generate knowledge that municipalities or governments could use to increase the attraction of FREI. Additionally, this research has a special focus on urban planning regulations, since this, more concrete determinant, can be adjusted by local authorities themselves as opposed to external factors, such as for example GDP / Capita or inflation.

5.1 Main research question

Based on the literature review, this research is focused on 5 main variables, besides urban planning regulations, the analyses have taken the macro-economic environment, locational factors, institutional factors and the level of internationalization into account. Based on the results of the different statistical analyses **figure 4.22** provides an overview of the determinants of FREI as well as some differences between the different analyses. Which enables the answering of the main research question:

What determines direct greenfield FREI attraction and how is SSA different?

All of the 5 variables obtained from the literature review have an indicator that has shown a significant sign in one or more of the analyses. So one could say, that actually all of these variables can be considered determinants of FREI. However, some had stronger significance, showed robust significance or had opposing sign in different samples, therefore this section will elaborate on these results and tries to hierarchize the determinants which have already been presented in chapter 4.

Some indicators showed robust significant results throughout all the different analyses. The number of FDIs in other sectors shows a significant and strong positive sign in the count equation part of all analyses **(see table 4.7 and 4.8).** A unit increase in FDIs is correlated with an increase of 1 percent in the number of FREIs in the global cities and double as much in SSA where for every 50 FDIs a FREI is expected to follow. The significant negative sign of trade barriers emphasizes the importance of international economic activity in the pursuit of FREI attraction. The level of internationalization is thus considered as a very important determinant of FREI.

A higher percentage of internet access showed to be negatively correlated with FREI in all analyses, which is probably related to the negative sign of financial depth. These unexpected negative signs of technological and financial development are assumed to be related to the distinction between direct and indirect FREI. In countries with higher level of technological and financial development, indirect FREI might function as an alternative for direct FREI (Lieser and Groh 2013; Salem and Baum 2016). The institutional variables showed opposite signs in Africa and SSA compared to the global analyses. Control of corruption is negatively correlated to FREI in the global sample and positive in the African and SSA country analysis. Which would indicate that FREI thrives in slightly corrupt areas but that excessive corruption does deter FREI. These results indicate that Direct FREI, in contrast to indirect FREI (Lieser and Groh 2013), is a creature of market imperfections (Rotherberger 2010; Kusiluka 2012),

since slightly corrupt and opaque environments, with lower levels of technological and financial development have shown to have a positive impact on Direct FREI attraction **(see table 4.7)**. However, since in the African analyses the results indicate that excessive corruption does deter FREI attraction and that the lower levels of technological development do not have a significant negative impact **(see table 4.8)**, it can be argued that there is a limit to these benefits of the market imperfections, even for Direct FREI.

Direct FREI might be functioning as a niche to access profitable markets that are not yet institutionally ready for Indirect FREI, in terms of governance, technology and financial development. The impact of the income level in the African analyses can be seen as a corroboration of this view **(see table 4.8)**. Because it has a very small, though significant, negative impact on the amount of FREI attracted, which is in contrast to literature on Indirect FREI (e.g. Lieser and Groh 2013). Simultaneously, the results indicate that in SSA a higher level of income reduces the chance of not receiving any investments significantly. It thus seems that Direct FREI is attracted by niche markets, which do have a basic level of institutional, infrastructural and economic development, but are not as sophisticated that indirect FREI is a reliable or functional alternative. Which is in line with Salem and Baums (2016) finding that the existence of REIT's[25] have a negative impact on Direct FREI attraction.

The different signs of political stability, as described in the previous chapter, are probably related to the continuing attraction of FREI into Northern Africa during the Arab spring. This result is in contrast with the Salem and Baums (2016) study, whom found political stability to be the most important positive factor for Direct FREI attraction in the Middle East and North-African region. However, they used data from 2003-2009 period and the Tunisian revolution only began at the end of 2010. This would indicate that in the context of North-Africa, political stability may not be as important as Salem and Baum concluded and is thus perhaps a less important determinant for FREI attraction in Africa than for example, the level of internationalization and the urban planning environment. However, in the global analyses a higher level of political stability did show a significant and robust positive impact and can therefore be assumed to have, in general, a positive impact on FREI attraction, which is in line with several other studies on FDI as well as FREI (e.g. Keogh and D'Arcy 1999; Asiedu 2006; Lieser and Groh 2013).

As the results indicate, a larger urban population with lower sanitation access and high urban growth increase the chance of not receiving any investment **(see table 4.7 and 4.8)**. This emphasizes the importance for cities to mitigate the negative agglomeration externalities in order to reap the benefits of positive agglomeration externalities, or in this case, to attract more FREI. This is in line with Castells-Quintana's (2014; 2015) findings that a lack of basic infrastructure under the pressure of rapid urban growth causes cities in SSA to underperform economically, since the negative externalities are outweighing the positive ones. Glaeser (2014) also found that infrastructure provision is a critical factor in large poor and poorly governed cities, especially in light of urbanization caused by agricultural desperation rather than agricultural surpluses. Related to this result is the indication that the different legislative, regulatory and procedural aspects of urban planning seem to be important determinants of FREI as well. For example, unregulated cities, measured by excessive population density, showed to have a negative impact on the amount of FREI that is attracted **(see table 4.7)**. Also, regulatory quality seemed more important in the African countries than in the, on average, better regulated global sample. This can also be seen as a similar indication of the importance of getting the basics right when it comes to the attraction of investment (Tibaijuka 2009; Dasgupta et al.

[25] A REIT is a securitized investment vehicle for Indirect FREI

2014; Glaeser 2014; Angelopulo 2015). However, the more restrictive urban planning environments, as indicated by the town and country planning act and the time required to obtain a building permit, do seem to limit the amount that is attracted by areas that have their "basics right" **(see table 4.8)**. Which is in line with authors that mention the potentially negative impact of inappropriate planning environments (Mabogunje 1990; Cheshire and Hilber 2008; Alterman 2013; Collier 2013; Cheshire et al. 2014; Obeng-Odoom 2015).

The results indicate that unsanitary and overcrowded cities attract less FREI, this can be seen as one of the most important explanations how SSA is different and why the region has attracted relatively few FREIs. Also the level of corruption and regulatory quality explain the differences in FREI attraction. Another very important difference seems to be the level of internationalization, especially the number of FDI's in other sectors in general and the existence of SEZs had a particularly strong impact in the SSA sample. This also explains the spikiness of FREI within the region, as a part the FREIs seem to "follow" other investments into the economic centres of the continent. The combination of lower international economic connectivity, institutional quality and basic infrastructure provision in rapidly growing and densely populated cities can be seen as an explanation why SSA received so little FREI.

5.2 Limitations and recommendation for future research

The main limitations of this research are related to the research strategy. Because this research has such a broad geographical scope, certain abstractions are made in favour of generalizability, or external validity, of the results. For example, population density is of course not a direct measurement of urban planning regulations but a mere indicator of them. This might have resulted in less internally valid results. This is also true for the rest of the data that is used to explain the determinants of FREI, these are just indicators of the reality and as such should the results of this research be interpreted. As an indication of reality, or in the words of Box (1976, p.792): "an economical description of a natural phenomenon".

Another limitation is the lack of triangulation of the conceptual model. Even though it is based on academic theory, the triangulation of the model by a survey of actual investors would have led to a more reliable research. For future research it would be interesting to incorporate the personal views of actual investors. This however requires substantial interaction between researcher and the desired respondents, as showed by this research, an email survey will not suffice.

The fact that this research only looks at Direct Greenfield FREI means that only a small part of the total investments into real estate is analysed. Therefore, the results of this research apply to a cities'/countries' attractiveness for Direct greenfield FREI only and is not fully generalizable for the attractiveness of the real estate market as a whole, since domestic real estate investments, private investments and indirect FREI are not included in this research. By no means does this research intend to portray Direct FREI as the only beneficial source of capital to increase formal employment, enhance economic growth and investment in the built environment. Including these other types of real estate investments are an interesting avenue for further research. Especially the effect of remittances on the quality of the urban environment might be an interesting study in the context of SSA. Since the remittances of the African diaspora are now larger than Official Development Assistance (ODA) and approximately as large as the total FDI inflow (Rotherberger 2010; Driffield and Jones 2013).

The measurement of FREI attraction on a country level was chosen because of a lack of city level data in Africa. Measuring the impact of urban planning regulation on a country level means that certain abstractions were made. For future research and a better understanding of

African urbanism it is important to develop statistical databases of urban indicators in Africa. One of the results this lack of data created was the omission of rental prices, simply because there was no data available for the period of analysis. The omission of rental prices, an important indicator, is an important limitation of this research. The effect of FREI as well as urban planning regulations on the inflation of real estate prices is also an interesting topic that deserves further research. The side-effects of FREI attraction, e.g. its impact on affordability, exclusion and inequity are beyond the scope of this research but are an interesting field of research as well which, especially in the context of SSA have not yet received enough attention (Watson 2013; Cain 2014).

A specific limitation of the data that is used for this research are the concerns about the construct validity (Thomas 2006), margins of error (Kaufmann 2009) and high correlation (Langbein and Knack 2008) of the World Governance Indicators from the World Bank. Some authors question if the data behind the constructs of regulatory quality, control of corruption and political stability actually measure these specific theoretical constructs or if all of them measure the higher theoretical construct of "good governance" (Thomas 2006; Langbein and Knack 2008; Ward and Dorussen 2015). Given the multicollinearity that some of these indicators showed in this research as well as in other studies using these indicators (e.g. Salem and Baum 2016), and the rigorous and statistically sound approach of the developers it can be presumed that, at least, it gives an indication of the general governmental and institutional quality in a country. Because of the encountered collinearity and concerns outed about the construct validity it is important to emphasize that the indicators from the World Governance Indicators are a mere indication of a theoretical construct and the differences between these indicators are perhaps differ less explicitly from one another than is presumed in this research.

The same is relevant for the way different legislative, regulatory and procedural aspects of urban planning were defined as urban planning regulations and subsequently operationalized into the measurable indicators which were used for this research. They give an indication of the urban planning environment of a city or country and as such should the results be interpreted. The urban planning regulations incorporated in this research were chosen to include as much aspects as possible to enable differentiation in the assessment of the impact of these different regulatory, legislative and procedural aspect of urban planning.

The analysis of urban planning regulations showed some very interesting results. However, the scope of this research has limited the depth to which knowledge on the subject is acquired. This research is conducted in the international trade and macro-economic tradition and used specific measurable indicators to obtain knowledge about broader concepts. As Van Thiel (2014) mentions, this approach could result in less internally valid result since there will be some discrepancy between the actual data that is analysed and the broader concept for which it is used. Another limitation is mentioned by Adams et. al. (2016), they argue that results from analyses in the econometric tradition often dismiss the benefits of "urban commons" and are unable to analyse the "place dimension". Therefore, a more holistic, in depth research into the effect of the urban planning environment on the socio-economic structure of a city would be a useful pursuit for future research, especially in the context of SSA.

The fact that the possibility of freehold land ownership increases the odds of not receiving any investments in the global models adds to the contradictory results on the subject (Pinckney and Kimuyu 1994; De Soto 2000; Rakodi and Leduka 2002; Payne et al. 2007; Mooya 2011). A research solely focused on the impact of the land ownership mechanisms is an important avenue for further research, especially given the emphasis of international development agencies on the subject. It is important in this research to include the procedural aspects of land instead of only taken tenure types into account.

Again, the scope of the research is a limitation, which means the results are still quite abstract, to gain a concrete idea of how to attract FREI an in depth comparative case study would add to the knowledge generated by this research. Especially an investigation into the relationship between SEZs and FREI attraction is of interest as well as a more in depth research into the effects of urban planning regulations, which includes primary qualitative data in the analyses, would be valuable.

5.3 Policy recommendations

This research is interested in capital attraction that may be beneficial urban centres in SSA. The attraction of FREI can help in the urbanization process, since it creates relatively large number of jobs (Tibaijuka 2009; Collier and Venables 2013; EY 2015), can enhance economic growth (Tibaijuka 2009; Dasgupta et al. 2014), and directly invests in the development of the built environment (Tibaijuka 2009; Harvey 2014; Dasgupta et al. 2014). To generate knowledge that could be useful for urban policymakers this research has a particular focus on the impact of urban planning regulations.

A more general policy recommendation for urban centres is to increase the amount of data gathered and share this data. This can increase the transparency of real estate markets, which could also be beneficial for attracting investment (JLL 2014). It can also spur academic and economic research which can be beneficial for governmental bodies to make informed decisions.

The results emphasize the importance of regulating urban growth, since excessive population density and unsanitary conditions show a negative impact on FREI attraction. The positive impact of regulatory quality and property registration emphasize the importance of good basic regulations and regulatory environment. The fact that regulatory quality as well as the Town and country planning act dummy reduce the odds of not receiving any investment shows once more the importance of "getting the basics right". Even though basic regulations are necessary to enable FREI attraction, the negative impact that the time required to obtain a building permit and the town and country planning act have on the amount of investment attracted, indicates that stringent planning regulations might be limiting the amount that is being attracted. Without these stringent regulations these areas with a good basic regulatory environment could attract more investment. Therefore, besides the basic urban planning regulations such as a well-functioning land and property registration and good basic urban infrastructure, the planning regulation such as excessive building standards and time required to obtain a building permit should be kept to the bare minimum. The results also indicate that, at least in favour of FREI attraction, urban centres should first invest in basic infrastructure, such as sanitation, instead of more high-tech infrastructure such as broadband access. Also urban centres with high growth rates should "build for growth", as Angel et. al. (2011) mention, instead of pursuing a "compact city" concept.

The attraction of investments in other sectors is also an important factor that reduces the odds of not receiving any FREI and increases the amount of FREI that is attracted. The SEZ development model seems to work well as a way to attract more investment for FDI in general as well as FREI (Zeng 2015). This seems especially true in SSA, where SEZs can function as a well-regulated attractive exception to invest, in an otherwise opaquely regulated country that would be less attractive for investors. There are however some concerns about the SEZ development model, and for Africa's urban centres a more integrated approach should be taken to make it complementary to the existing city instead of an area that drains investment from other areas (Watson 2013; Zeng 2015). As Gollin et. al. (2015) and Glaeser (2014) showed, in

SSA there seems to be a relationship between increased international trade, urbanization, inequality as well as unsanitary conditions. This emphasizes the importance that ODA, FDI, FREI or any other foreign capital for that matter, should either be used to invest, or at least be accompanied by investment in the upgrading of urban infrastructure and the provision of housing for the impoverished masses. Otherwise these capital flows will probably not contribute little for cities in SSA to become the envisioned "engines of growth" where positive agglomeration externalities outweigh the negative externalities.

5.4 Conceptual example of Urban Policy Strategy

To give an insight into the potential "usefulness" of this research for African cities, this section will provide a brief outline and personal vision of how the results of this research can be used and translated into an urban strategy to attract more FREI for a particular African city.

The combination of statistical analyses and geographical analyses allows for a geographical comparison of statistically significant indicators and the distribution of FREI across the African continent **(see figure 4.19)**. This enables the selection of a particular city that receives little FREI and where a combination of negative determinants as well as a lack of positive indicators make it an ideal location to test the theoretical result which have been derived from this research.

For example, Abidjan in Cote d'Ivoire is such a place where this combination of determinants that have shown a significant impact is apparent (**see figure 4.19)**. Abidjan received zero Direct greenfield FREI during the 2006-2014 period which has been analysed in this research. Based on the results of the research, this lack of investments into Abidjan might be explained by the fact that it does not have the basic urban planning regulatory quality that cities which have been influenced by the Town and Country planning act have. Also the time required to obtain a building permit is the highest in the continent and even higher than any city that has been analysed in the global sample. As the world development indicators from the World Bank show, the level of access to improved sanitation among urban dwellers is approximately 33%, which, even for SSA standards, is quite low. Additionally, the regulatory quality is quite low and as the results have shown the possibility of freehold land ownership does not increase the possibility to attract FREI.

One of the most important determinants that has a significant positive impact on FREI attraction is a higher level of internationalization, especially investment in other sectors. The existence of a SEZ helped to enable FREI attraction as well as increase the amount that is attracted. They can function as well-regulated, stable, transparent and procedurally efficient islands in an otherwise opaque, instable and unregulated investment environment(Zeng 2015). However they should not function separately from urban centres but rather be used as a stepping stone or role model for future integrated urban, economic and institutional development (Zeng 2015).

Based on these indications a conceptual proposal for the attraction of FREI in Abidjan could be several smaller, Special Economic Zones, or rather Special Economic Plots (SEP). These SEPs would have to be well regulated, with predetermined and transparently communicated "building envelopes"[26] and possible land uses based on the surrounding urban fabric, in order to increase the procedural efficiency, reduce the time required to obtain a building permit and create a stable investment climate. These plots could form the centres in a network of new

[26] See Urhahn's (2010) work on The Spontaneous city for further explanation of Building Envelopes and free use zoning.

infrastructural development for basic service provision such as sanitation, electricity and mobility, which, as Castells-Quintana (2015) has showed, are essential. These SEPs could also function as hubs around which future urban development could congregate. In the example of Abidjan, the unused plots along the polluted watersides as well as a strategically located areas in the peri-urban ring could form a network of new investment and infrastructure hubs. This network could function as a framework for future urban development which could benefit from the attraction of foreign capital into these SEPs.

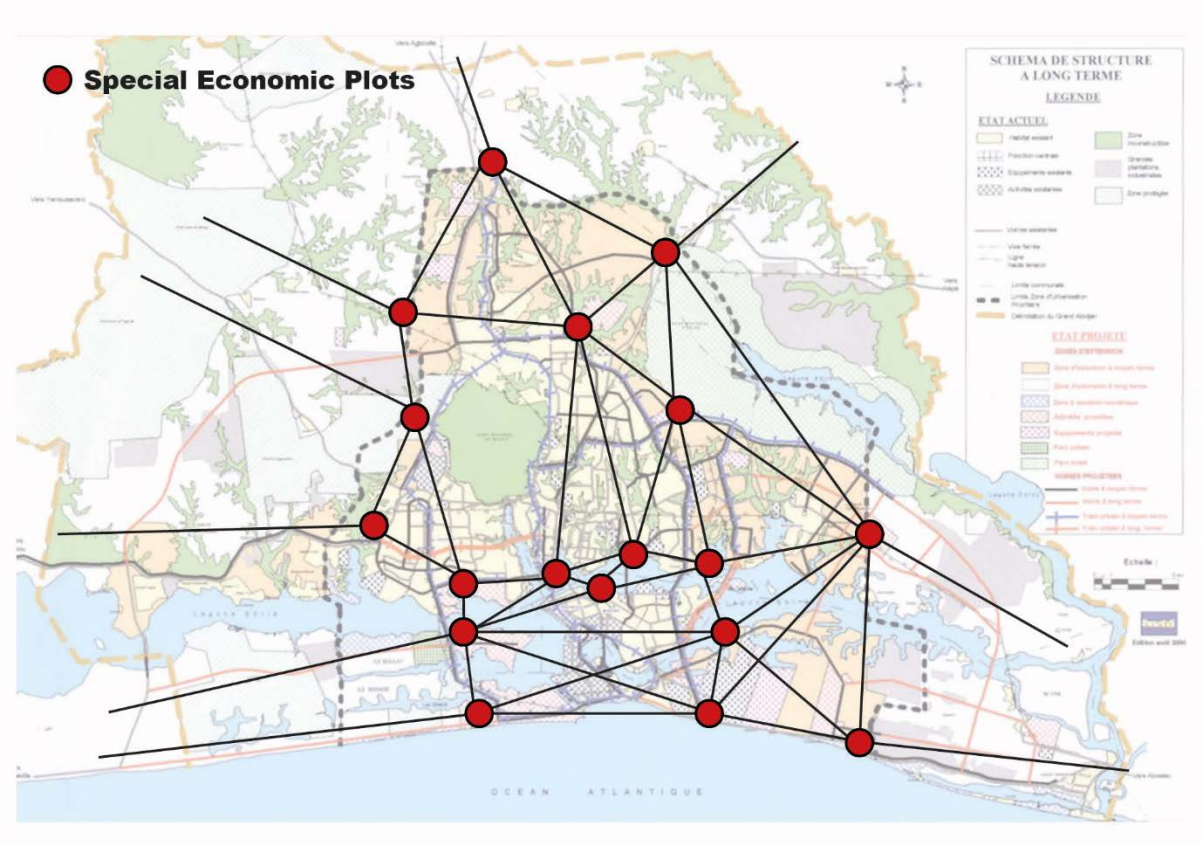


Figure 4.23 Conceptual plan for a ¨Special Economic Plots network¨ in Abidjan

By no means is the short outline of the potential urban strategy described above meant to be a concrete strategy or solution for Abidjan. It is a mere example of how the results of this quantitative research with a broad geographical scope could become useful for the development of an urban strategy to attract more investment and improve the built environment on a municipal level. It is just a simple conceptual example of a potential strategy that uses the attraction of foreign capital flows, in this case direct greenfield FREI, to invest in urban development in general and basic urban service provision in particular in order to increase the positive urban agglomeration externalities and mitigate the negative externalities.

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Annex 2: Survey
Online Version accessible at:
https://docs.google.com/forms/d/1wZSPkjrOpn7FOMzEC7qVo6CZmi1vc4_yNcHGG-9rvJw/viewform

Annex 3: Descriptive Statistics
Variable description Global Sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	648	2010	2.58398	2006	2014
Number of FREIs	648	1.78086	3.09431	0	32
UPR_Regulatory Quality	648	.455937	.875264	-1.80582	1.97094
UPR_Population Density	648	1516.54	1619.64	82.7	10045.6
UPR_Days to Obtain Permit	576	177.989	89.3941	27	529
UPR_Days to Register Property	576	42.6832	52.0947	1	398
UPR_Freehold Landownership Possibility	648	.833333	.372966	0	1
MACRO_GDP / Capita	648	23032.5	24204.9	111.516	107446
MACRO_Inflation	648	4.95525	5.73109	-4.9	70.2
INT_Population Size	648	7129.02	8050.3	414.9	37050.7
LOC_Infrastructure Sanitation	648	89.4667	15.8773	28.3	100
LOC_% of Households with Internet Access	648	52.7972	28.2534	2.2	100
LOC_Housing Expenditure	648	15115.4	34570.9	23.9	220094
INT_Trade Barriers	647	33.9462	22.3433	11	165
INT_Trade Sector (% of GDP)	647	83.768	39.179	22.106	209.075
INT_Airpassengers	648	21565.1	25990.1	448.1	139951
INT_Number of FDIs	648	45.412	59.5848	0	412
INST_Domestic Credit Depth(% of GDP)	627	71.3464	49.3082	.249744	206.303
INST_Control of Corruption	648	.318302	1.041	-1.38247	2.55269
INST_Political Stability	648	.0213	.919562	-2.81208	1.49641

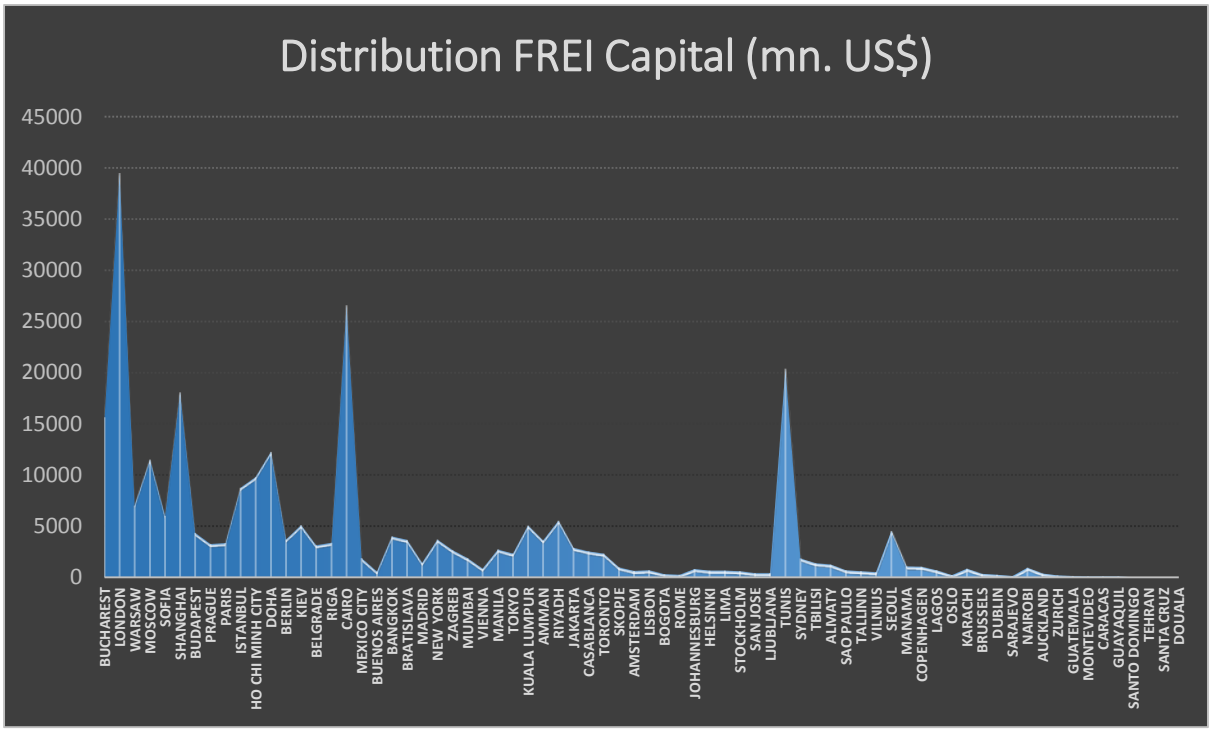
Variable description African Sample

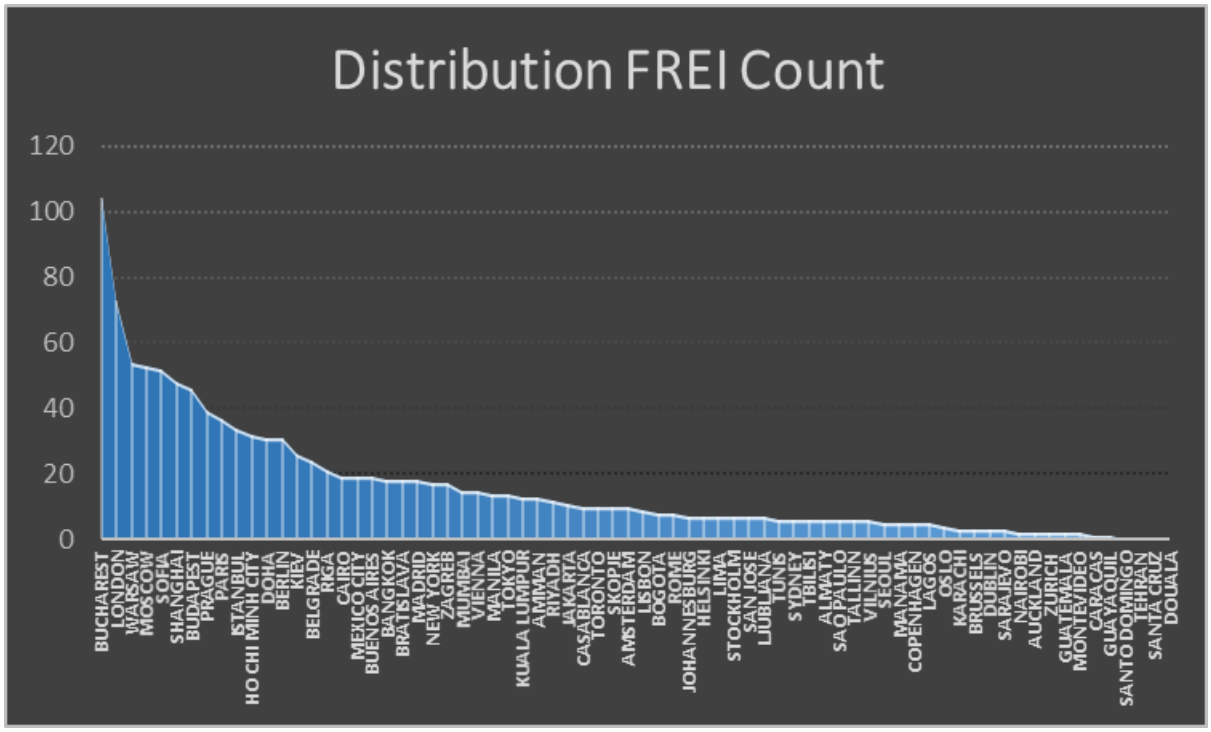
Variable	Obs	Mean	Std. Dev.	Min	Max
Year	279	2010	2.58663	2006	2014
Number of FREIs	279	.888889	2.54708	0	26
UPR_Regulatory Quality	279	-.448946	.510577	-1.5823	1.00071
UPR_UK Town Planning Act	279	.387097	.487961	0	1
UPR_Special Economic Zone	279	.290323	.454727	0	1
UPR_Days to Obtain Permit	272	194.851	83.5839	86	599
UPR_Days to Register Property	272	80.2066	65.2226	10	335
UPR_Freehold Landownership Possibility	279	.548387	.498547	0	1
MAC_GDP / Capita	278	2040.3	2100.66	237.698	10016.6
MAC_Inflation	278	6.39581	5.68177	-35.8367	27.2833
MAC_Infra Internet	279	11.2623	12.7408	.227669	56.8
LOC_Urban Population Size	279	1.1e+07	1.4e+07	279924	8.3e+07
LOC_Urban Growth Rate	279	3.7022	1.4439	-.351227	6.68178
INT_Trade Barriers	279	65.7047	33.9793	19	180
INT_Number of FDIs	279	16.4301	25.4004	0	158
INS_Control of Corruption	279	-.549403	.570456	-1.4849	1.00333
INS_Political Stability	279	-.414813	.799374	-2.27385	1.08115
INS_Domestic Credit Depth (% of GDP)	278	33.9086	40.0176	-18.4406	192.66

Variable description Sub-Saharan Africa Sample

Variable	Obs	Mean	Std. Dev.	Min	Max
Year	243	2010	2.58732	2006	2014
Number of FREIs	243	.353909	.9782	0	9
UPR_Regulatory Quality	243	-.456047	.522981	-1.5823	1.00071
UPR_UK Town Planning Act	243	.444444	.49793	0	1
UPR_Special Economic Zone	243	.259259	.439133	0	1
UPR_Days to Obtain Permit	236	202.38	84.9774	106.3	599
UPR_Days to Register Property	236	82.2042	68.551	10	335
UPR_Freehold Landownership Possibility	243	.518519	.500688	0	1
MAC_GDP / Capita	242	1813.96	2122.71	237.698	10016.6
MAC_Infra Internet	243	8.82401	10.4118	.227669	49
LOC_Urban Population Size	243	9.2e+06	1.4e+07	279924	8.3e+07
LOC_Urban Growth Rate	243	3.94773	1.37122	-.351227	6.68178
INT_Number of FDIs	243	13.2551	24.4319	0	158
INS_Control of Corruption	243	-.571846	.603655	-1.4849	1.00333
INS_Political Stability	243	-.365046	.822229	-2.27385	1.08115

Annex 5

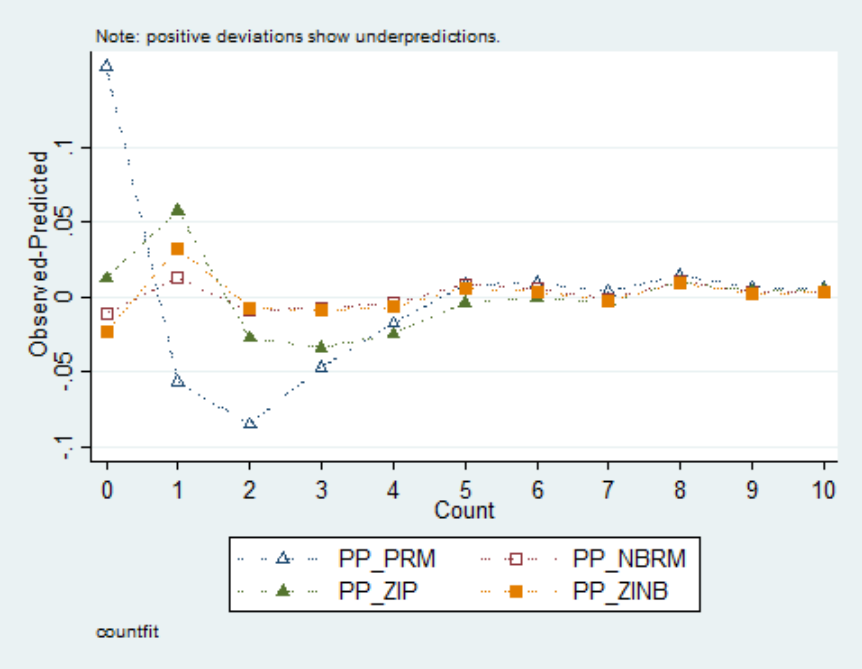




Annex 4

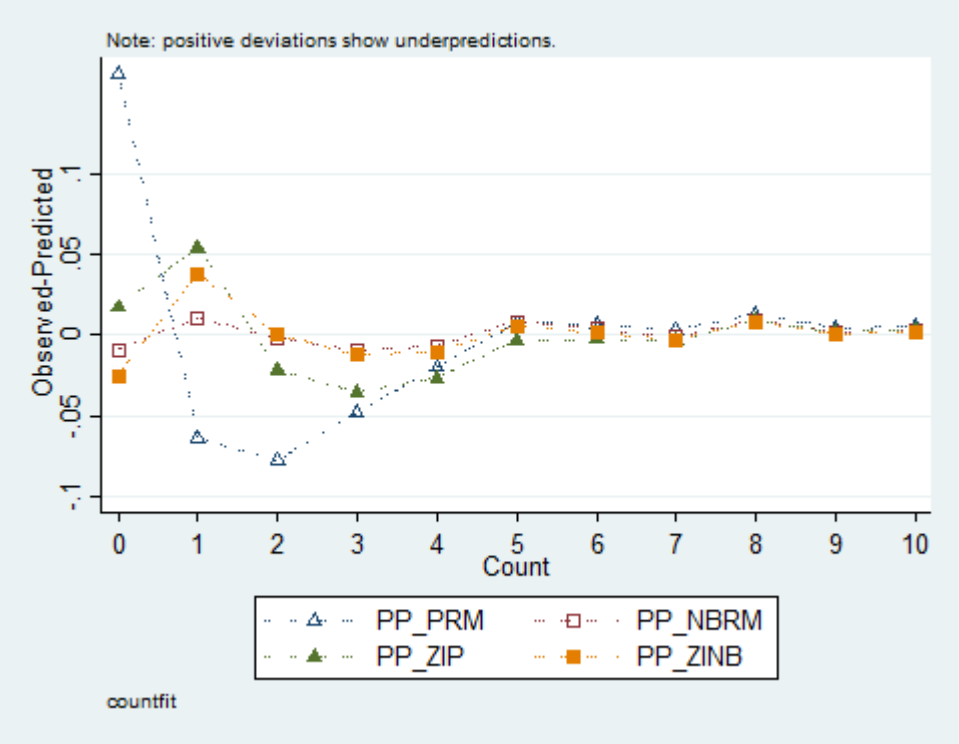
Global sample model 1 As parsimonious as possible

```
Tests and Fit Statistics

PP_PRM          BIC= -1456.366  AIC=     4.171  Prefer  Over  Evidence
-----------------------------------------------------------------------
  vs PP_NBRM    BIC= -1980.491  dif=   524.125  NBRM    PRM   Very strong
                AIC=     3.355  dif=     0.816  NBRM    PRM
                LRX2=  530.599  prob=    0.000  NBRM    PRM   p=0.000
-----------------------------------------------------------------------
  vs PP_ZIP     BIC= -1698.441  dif=   242.075  ZIP     PRM   Very strong
                AIC=     3.735  dif=     0.436  ZIP     PRM
                Vuong=   4.700  prob=    0.000  ZIP     PRM   p=0.000
-----------------------------------------------------------------------
  vs PP_ZINB    BIC= -2020.466  dif=   564.100  ZINB    PRM   Very strong
                AIC=     3.232  dif=     0.940  ZINB    PRM
-----------------------------------------------------------------------
PP_NBRM         BIC= -1980.491  AIC=     3.355  Prefer  Over  Evidence
-----------------------------------------------------------------------
  vs PP_ZIP     BIC= -1698.441  dif=  -282.049  NBRM    ZIP   Very strong
                AIC=     3.735  dif=    -0.380  NBRM    ZIP
-----------------------------------------------------------------------
  vs PP_ZINB    BIC= -2020.466  dif=    39.976  ZINB    NBRM  Very strong
                AIC=     3.232  dif=     0.124  ZINB    NBRM
                Vuong=   5.673  prob=    0.000  ZINB    NBRM  p=0.000
-----------------------------------------------------------------------
PP_ZIP          BIC= -1698.441  AIC=     3.735  Prefer  Over  Evidence
-----------------------------------------------------------------------
  vs PP_ZINB    BIC= -2020.466  dif=   322.025  ZINB    ZIP   Very strong
                AIC=     3.232  dif=     0.504  ZINB    ZIP
                LRX2=  328.499  prob=    0.000  ZINB    ZIP   p=0.000
-----------------------------------------------------------------------
```



Global sample model 2 As parsimonious as possible + all urban planning indicators

```
Tests and Fit Statistics

PP_PRM          BIC= -1255.773  AIC=     4.100  Prefer  Over  Evidence
-----------------------------------------------------------------------------
  vs PP_NBRM    BIC= -1719.510  dif=   463.738  NBRM    PRM   Very strong
                AIC=     3.288  dif=     0.813  NBRM    PRM
                LRX2=  470.094  prob=    0.000  NBRM    PRM   p=0.000
-----------------------------------------------------------------------------
  vs PP_ZIP     BIC= -1490.249  dif=   234.477  ZIP     PRM   Very strong
                AIC=     3.610  dif=     0.490  ZIP     PRM
                Vuong=   4.986  prob=    0.000  ZIP     PRM   p=0.000
-----------------------------------------------------------------------------
  vs PP_ZINB    BIC= -1761.319  dif=   505.547  ZINB    PRM   Very strong
                AIC=     3.132  dif=     0.968  ZINB    PRM
-----------------------------------------------------------------------------
PP_NBRM         BIC= -1719.510  AIC=     3.288  Prefer  Over  Evidence
-----------------------------------------------------------------------------
  vs PP_ZIP     BIC= -1490.249  dif=  -229.261  NBRM    ZIP   Very strong
                AIC=     3.610  dif=    -0.322  NBRM    ZIP
-----------------------------------------------------------------------------
  vs PP_ZINB    BIC= -1761.319  dif=    41.809  ZINB    NBRM  Very strong
                AIC=     3.132  dif=     0.156  ZINB    NBRM
                Vuong=   6.097  prob=    0.000  ZINB    NBRM  p=0.000
-----------------------------------------------------------------------------
PP_ZIP          BIC= -1490.249  AIC=     3.610  Prefer  Over  Evidence
-----------------------------------------------------------------------------
  vs PP_ZINB    BIC= -1761.319  dif=   271.070  ZINB    ZIP   Very strong
                AIC=     3.132  dif=     0.478  ZINB    ZIP
                LRX2=  277.426  prob=    0.000  ZINB    ZIP   p=0.000
-----------------------------------------------------------------------------
```



Global sample model 3 As complex as possible

*** //Measures of Fit for zinb of FREI_count

//Log-Lik Intercept Only:	-1154.373	Log-Lik Full Model:	-989.963
//D(614):	1979.925	LR(30):	328.820
//		Prob > LR:	0.000
//McFadden's R2:	0.142	McFadden's Adj R2:	0.114
//ML (Cox-Snell) R2:	0.398	Cragg-Uhler(Nagelkerke) R2:	0.410
//AIC:	3.162	AIC*n:	2045.925
//BIC:	-1994.095	BIC':	-134.649
//BIC used by Stata:	2193.513	AIC used by Stata:	2045.925

//countfit does not converge!!! vuong zip prefers zinb over nbreg

// Vuong Test = 5.72 (p=0.000) favoring ZINB over NBRM.

***Measures of Fit for nbreg of FREI_count

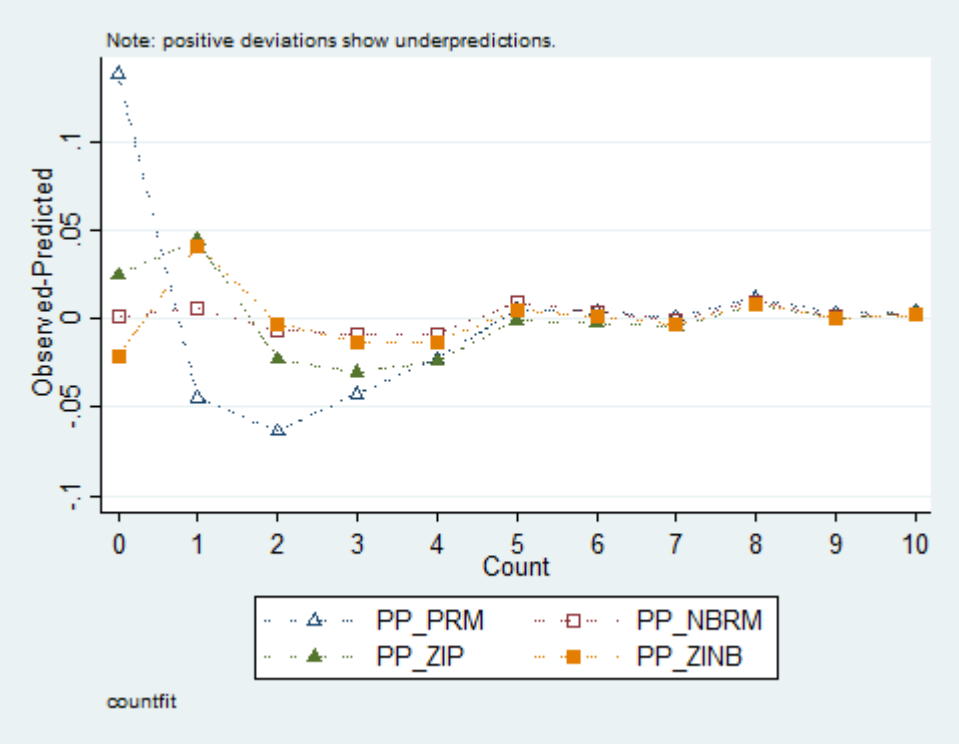
//Log-Lik Intercept Only:	-1154.373	Log-Lik Full Model:	-1040.271
//D(630):	2080.542	LR(15):	228.203
//		Prob > LR:	0.000
//McFadden's R2:	0.099	McFadden's Adj R2:	0.084
//ML (Cox-Snell) R2:	0.297	Cragg-Uhler(Nagelkerke) R2:	0.306

//AIC:	3.268	AIC*n:	2114.542
//BIC:	-1997.036	BIC':	-131.118
//BIC used by Stata:	2190.572	AIC used by Stata:	2114.542

//BIC also indicates zinb as better model!!!!

Global sample model 4 As complex as possible + all urban planning indicators

```
Tests and Fit Statistics

PP_PRM          BIC= -1255.231  AIC=     3.917  Prefer  Over  Evidence
-----------------------------------------------------------------------------
  vs PP_NBRM    BIC= -1606.021  dif=   350.790  NBRM    PRM   Very strong
                AIC=     3.277  dif=     0.640  NBRM    PRM
                LRX2=  357.109  prob=    0.000  NBRM    PRM   p=0.000
-----------------------------------------------------------------------------
  vs PP_ZIP     BIC= -1430.661  dif=   175.430  ZIP     PRM   Very strong
                AIC=     3.461  dif=     0.456  ZIP     PRM
                Vuong=   5.812  prob=    0.000  ZIP     PRM   p=0.000
-----------------------------------------------------------------------------
  vs PP_ZINB    BIC= -1619.276  dif=   364.045  ZINB    PRM   Very strong
                AIC=     3.113  dif=     0.804  ZINB    PRM
-----------------------------------------------------------------------------
PP_NBRM         BIC= -1606.021  AIC=     3.277  Prefer  Over  Evidence
-----------------------------------------------------------------------------
  vs PP_ZIP     BIC= -1430.661  dif=  -175.360  NBRM    ZIP   Very strong
                AIC=     3.461  dif=    -0.184  NBRM    ZIP
-----------------------------------------------------------------------------
  vs PP_ZINB    BIC= -1619.276  dif=    13.255  ZINB    NBRM  Very strong
                AIC=     3.113  dif=     0.164  ZINB    NBRM
                Vuong=   6.350  prob=    0.000  ZINB    NBRM  p=0.000
-----------------------------------------------------------------------------
PP_ZIP          BIC= -1430.661  AIC=     3.461  Prefer  Over  Evidence
-----------------------------------------------------------------------------
  vs PP_ZINB    BIC= -1619.276  dif=   188.615  ZINB    ZIP   Very strong
                AIC=     3.113  dif=     0.348  ZINB    ZIP
                LRX2=  194.934  prob=    0.000  ZINB    ZIP   p=0.000
-----------------------------------------------------------------------------
```



Annex 5 Modelfittests (Sub-Saharan) African samples

Model 1 Africa

*****Model 1 APAP maxN + SEZdummy

Fitstat

//Measures of Fit for zinb of FREI_count

//Log-Lik Intercept Only:	-312.790	Log-Lik Full Model:	-251.736
//D(257):	503.472	LR(18):	122.109
//		Prob > LR:	0.000
//McFadden's R2:	0.195	McFadden's Adj R2:	0.128
//ML (Cox-Snell) R2:	0.355	Cragg-Uhler(Nagelkerke) R2:	0.397
//AIC:	1.962	AIC*n:	545.472
//BIC:	-942.827	BIC':	-20.811
//BIC used by Stata:	621.652	AIC used by Stata:	545.472

//!!!(doesnt run) countfit

//vuong zip test *!!!prefer zinb over zip and zinb over nbreg

//Likelihood-ratio test of alpha=0: chibar2(01) = 86.90 Pr>=chibar2 = 0.0000

//Vuong test of zinb vs. standard negative binomial: z = 2.51 Pr>z = 0.0061

*****nbreg model

fitstat

//Measures of Fit for nbreg of FREI_count

//Log-Lik Intercept Only:	-312.790	Log-Lik Full Model:	-267.053
//D(267):	534.107	LR(9):	91.474
//		Prob > LR:	0.000
//McFadden's R2:	0.146	McFadden's Adj R2:	0.111
//ML (Cox-Snell) R2:	0.280	Cragg-Uhler(Nagelkerke) R2:	0.313
//AIC:	2.000	AIC*n:	556.107
//BIC:	-968.468	BIC':	-40.825
//BIC used by Stata:	596.011	AIC used by Stata:	556.107

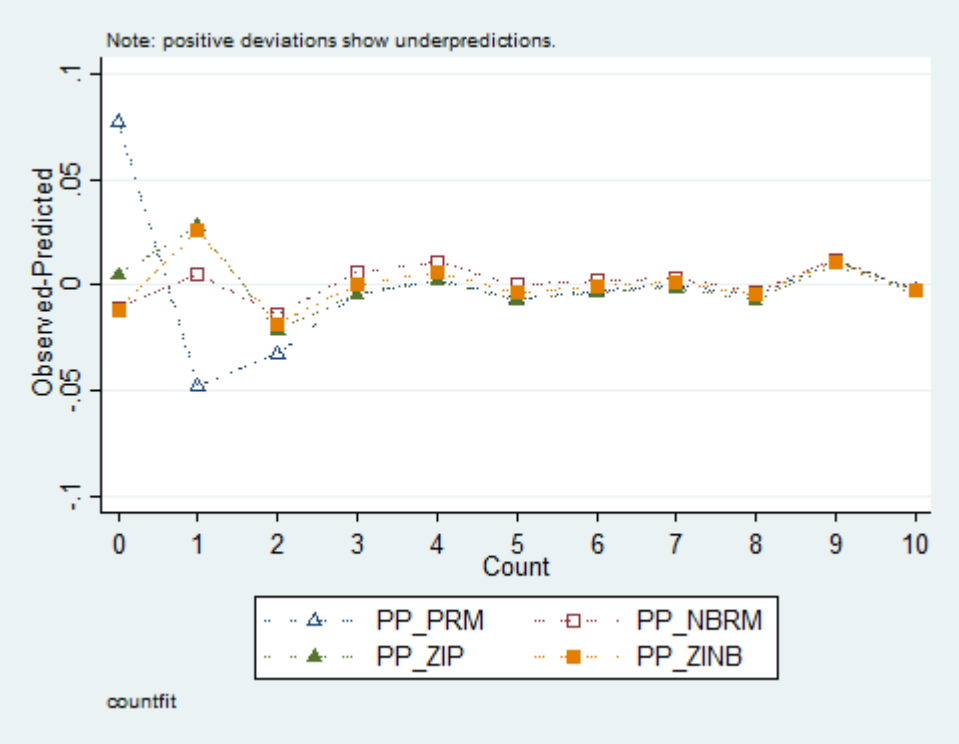
*!!!BIC indicates nbreg over zinb

*xtnbregmodel

*!!!LR test vs. pooled: chibar2(01) = 23.76 Prob >= chibar2 = 0.000

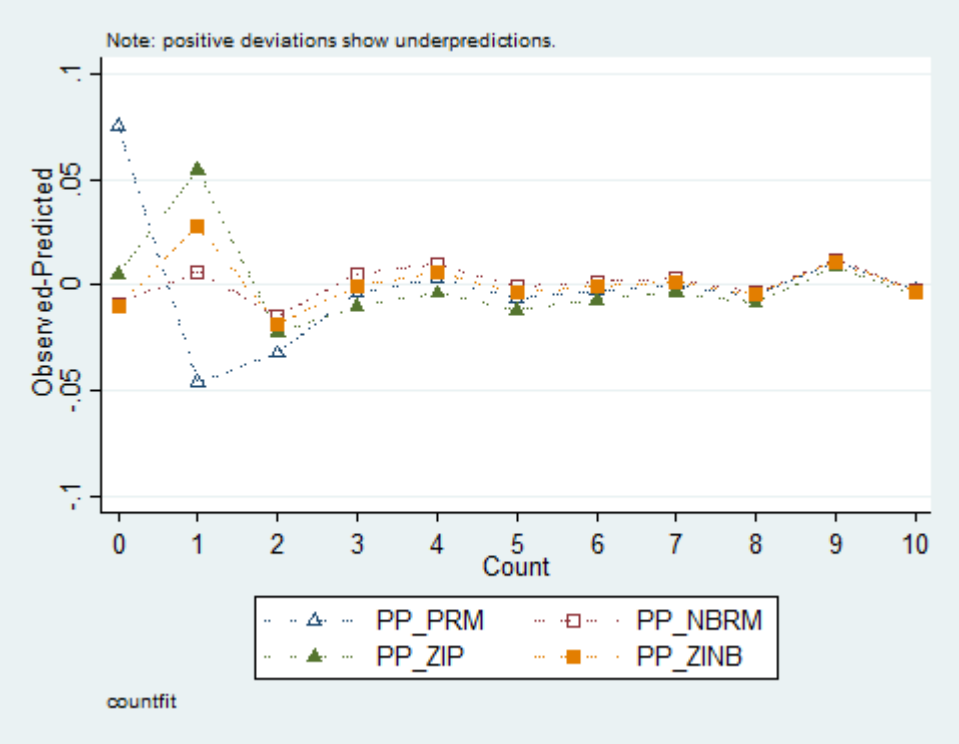
Model 2

```
Tests and Fit Statistics

PP_PRM          BIC=  -816.230  AIC=     2.444  Prefer  Over  Evidence
-----------------------------------------------------------------------
  vs PP_NBRM    BIC=  -954.967  dif=   138.737  NBRM    PRM   Very strong
                AIC=     1.919  dif=     0.525  NBRM    PRM
                LRX2=  144.339  prob=    0.000  NBRM    PRM   p=0.000
-----------------------------------------------------------------------
  vs PP_ZIP     BIC=  -870.012  dif=    53.783  ZIP     PRM   Very strong
                AIC=     2.086  dif=     0.358  ZIP     PRM
                Vuong=   2.419  prob=    0.008  ZIP     PRM   p=0.008
-----------------------------------------------------------------------
  vs PP_ZINB    BIC=  -943.216  dif=   126.986  ZINB    PRM   Very strong
                AIC=     1.803  dif=     0.641  ZINB    PRM
-----------------------------------------------------------------------
PP_NBRM         BIC=  -954.967  AIC=     1.919  Prefer  Over  Evidence
-----------------------------------------------------------------------
  vs PP_ZIP     BIC=  -870.012  dif=   -84.955  NBRM    ZIP   Very strong
                AIC=     2.086  dif=    -0.167  NBRM    ZIP
-----------------------------------------------------------------------
  vs PP_ZINB    BIC=  -943.216  dif=   -11.751  NBRM    ZINB  Very strong
                AIC=     1.803  dif=     0.116  ZINB    NBRM
                Vuong=   3.555  prob=    0.000  ZINB    NBRM  p=0.000
-----------------------------------------------------------------------
PP_ZIP          BIC=  -870.012  AIC=     2.086  Prefer  Over  Evidence
-----------------------------------------------------------------------
  vs PP_ZINB    BIC=  -943.216  dif=    73.203  ZINB    ZIP   Very strong
                AIC=     1.803  dif=     0.283  ZINB    ZIP
                LRX2=   78.805  prob=    0.000  ZINB    ZIP   p=0.000
-----------------------------------------------------------------------
```



Model 5 as complex as possible

```
Tests and Fit Statistics

PP_PRM          BIC=  -790.840  AIC=     2.456  Prefer  Over  Evidence
-------------------------------------------------------------------------
  vs PP_NBRM    BIC=  -927.103  dif=   136.263  NBRM    PRM   Very strong
                AIC=     1.938  dif=     0.518  NBRM    PRM
                LRX2=  141.861  prob=    0.000  NBRM    PRM   p=0.000
-------------------------------------------------------------------------
  vs PP_ZIP     BIC=  -834.944  dif=    44.104  ZIP     PRM   Very strong
                AIC=     2.186  dif=     0.270  ZIP     PRM
                Vuong=   1.299  prob=    0.097  ZIP     PRM   p=0.097
-------------------------------------------------------------------------
  vs PP_ZINB    BIC=  -907.598  dif=   116.758  ZINB    PRM   Very strong
                AIC=     1.904  dif=     0.552  ZINB    PRM
-------------------------------------------------------------------------
PP_NBRM         BIC=  -927.103  AIC=     1.938  Prefer  Over  Evidence
-------------------------------------------------------------------------
  vs PP_ZIP     BIC=  -834.944  dif=   -92.159  NBRM    ZIP   Very strong
                AIC=     2.186  dif=    -0.248  NBRM    ZIP
-------------------------------------------------------------------------
  vs PP_ZINB    BIC=  -907.598  dif=   -19.505  NBRM    ZINB  Very strong
                AIC=     1.904  dif=     0.034  ZINB    NBRM
                Vuong=   1.919  prob=    0.028  ZINB    NBRM  p=0.028
-------------------------------------------------------------------------
PP_ZIP          BIC=  -834.944  AIC=     2.186  Prefer  Over  Evidence
-------------------------------------------------------------------------
  vs PP_ZINB    BIC=  -907.598  dif=    72.654  ZINB    ZIP   Very strong
                AIC=     1.904  dif=     0.282  ZINB    ZIP
                LRX2=   78.252  prob=    0.000  ZINB    ZIP   p=0.000
-------------------------------------------------------------------------
```


Note: positive deviations show underpredictions.
Observed-Predicted
.1
.05
0
-.05
-.1
0
1
2
3
4
5
6
7
8
9
10
Count
PP_PRM
PP_NBRM
PP_ZIP
PP_ZINB
countfit

Annex 6 Listcoef tables

Listcoef global APAP model

```
zinb (N=648): Factor Change in Expected Count

 Observed SD: 3.0943142

Count Equation: Factor Change in Expected Count for Those Not Always 0
```

FREI_count	b	z	P>|z|	e^b	e^bStdX	SDofX
UPR_regula~y	-0.04096	-0.326	0.745	0.9599	0.9648	0.8753
UPR_dummyl~d	0.34775	1.407	0.159	1.4159	1.1385	0.3730
UPR_popden~p	-0.00020	-2.788	0.005	0.9998	0.7175	1619.6425
INST_c~n_wgi	-0.55084	-2.685	0.007	0.5765	0.5636	1.0410
INST_p~b_wgi	0.39673	2.783	0.005	1.4870	1.4403	0.9196
INT_fdicou~t	0.00888	5.111	0.000	1.0089	1.6978	59.5848
LOC_pop_pp	-0.00000	-0.124	0.902	1.0000	0.9880	8050.3010
MACRO_gdpc~p	-0.00001	-1.199	0.231	1.0000	0.7858	24204.9364
ln alpha	-0.26613					
alpha	0.76634	SE(alpha) = 0.15944				

```
       b = raw coefficient
       z = z-score for test of b=0
   P>|z| = p-value for z-test
     e^b = exp(b) = factor change in expected count for unit increase in X
 e^bStdX = exp(b*SD of X) = change in expected count for SD increase in X
   SDofX = standard deviation of X

Binary Equation: Factor Change in Odds of Always 0
```

Always0	b	z	P>|z|	e^b	e^bStdX	SDofX
UPR_regulatory	-0.05781	-0.121	0.904	0.9438	0.9507	0.8753
UPR_dummyland	2.39312	2.484	0.013	10.9476	2.4414	0.3730
UPR_popdensity_pp	0.00035	0.800	0.424	1.0004	1.7702	1619.6425
INST_corruption_wgi	-1.61467	-1.558	0.119	0.1990	0.1862	1.0410
INST_polstab_wgi	2.78065	1.035	0.301	16.1296	12.8969	0.9196
INT_fdicount_ft	-0.41632	-1.474	0.141	0.6595	0.0000	59.5848
LOC_pop_pp	0.00015	0.742	0.458	1.0001	3.3117	8050.3010
MACRO_gdpcap_pp	-0.00014	-0.933	0.351	0.9999	0.0325	24204.9364

```
       b = raw coefficient
       z = z-score for test of b=0
   P>|z| = p-value for z-test
     e^b = exp(b) = factor change in odds for unit increase in X
 e^bStdX = exp(b*SD of X) = change in odds for SD increase in X
   SDofX = standard deviation of X
```

Listcoef Africa Nbreg model

FREI_count	b	z	P>|z|	e^b	e^bStdX	SDofX
UPR_regul_~i	1.26349	2.077	0.038	3.5378	1.9153	0.5144
UPR_dland_wb	-1.06303	-2.677	0.007	0.3454	0.5898	0.4967
UPR_dgb	-1.74665	-3.261	0.001	0.1744	0.4291	0.4844
UPR_permit~b	-0.00393	-1.828	0.068	0.9961	0.7194	83.7371
UPR_regis_db	0.00245	0.937	0.349	1.0025	1.1728	64.9995
MAC_gdpcap	-0.00012	-1.577	0.115	0.9999	0.7800	2124.2089
LOC_urbpop	0.00000	1.439	0.150	1.0000	1.3757	1.1226e+07
LOC_urbrate	-0.36761	-2.304	0.021	0.6924	0.5863	1.4524
INT_fdicount	0.02296	1.606	0.108	1.0232	1.7957	25.4981
INS_corrup~n	0.47167	0.856	0.392	1.6027	1.3090	0.5708
INS_polstab	-0.33019	-0.923	0.356	0.7188	0.7760	0.7682
ln alpha	0.27335					
alpha	1.31435	SE(alpha) = 0.31557				

LR test of alpha=0: . Prob>=LRX2 = .

b = raw coefficient
z = z-score for test of b=0
P>|z| = p-value for z-test
e^b = exp(b) = factor change in expected count for unit increase in X
e^bStdX = exp(b*SD of X) = change in expected count for SD increase in X
SDofX = standard deviation of X

Annex 7 pwcorr regulatory quality and SEZ

The existence of a Special Economic Zone (SEZ) seems to interfere with the regulatory quality in the regressions[27]. By using a Pearson's correlation test in Stata the coefficient and significance of the correlation between the variables can be established. This test (**see annex 9**) indicates that these two variables have a low[28] positive correlation in Africa as a whole, but that the correlation is higher (medium) in SSA. This would indicate that in SSA, which has a lower regulatory quality overall, SEZs function as a well regulated exemption in a less well regulated country.

[27] see the changing significance in **Table 4.7**

[28] Although there is no exact rule about the quantity of correlation coefficients Cohen (1988) argued that Low<0,3> Medium <0,5> High can be used as a rule of thumb.

Africa sample

```
. pwcorr UPR_regul_wgi UPR_sezdeummy, sig star(0.05)

             | UPR_re~i UPR_se~y
-------------+------------------
UPR_regul_~i |   1.0000
             |
             |
UPR_sezdeu~y |   0.2223*  1.0000
             |   0.0002
             |
```

SSA Sample

```
. pwcorr UPR_regul_wgi UPR_sezdeummy, sig star(0.05)

             | UPR_re~i UPR_se~y
-------------+------------------
UPR_regul_~i |   1.0000
             |
             |
UPR_sezdeu~y |   0.3467*  1.0000
             |   0.0000
             |
```

.