

https://dspace.org/

Regulations, securitisation and the financing of airport infrastructure in Sub-Saharan Africa: a case study

Dlamini, Phumzile Zimasa

2017

http://hdl.handle.net/10539/23680

Dlamini, Phumzile Zimasa (2017) Regulations, securitisation and the financing of airport infrastructure in Sub-Saharan Africa: a case study, University of the Witwatersrand, Johannesburg, <http://hdl.handle.net/10539/23680>

Downloaded from a DSpace repository. https://dspace.org/



RESEARCH REPORT

Regulations, Securitisation and the Financing of Airport Infrastructure in Sub-Saharan Africa
a case study

Phumzile Zimasa Dlamini

A project report submitted in partial fulfilment of the requirements for the degree of

Masters of Management (Finance and Investment)

In the

FACULTY OF COMMERCE, LAW AND MANAGEMENT
WITS BUSINESS SCHOOL

UNIVERSITY OF THE WITWATERSRAND

Supervisor: Doctor Odongo Kodongo

29 February 2016

29 February 2016

Abstract

It is well acknowledged that infrastructure provision is linked to economic growth , in particular airports are viewed a strategic catalysts to this growth bringing about increased opportunities for trade, tourism, and serving as an enabler for business. African airports have historically suffered underinvestment as a result of competing priorities for government funding; growing safety concerns, increased traffic growth and globalisation, and the need for refurbishment and modernisation of systems. African nations are now beginning to spend considerable amounts on aviation infrastructure. The purpose of this study evaluate the financing mechanisms available to governments, to access the role that airport economic regulation plays in attracting investment and the potential of leveraging the securitisation model for the financing of aviation infrastructure. It was found that, no one funding mechanism is king and that airport owners and operators should attempt a diversification strategy towards their funding sources, taking into account that the investment appetite of various investors will be different at the various phases of infrastructure project delivery. It was found that airport regulation is key to harnessing the certainly of future cash flows required by private investors , and may be the required mechanism to off load the financial burden of smaller airports from the government budgets. Lastly it was found that development finance institutions may be the biggest benefactors to utilising the securitisation model to unlock further developmental funding; key to this is the support of institutional investors.

Keywords: Airport finance, asset-backed securitisation, airport economic regulation, sub Saharan Africa

Acknowledgements

The researcher wishes to thank Doctor Odongo Kodongo, of the Witwatersrand Business School for his valuable input and assistance throughout this research study. A further acknowledgement goes to the Airports' Company South Africa and the respondents to the study for their openness, assistance and support. And lastly to family and friends for their continued support and encouragement throughout the process.

Table of Contents

1. Background to Research Study 1

1.1. Introduction 1
1.2. Background 1
1.3. Motivation and Problem Statement 5
1.4. Purpose of the study 9
1.5. Objectives of the study 10
1.6. Organisation of the Study 10

2. Theoretical and Empirical Literature Review 11

2.1 Introduction 11
2.2 The State of Airport Infrastructure in Sub-Saharan Africa 11
2.2.1 Air Traffic Control Infrastructure 16
2.2.2 Airport Capacity 16
2.3 The financing gap, sources, opportunities & challenges of infrastructure funding in SSA 17
2.4 Funding and Financing Options Available for Airport Infrastructure in Sub-Saharan Africa 19
2.4.1 Government grants 20
2.4.2 Special-purpose user taxes 20
2.4.3 Low-cost/ concessional loans or grants from international or national development banks 21
2.4.4 Retained Earnings 26
2.4.5 Loans from commercial banks 26
2.4.6 General-obligation bonds 26
2.4.7 Revenue bonds 27
2.4.8 Private financing against specified rights to airport revenues (Public Private Partnerships) 27
2.5 Current trends in infrastructure Finance 31
2.6 Role of Securitization in the Success of Private Financing of Airport Developments 35
2.6.1 Issuer Rationale 39
2.6.2 Investor Benefits 40
2.6.3 Securitising Infrastructure Revenues 41
2.6.5.1 The scale and size of markets 45
2.6.5.2 Legal Framework 45
2.6.5.3 Information Constraints 45
2.6.5.4 Investor Base 46
2.6.5.5 Risk Considerations 46
2.6.6.1 Regulations 46
2.6.6.2 Small Illiquid Markets 47
2.6.6.3 Investor Knowledge 47
2.6.7 Applications to Airport Financing 47
2.6.8 Airport Privatisation 50
2.6.9 Airport Ownership Models 52
2.7 Regulation 56
2.7.1 Economic Regulation 56
2.7.2 Types of Airport Regulation 57
2.7.3 Regulation and Investment 61
2.7.4 The Impact of Regulations on financing of airport infrastructure 66

3. Research Design and Methodology 67

3.1. Introduction 67
3.2. Research Design 67
3.3. Sampling 70
3.3.1. Case Selection 71
3.3.2. Selection of Data Sources 73
3.4. Data Collection 74

4. Data Analysis and Results 79

4.1. Introduction 79
4.2. Data Collection 79
4.3. Data and Information Gathered 79

4.3.1. Securitisation 79
4.3.2. Airport Economic Regulation 80
4.3.3. Airport Financing 80
4.4. Data Analysis 80
4.5. Case Narrative: South Africa 81
4.6. Interview Analysis Results 83
4.6.1. Securitisation 83
4.6.2. Airport Economic Regulation 89
4.6.3. Airport Operators 102
4.7. Case Narrative: Zambia 110
4.8. Interview Analysis Results 113
4.8.1. Infrastructure Finance Specialist 113
4.8.2. Airport Operators 119

5. Conclusion and Recommendations 122

5.1. Summary of Research Findings 122
5.1.1. Securitisation 122
5.1.2. Airport Financing 123
5.1.3. Airport Regulations 124
5.2. Contribution of Research Study 125
5.3. Opportunities for Future Research 126
5.4. Recommendations 126

6. References 127

7. ANNEXTURE A: Regulation 28 Table Summary 134

8. ANNEXTURE B: Determination of Securities, Classes of Securities, Assets/Classes of Asset 136

9. ANNEXTURE C: Interview Guide 138

List of Figures

Figure 2-1: ICAO Regional Accident Statistics 2014 11
Figure 2-2: Travel and Tourism Index 2015 Regional Performance 14
Figure 2-3: Enabling Trade Index 2014: Regional Averages 15
Figure 2-4 : Global Infrastructure Spending by Sources 18
Figure 2-5: Africa Infrastructure Needs, by Sources of Finance 19
Figure 2-6 : Cost of Capital 23
Figure 2-7: Securitisation Structure Generic 36
Figure 3-1: The Research Design Process 70

List of Tables

Table 1-1 : Key Country Overview 7
Table 2-1: Travel and Tourism Index Sub Saharan Africa 13
Table 2-2 : Airport Runways in Sub Saharan Africa and the Rest of the World 17
Table 2-3: Airport PPP's in Africa 29
Table 2-4 : Options for Private Participation in Public Partnership 29
Table 2-5: Phases of infrastructure projects and their characteristics 34
Table 2-6: Various Securitisation Structures 38
Table 2-7: County Characteristics of Securitisation Enabling Factors 49
Table 2-8: Africa Airport Privatisation 52
Table 2-9 : Airport Regulation Summary 61
Table 3-1: Relevant situations for different research strategies 68
Table 3-2: Comparison of Qualitative and Quantitative Methods 69
Table 3-3: Strategies for the Selection of Samples and Cases 71
Table 3-4: Airports over 1 Million Annual Passengers in Sub Saharan Africa 72
Table 3-5: Different types of triangulation 74
Table 3-6 : Sources of Data: Strengths and Weaknesses 75
Table 3-7: Advantages of Human Research Instrument 77
Table 4-1: Securitisation Respondent Background 83
Table 4-2: Regulation Respondent Background 90

List of Acronyms

ABS: Asset Backed Securitisation
ACSA: Airports Company South Africa
ADS-B: Automatic Dependent Surveillance-Broadcast
AfDB: African Development Bank
CDO: Collateralised Debt Obligation
CPI: Consumer Price Index
EUR: Euro
JIBRA: Johannesburg Interbank Average Rate
LIBRO: London Interbank Offered Rate
OECD: Organisation for Economic Co-operation and Development
RAB: Regulated Asset Base
RMBS: Residential Mortgage Asset Backed Securitisation
SPV: Special Purpose Vehicle
SSA: Sub Saharan Africa
UK: United Kingdom
USD: United States Dollar

1. Background to Research Study

1.1. Introduction

Public infrastructure financing has taken a radical shift in recent times and in particular the role that governments have played is changing from owners, operators and financiers to guarantors and regulators. Much of the research on public infrastructure financing on transportation is geared towards road and rail development. Airports are however catalysts to economic growth; as they generate employment opportunities, act as gateways for tourism and business and attract commercial development thereby stimulating new investment and promoting local economic activity. Airports however remain a relatively under-researched area. This study focuses on these developments in the context of airport infrastructure financing in Sub Saharan Africa.

This chapter presents a background and motivation for the research, contextualising the importance of this research, the problem statement is then briefly discussed along with the rationale of the research, research objectives and closes with the research approach and chapter overview.

1.2. Background

Aerodromes/Airports are defined by the International Civil Aviation Organisation, a United Nations body that is mandated to establish and maintain international civil aviation standards and recommended practices of its 191 member states, as “a defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft” (ICAO, 2004).

Traditionally airports were predominately owned, operated and funded by governments. By the 1970’s the airport management philosophy began to shift, airports were viewed as commercial enterprises and with that, the privatisation of airports in Europe began to take shape. The rationale for the privatisation of these airports was largely to remove the financial burden of funding from government budgets, with the acknowledgement that many large airports could operate as profitable self-sustained businesses. Developing

countries also followed suit in the 1980's with countries such as Nigeria, Thailand, Philippines and India developing autonomous airport authorities allowing these airports to operate as independent commercial enterprises. Even where governments continue to own and manage airports there has been greater pressure for airports to reduce government funding by producing profits (Doganis, 1992).

Distinct revenue sources characterise airports namely; non-aeronautical/commercial revenues and aeronautical revenues. Aeronautical revenues represent airport landing , parking and passenger fees and commercial revenues include commercial concessions, advertising, car parks, retail, hotels, restaurants, warehousing and offices. An aircraft landing fee is calculated on the basis of weight, typically maximum take-off weight (MTOW) is utilised, other measures such as maximum authorised weight (MAW) and maximum landing weight (MLW) are also utilised. Aircraft parking fees are typically weight and time based and passenger service fees are organ and destination based.

Airports were considered to be monopolistic (natural monopolies) in nature and therefore the introduction of privatisation and the restructuring of government airports into autonomous airport authorities, resulted in concerns over the abuse of market power. This necessitated governments to introduce economic regulation of aeronautical tariffs. According to Forsyth, et al.(2004) the objectives of airport regulation were primarily to promote economic efficiency. This related to the provision of a quality service that consumers were willing to pay for, the enablement of cost recovery, minimised production costs, price structures that reflected costs or capital efficiency, and efficient levels of investment.

There are several forms of economic airport regulation. One of the most popular is rate of return/cost based regulation where the airport is allowed revenues to cover total operational and capital costs inclusive of depreciation but is restricted to a "fair" rate on return on capital invested. The biggest challenges with this method is defining what is considered a fair return, how to account for capital invested i.e. is it at historical costs or replacement costs and whether new capital invested is allowed in the regulated asset base. The method is fraught with complexities as described by Tretheway (2001), who found the method to be expensive, complex and unresponsive for airports given the detailed regulatory process airports must undertake to raise fees. From a regulatory

perspective. A study by Niemeier (2002), concluded that rate of return regulation in Germany had resulted in a lack of quality monitoring, gold plating, inefficient structuring of charges, misallocation of capacity, high level of charges and a lack of productive efficiency.

Although Niemeier (2002), recommended the move towards price cap regulation, it too has its own challenges. Price cap regulation allows prices to be raised to a particular ceiling which represents an acceptable profit margin. This ceiling/cap is typically set at inflation. Prices are allowed to be increased to reflect inflationary increases and are augmented by deductions for efficiency gains. It is popularly termed CPI-X regulation where "X" represents efficiency gains and CPI represents inflation (i.e. the change in the average basket of goods). This form of regulation tries to simulate a competitive market by imposing limits on prices, leaving the airports to exploit efficiencies and cost reductions to enhance profitability. This method can be applied as single till, where all airport aeronautical revenues and costs (including commercial) are considered in the determination of airport charges, alternatively it can be implemented as a dual till system, where only the aeronautical revenues and costs determine charges. Although this method seemingly provides the correct efficiency incentives provided the prices are set at the correct level, it can cause underinvestment/ or delayed invested in an effort to drive up profitability. The method is less costly to airports and considerably more flexible as airports can change their prices (within the set parameters) without regulatory intervention/application within a specific regulatory period (3-5 years).

Monitoring or trigger regulation is a method largely applied in Australia and New Zealand. Airports are free to set prices as they please but are threatened with sanctions where complaints of abuse are received. According to the OCED (2010) this system has been practiced at airports with a fair amount of capacity and their geographic location makes it difficult for other airports outside these countries to compete; its effectiveness has not be tested where there is scarcity of airport capacity and limitations on the charges that can be passed down to passengers from airlines.

The last major form of regulation worth discussion is revenue sharing agreements or contract regulation. This method is typically based on a contractual arrangement where passenger growth is inversely related to the level of charges. The airlines and airport sign an agreement for a set period where the pricing mechanism is described in detail and upon

disagreement the contract is converted to cost based regulation. This method can however lead to considerable investment holdup costs and high transaction costs. (OECD 2010)

The discussion on regulation above is crucial to the economic issue of financing airport investment in Africa. The OECD (2010) notes that the more popular forms of airport regulation have a much shorter contractual life than that of the airport revenues stream derived from a particular investment. For example in the case of cost based regulation, regulators could lower prices after investment decisions have been made; if airport owners anticipate this they will not invest in infrastructure. In rate of return structures, capital investments could be gold platted. Therefore airport investment decisions are highly dependent on the credibility of regulation.

Airport developments are large and lumpy capital investments and take several years not only to construct but also to recover its costs. They are also indivisible investments and must allow for sufficient forecasted future capacity. The implication is that these developments must be planned long in advance and that in itself brings about considerable variations in estimated costs vs actual costs. Traditional financing sources for airport infrastructure are retained earnings, special facility taxes, revenue bonds, development bank financing, public private partnerships and commercial loans. Typically a combination of funding sources are utilised due to the capital intensive nature of these projects, this has prompted the use of non-governmental and non-user sources of funding which are viewed to be more sustainable.

As governments move towards privatisation or corporatized airport agencies in an aid to attract more private investment, they face the challenge that financing of airports are not easily served by financial markets due to their scale and length of construction, difficulty in securing long term contracts with airlines, the nature of their risks (traffic driven) and their cash flow profiles (Hooper, 2002). Added to this is the complexity around the regulatory frameworks that are typically attached to airports and how this risk is transferred/mitigated to facilitate the private investment required.

Enter securitisation of project finance loans. Securitisation enables an avenue of access for new investors to participate in the infrastructure funding of airports, these investors are pension funds and institutional investors whose long term liabilities match the long term

nature of infrastructure projects. Securitisation, which is a structured finance process that takes a pool of illiquid assets and transforms them into a security which is sold to investors. Because of the monopolistic nature of airports, they are able to generate stable and predictable revenues which are suitable for securitisation. Investors benefit from a long term stable investment, where they can choose the risks they are prepared to undertake through the various risk reward tranches of securitised products and are able to diversify their investment portfolios. Banks and other financial institutions are able to transfer the current infrastructure finance risks that currently sit on their balance sheets to investors and are able to unlock capital which they can redirect to further infrastructure projects.

If this is possible in emerging Sub Saharan Africa countries, the positive implications on trade, travel, and economic growth and the financial market development could be significant and is a topic that warrants study.

1.3. Motivation and Problem Statement

The aviation industry is a major generator of employment opportunities and economic activity, as they constitute the infrastructure for a wide range of economic activities, such as supporting retail and property developments, warehousing, distribution centres, hotels, car rental and tax services amongst others. African Development Bank Group, (2012) describe the economic contribution of aviation as being sevenfold to the contribution of road transportation.

InterVistas's, (2015) study on the social and economic impacts of European airports notes that although airports contribute directly to the economy, it is their role in providing accessibility that allows businesses to grow that is of more economic significance. They view airports as pivotal to national and regional economic development strategies. The African Development Bank Group, (2012) noted that in Africa, aviation contributed 7 million direct (257 000) and indirect jobs in 2010, which translated into a contribution USD 67 billion to the continents GDP via travel and tourism, they anticipate the industry will contribute approximately 900 000 direct jobs in the next 20 years.

The literature also largely supports this view; Hakfoort, Poot and Rietveld (2001), in a study of the regional economic impact of Schiphol Airport in Amsterdam, reported an indirect and

induced employment multiplier of 2 in the period 1987 to 1998. A similar study by Luke and Walters (2010) assessed the economic impact of South Africa's international airports and reported a combined direct and indirect GDP-multiplier effect of 4.21 and 10.7 indirect jobs created from one direct job. Özcan (2013) analysed the impact of passenger air traffic and local employment in Turkey and found that a 10% increase in air passenger traffic per capita would generate approximately 15,013 service-related jobs. A recent study by Profillidis and Botzoris, (2015) affirmed a degree of causal correlation between GDP and air passenger transport demand globally.

The above discussion solidifies the economic benefits associated with airports and makes a strong case for African countries to leverage off these benefits to achieve higher levels of economic growth by developing the African aviation industry. African aviation accounts for approximately 3% of global traffic, and is considered to be the third fastest growing international traffic region. Over the period 2010-2015, the global air traffic growth average was 5.8 %, Africa achieved 6.1%, closely behind the Middle East at 6.9% (African Development Bank, 2012) the trend is predicted to endure well into the future, with Boeing (2014) predicting traffic from and to Africa to grow at approximately 6% for the next 20 years, founded on an emerging middle class, robust economic growth and increased urbanisation.

Table 1.1, adopted from the Infrastructure Consortium of Africa, illustrates the potential of African aviation. It lists the most prominent African countries in terms of wealth, population, departing passenger seats and propensity to fly. Propensity to fly is measured here as the departing seats per 1,000 inhabitants, the figures indicate that the aviation market is still developing and can be considered at its infancy stage when a comparison of projected population growth, GDP and propensity to fly are analysed.

Country	***Population in 2012***	***Population Growth 2012-2025***	***GNI PPP per Capita 2012***	***Trade- Imports & Exports to the World , Rank in Group***	***Departing Seats***	***Propensity to fly***
Nigeria	168.8	2.7%	14.3	2	19,868,437	0.12
Ethiopia	91.7	2.4%	12.4	11	8,064,722	0.09

Congo, Dem Rep.	65.7	2.6%	5.6	13	1,937,127	0.03
South Africa	51.2	0.5%	218.6	1	44,753,564	0.87
Tanzania	47.8	2.9%	33.3	9	6,862,870	0.14
Kenya	43.2	2.5%	40.8	7	11,887,386	0.28
Algeria	38.5	1.5%	-	3	9,598,299	0.25
Sudan	37.2	2.3%	54.6	12	4,113,009	0.11
Uganda	36.3	3.2%	31.4	17	1,917,299	0.05
Morocco	32.5	1.1%	156.2	5	13,075,251	0.04
Ghana	25.4	1.9%	76.5	6	4,780,841	0.19
Mozambique	25.2	2.4%	40.5	15	2,855,014	0.11
Madagascar	22.3	2.8%	42.6	22	2,027,181	0.09
Cameroon	21.7	2.4%	106.9	14	2,744,682	0.13
Angola	20.8	3.0%	263.7	4	5,473,978	0.26
Cote d'Ivoire	19.8	2.2%	98.8	8	2,053,828	0.10
Niger	17.2	4.0%	37.9	23	770,191	0.04
Burkina Faso	16.5	2.8%	91.7	20	1,161,835	0.07
Mali	14.9	3.2%	78.1	21	1,168,170	0.08
Zambia	14.1	3.3%	115.1	10	2,364,270	0.17
Senegal	13.7	2.7%	139.9	16	2,501,899	0.18
Zimbabwe	13.7	2.4%	-	18	2,908,258	0.21
Chad	12.4	3.0%	106.0	19	301,541	0.02
Rwanda	11.5	2.6%	-	25	1,838,274	0.16
Guinea	11.5	2.4%	85.6	24	608,079	0.05
Togo	6.6	2.4%	138.5	26	775,990	0.12

Table 1-1 : Key Country Overview
Source: The Infrastructure Consortium of Africa's Report on Opening up Aviation Services in Africa 2012

African airport infrastructure has historically suffered major underinvestment for a number of reasons including prioritisation of funding to rail and road development, despite the significant economic gains associated with airports as compared to other transport infrastructure. In particular the African Development Bank (2012) notes that the Africa aviation industry supported 7 million jobs in 2010 both direct and indirect and contributed approximately $67 billion in GDP through travel and tourism. The Air Transport Focus Groups Aviation Benefits Report (2014) reports that African aviation contributed approximately $80.5 billion in GDP in 2012.

Recent acknowledgement of the economic spill-over effects of airports, increased aviation demand and the need for modernisation and expansion of facilities has driven a number of African countries to begin investing in their airport infrastructure; of note are the upgrades in Algeria, Egypt, Morocco, Tunisia and Libya. Much of this development is being facilitated by China, through both favourable financial terms availed by the Chinese government, and through actual airport infrastructure construction enabled by various Public Private Partnerships. (Bates 2014).

Although this investment activity is encouraging, there are still however a number of impediments; inadequate infrastructure and resources, lack of regulation and government action, high operating costs, poor safety and security track records and limited connectivity and considerably distances (African Development Bank, 2012).

Africa's economic growth will likely continue to grow into the future and with it, air travel. Given the current relatively poor state of development of Sub-Saharan African airports, the long lead times associated with airport development (typically 5 -7 years) and the high costs typically associated with airport infrastructure development, how can African countries optimally finance these investments? In particular, what role can securitisation play given that long term financing is required?

There is strong demand to build new airport infrastructure and facilities (modernisation), which can to be financed by a sufficient level of airport user charges. However, evidence suggests that airports often are not able to achieve full coverage of their aeronautical cost basis through user charges. (OECD, 2010). These shortages must be plugged with external financings. To what extent do regulations impact the overall financing requirements of, and ability to raise financing, by airport operators? What considerations must regulators concern themselves with in respect of airport financing?

There is little literature on airport financing in emerging markets, the work done that has been largely focused on the development of public private partnerships such as that detailed by Airports Council International (2012) and Juhel, (2011). Airport financing in general has been concentrated in the United States with works from (Buckley J. , 1952) (Dempsey, 2008) (Dillingham, 2014) (de Neufville & Odoni, 2003) whose airport funding is largely supported by a government grant or revenue bonds. Given the underdeveloped

state of African bond markets and the limited financial resources of African governments, these works cannot be fully generalised to an African context. On securitisation, little work exists in the African context, with the exception of Smith (2007) and Saayman and Styger, (2003); although securitization has been mentioned in literature around infrastructure financing in Africa and the bond markets (Oji C.K, 2015) (Ayotte & Gaon, 2011) (Mezui Mbeng & Hundal, 2013) (Mu, Phelps, & Stotsky, 2013) and in the emerging economies in Asia and Latin America (Giddy I. , 2000) (Scatigna & Tovar, 2007). From an airport regulation perspective, there is a wealth of literature globally (Niemeier, 2002) (Tretheway M. , 2001) (OECD, 2010) which relate the various methods and their advantages and disadvantages, applications and challenges however none that the author could find from an African context. Airport regulation must be compatible with airport competition and as such there are marked differences with how Europe has regulated its airports, where many of the hub airports compete against each other and the case of Australian airports for example whose geographic location makes it difficult for any other global hub airport to compete for traffic to the region. These studies can therefore not be generalised to a dispersed, semi-liberalised African aviation sector with limited efficient inter-country connectivity in the form of high speed rail or road networks. There is therefore a knowledge gap, in relation to issues around airport financing, regulations and securitisation of infrastructure within from an African perspective.

1.4. Purpose of the study

This study aims to describe and assess the various financing mechanisms available for airport infrastructure financing in the Sub-Saharan Africa region with particular emphasis on the role that securitisation and regulations play in financing considerations. This study will attempt to establish how regulations and alternative financing mechanisms (such as securitisation) can shape infrastructure financing strategies of Sub–Saharan African airport operators.

1.5. Objectives of the study

The objectives of the study are as follows:

- To identify the various sources of financing available and utilised for African airport infrastructure development and examine their merits and demerits in the SSA context;
- To assess the role that securitization can play in the success of private financing of airport infrastructure projects.
- To establish the set of conditions that need to exist in countries in order for financial institutions to be able to effectively undertake securitization for airport financing.
- To examine the effect of airport regulatory regimes on airport infrastructure investment.

1.6. Organisation of the Study

The organisation of this thesis is as follows: Chapter 2 is comprehensive literature review primarily focussed on the state of African aviation infrastructure, all the available aviation funding mechanisms, aviation economic regulation, current trends in infrastructure finance and finally a discussion of securitisation and its use in infrastructure finance.

Chapter three contains a thorough discussion on the methodology that was developed for gathering the data for this study. Namely, unstructured interviews were conducted with airport operators, government bodies and economic regulatory specialists as well as investment analysts and frequent users of the securitisation model. The chapter addresses the applicable research methods and procedures.

The data collected above is analysed in Chapter four along with a discussion on transcription and coding. Chapter five concludes by synthesising the analysed data, drawing closure to the research problem and objectives as well as summarising the contribution of this work and making future research recommendations.

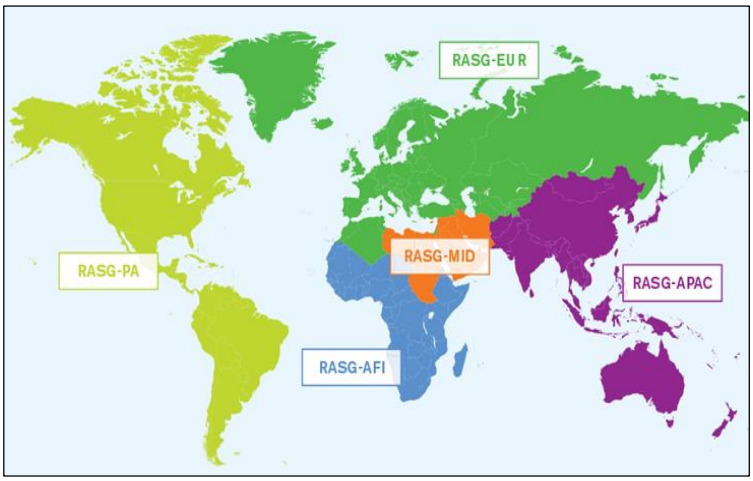
2. Theoretical and Empirical Literature Review

2.1 Introduction

This chapter contains a critical analysis of the current literature on the subject of this report. The literature reviewed includes the current status of Sub Saharan airports, airport regulation, airport financing, capital markets and securitisation.

2.2 The State of Airport Infrastructure in Sub-Saharan Africa

Deregulation of air transport, tighter security and increased competition have resulted in significant challenges for airports globally in recent times. Rapid traffic growth, infrastructure congestion, airport and airline alliances, commercialisation and privatisation of airports has led to the evolution of the airport business from mere service providers to major competitive entities (Akwei, Tsamenyi, and Sa'id, 2012). African aviation is also increasingly experiencing the above challenges. However, its reform is further hampered by years of underinvestment, mismanagement and lack of vision leading to decaying infrastructure, unsafe air transport systems and outdated equipment (Centre for Aviation, 2014). The International Civil Aviation Organisation's (2014) report of aviation safety for example, indicated that Africa had the highest accident rate and although it only contributed 2% to global air traffic, it contributed 10% of all aviation accidents.



ICAO Regional Safety

RASG	Number of Accidents	Accident rate (per million departures)	Share of traffic	Share of accidents
AFI	9	12.9	2%	10%
APAC	19	2.2	27%	21%
EUR	21	2.7	25%	23%
MID	2	1.8	3%	3%
PA	39	2.8	43%	43%
WORLD	90	2.8	100%	100%

Figure 2-1: ICAO Regional Accident Statistics 2014
Source: International Civil Aviation Organisation (2014)

The African Development Banks' (African Development Bank Group, 2013) strategy for 2013-2022 cites infrastructure and sound policy development as the key drivers to improving private sector development, entrepreneurship and boosting investment to meet Africa's vision of becoming a "prosperous continent with high-quality growth that creates more employment opportunities for all". In particular, its vision is for a more integrated continent where people, services and goods move across countries and regions, creating larger markets, expanding intra-Africa trade and increasing competitiveness. A major impediment to achieving this end is the state of Africa's transport infrastructure. The strategy notes the estimated high cost of transport adds approximately 75% to the price of African goods.

According to Foster and Briceño-Garmendia (2010), air transport in Sub Saharan Africa is expensive by international standards. This is mainly due to lower passenger volumes of traffic, high passenger and airport taxes, limited infrastructure and limited liberalization of air space (World Economic Forum, 2015).The protection of small national carriers by governments and regulators through cross subsidisation is also noted as a significant contributing factor to higher costs and a barrier to efficient service.

Carruthers, Krishnamani, & Murray, (2009) note that air freight plays a considerable role in the competitiveness of African high value, time sensitive cargo of goods in international markets. In particular, relatively inefficient and expensive air transport has had a negative impact on the competitiveness of African trade and tourism.

Consider Table 2.1 and Figures 2.2 and 2.3, adopted from the World Economic Forum's (2015) competiveness reports for travel and tourism competiveness and 2014 report on trade enablement (World Economic Forum,2014). Table 2.1 and Figure 2.2 report the travel and tourism competitive indexes, which measures the factors that contribute to the sustainable development of travel and tourism. The Index measures 14 factors including a factor on air transport infrastructure with 6 indicators including airport density, quality of airport infrastructure, number of departures, available seat kilometres and the number of operating airlines. Overall, Sub-Saharan Africa airports ranked poorly with the top 5 performers being South Africa, Seychelles, Mauritius, Namibia and Kenya, ranking 48th, 54th, 56th, 70th and 78th respectively.

Air Transport Infrastructure Score Per Country			
South Africa	3.28	Cape Verde	3.63
Seychelles	4.3	The Gambia	1.99
Mauritius	2.95	Senegal	2.03
Namibia	3.03	Cote d'Ivoire	2.04
Kenya	2.56	Ghana	2.07
Botswana	2.27	Cameroon	1.79
Tanzania	1.94	Gabon	2.03
Rwanda	1.84	Mali	1.75
Zambia	1.93	Nigeria	2.02
Swaziland	3.03	Sierra Leone	1.51
Uganda	1.81	Mauritania	1.59
Zimbabwe	1.79	Angola	1.96
Ethiopia	2.27	Guinea	1.54
Madagascar	1.87	Chad	1.42
Malawi	1.51		
Lesotho	1.59		
Mozambique	1.78		
Burundi	1.64		
Eastern and Southern Africa Average	2.3	**Central and West Africa Average**	1.93
Sub Saharan Africa Average			2.13
Global Best Performer			6.75

Table 2-1: Travel and Tourism Index Sub Saharan Africa
Source: World Economic Forum: Travel and Tourism Competitiveness Report 2015

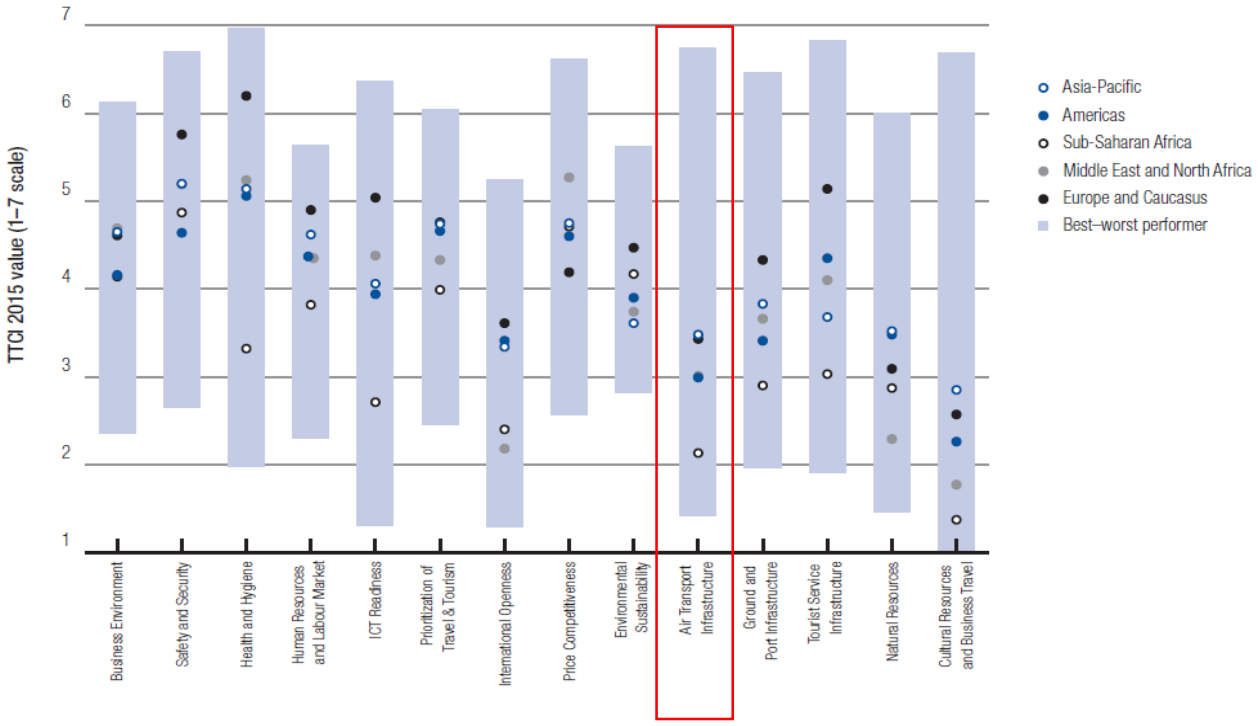


Figure 2-2: Travel and Tourism Index 2015 Regional Performance
Source: World Economic Forum: Travel and Tourism Competitiveness Report 2015

Figure 2.2 illustrates that Sub Saharan Africa ranks the lowest at availability of quality transport infrastructure to enable trade. The report notes that advanced economies lead the ranking due to their low trade costs, owing not only to lower tariffs but aided by enhanced capabilities in telecommunications, regulation infrastructure and administration (WEF 2014). The reports then gives a comprehensive ranking and only three African countries feature prominently on the international ranking namely Mauritius at 29th place, South Africa at 59th and Rwanda at 66th. The report lists transport infrastructure as one of the pillars with the widest gap amongst emerging and developing economies. They, however, note the considerable costs and time lag required to upgrade transport infrastructure.

Transport infrastructure, particularly air transport infrastructure, is critical to business development and creation and to general competitiveness and growth of nations. Having demonstrated the negative impact that the poor state of transport infrastructure has on travel and trade, it is necessary to provide a more detailed discussion on the actual airport infrastructure challenges faced by Sub Saharan African countries.

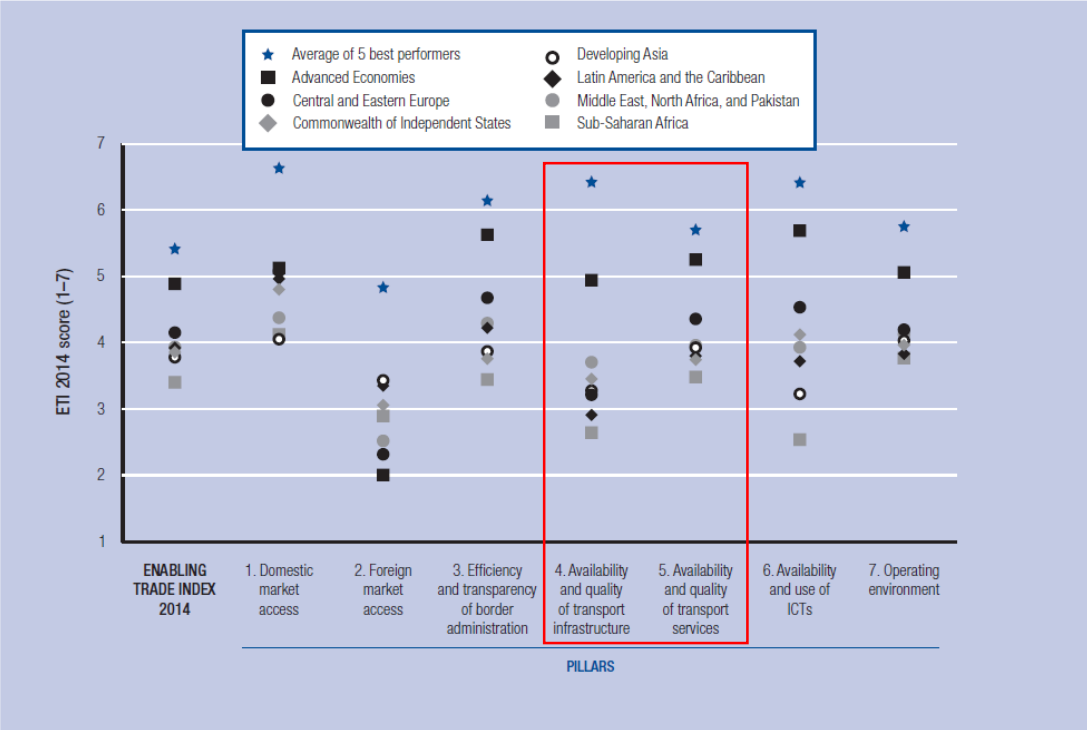


Figure 2-3: Enabling Trade Index 2014: Regional Averages

Source: World Economic Forum Report on Trade Enablement 2014

According to Fay et al (2012) Africa has limited data on the investment on infrastructure both in terms of availability and spending. They note that this has a compounding effect arguing that, “what does not get measured often does not get done.” However, a little data has been gathered on African airport infrastructure, some of which is discussed below.

The infrastructure that is referred to includes, expansion of facilities to facilitate traffic growth, wear and tear maintenance requirements and meeting changing technological requirements. Both the quality and availability of Africa’s approximately 2900 airports varies; however, established hubs such as Johannesburg, Addis Abba, Cairo and Nairobi provide acceptable quality and sufficient infrastructure to service demand albeit the requirement of a western African hub airport has not fully satisfied by Lagos and Lome (ICA 2012). According to Gwilliam (2011) only 10% of these airports are used for commercial services.

2.2.1 Air Traffic Control Infrastructure

According to Gwilliam (2011), the state of African air traffic control infrastructure is relatively sparse, he cites that only the eastern corridor of the continent is adequately provided for. This includes countries such as Nigerian, Ghana, South Africa, Tanzania, Zimbabwe and Egypt. The rest of the continent is riddled with issues, radar technology is not fully utilised, controllers are not certified in some countries, and some struggle with aged technology. Although the provision of air traffic control infrastructure is problematic and provides safety issues, this view is shared by the Africa Infrastructure Knowledge Program's (AIKP) Handbook on Infrastructure Statistics (2011) which noted the need for the modification of surveillance and air traffic control facilities, noting Sub-Saharan Africa's poor air safety record when compared to international standards. Gwilliam (2011), posit that this situation can be rectified at relatively low costs. Modern aircraft control technology allows for the use satellite navigation systems (automatic dependent surveillance-broadcast (ADS-B)) which are far less costly than the more traditional radar technology. He also notes however, that plans to update and fund air traffic control systems have been static.

2.2.2 Airport Capacity

Airport capacity refers to the ability to accommodate air traffic. It is typically determined by the facilities with the lowest capacity, i.e. terminal, aircraft parking or runway throughput.

Gwilliam (2011) notes that African airports typically have sufficient runway capacity and relays that African airports should rather focus on maximising capacity. This view is echoed by the Africa Infrastructure Knowledge Program's (AIKP) Handbook on Infrastructure Statistics (2011) which concludes that much of Africa's airport infrastructure is adequate to serve current demands and that any potential bottlenecks can be accommodated with better scheduling. The author contends however that better scheduling must be matched with flexibility in pricing regimes for this to work as it indicated by in the work of Forsyth (2007). In contrast, a study by Carruthers, Rajan and Murray (2009) compared other countries of similar per capita income with Sub-Saharan Africa and concluded that African runways were underendowed.

Sub-Saharan Africa						*Rest of the World*	
Airport runway density	All	Resource-rich	Low Income (not fragile)	Low income (fragile)	Middle - Income	Low-Income	Middle-Income
By land Area per 1000km^2	0.02	0.02	0.02	0.02	0.05	0.12	0.24
By population, per million people	0.67	0.57	0.46	0.68	2.29	2.20	2.83
By GDP, per US$1 billion	0.81	0.62	1.35	2.56	0.49	3.81	1.85

Table 2-2 : Airport Runways in Sub Saharan Africa and the Rest of the World
Source Carruthers, Rajan and Murray (2009)

Gwilliam (2011) notes that the challenge is that African airports are of a low cost design, the configuration of the airfield is typically limited by not having parallel taxiways which allows airports shorten the use of the runway to make allowance for addition landings and departures thereby maximising the available runway capacity.

Inadequate terminal capacity is viewed as being more prevalent with lower-quality infrastructure being more common among airports with traffic volumes below 1 million annual passengers (Gwilliam, 2011). .Ajakaiye and Mthuli (2010), note that African air transport is well below world standards. The limited data makes it difficult to quantity the shortage, however a study by Carruthers, Rajan and Murray (2009) reported that Sub-Saharan Africa would need to invest over USD 5 billion between 2006 and 2015 in airport infrastructure maintenance, upgrades and expansions. A more a recent article by East African Business Week (2015) makes note of as many as 40 airport infrastructure projects on the continent being reported at a cost of USD 39,545 billion in 2014, signifying a considerable requirement for airport infrastructure.

2.3 The financing gap, financing sources, opportunities and challenges of infrastructure funding in Sub-Saharan Africa

Having noted Africa's infrastructure challenges, it is also important to discuss how this infrastructure development can be financed and where the possible financing gaps lie. Bhattacharya, Romani and Stern (2012) give an estimate of the amount of global infrastructure investment that will be required by 2020 in 2008 US Dollars. They list the following sources of funding: Government budgets, private sector Multilateral Development

Bank financing (MDB), other developing countries financing and concessional Official Development Assistance (ODA) Financing.

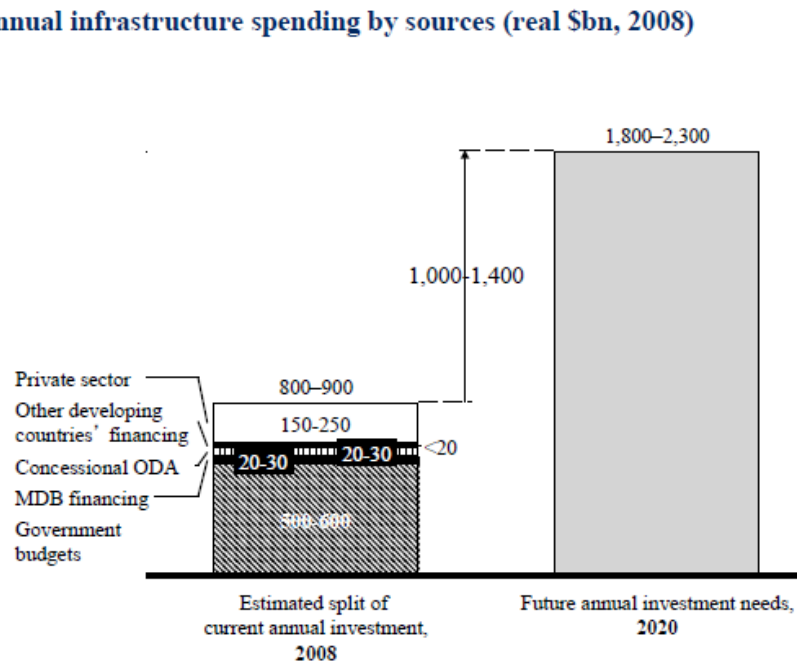


Figure 2-4 : Global Infrastructure Spending by Sources
Source: Bhattacharya, Romani and Stern (2012)

Bhattacharya, Romani and Stern (2012) further give an example of infrastructure spending sources in African for the year 2006. As can be seen, a significant amount of funding of transportation is via government's budgets, this trend is particularly important to note in the discussion of airport financing in Africa.

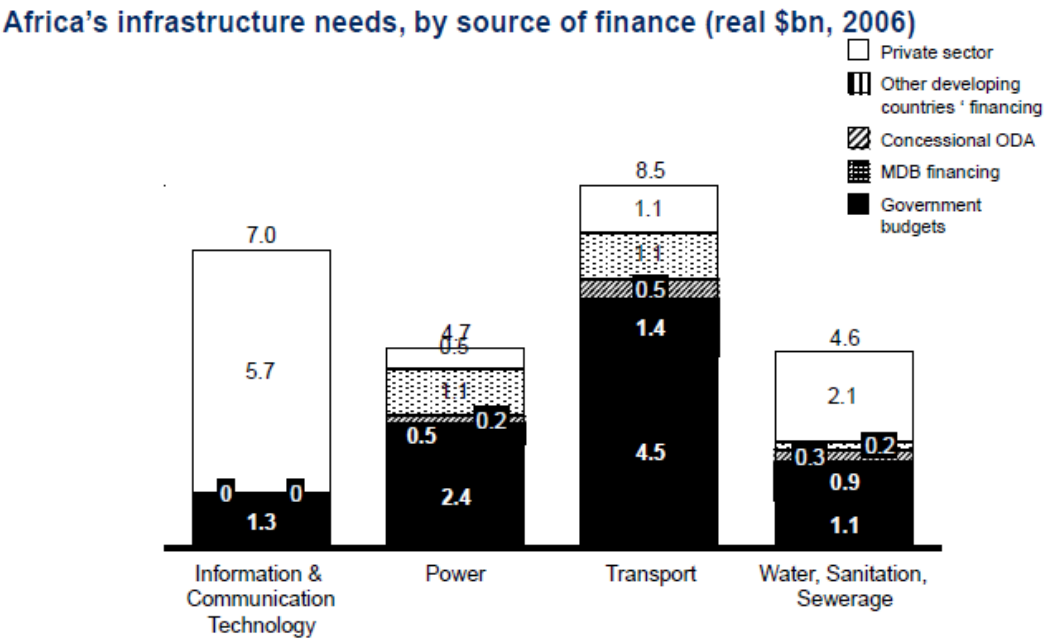


Figure 2-5: Africa Infrastructure Needs, by Sources of Finance
Source: Bhattacharya, Romani and Stern (2012)

An earlier study by Gwilliam (2011) approximated that about three half of transportation capital investment spending was financed via the public sector with the other half being financed via official development assistance from the Organisation of economic cooperation and development (OECD) countries; PPI, and non-OECD countries, predominately India, the Arab States, and China.

2.4 Funding and Financing Options Available for Airport Infrastructure in Sub-Saharan Africa

Doganis (1992) characterises the airport business as being one in which airport authorities, owners or operators are obligated invest in large sums of capital on immovable assets with no alternative uses, to satisfy a demand for which they have little control over. He notes that because the planning lead time required for an airport development is typically five to ten years and that upon completion these developments must seek to increase effective capacity by more than what is required in the short term (a minimum of 10 years) ; airports tend to plan their infrastructure developments fifteen to twenty years in advance.

Airport development requires high capital investment costs (typically in the hundreds of million US Dollars for new airport terminals) and therefore airport finance becomes a key tool for ensuring the longevity of an airport. The issue of airport funding has become more

critical in recent times. Over the last 10 years the aviation industry experienced a financial crisis and significant economic pressures that resulted in higher fuel costs, this led to noticeable airline restructuring in the United States and a decline in the number of commercial flights (Dillingham 2014). Reliance on aviation activity related funding, such as user taxes and grants can no longer be regarded as a sustainable method of generating the funding required for infrastructure development. Prior to assessing the other, more sustainable methods of airport development financing, it is necessary to discuss the various methods available along with their merits and demerits.

De Neufville and Odoni (2003) and Dempsey (2008) provide an overview of the various financing and funding mechanisms available for airports, as follows:

2.4.1 Government grants

This funding is provided by national governments, whose interests are in the development of the project rather than financial profit. Infrastructure projects are generally regarded as being of economic and social importance, and therefore receive such funding. Government grants are the most common type of airport financing in many countries and comprise of non-returnable funds.

These are typically the instruments used in the financing of Sub Saharan African airport projects (typically smaller airports). However, due to the major infrastructure gaps that many African countries face and by virtue of these funds being limited, these funds are allocated by order of priority (Tretheway and Markhvida, 2013). The current state of African airports provides intuitive hints that airport projects have historically lost out to more pressing needs. This trend is unlikely to change in the future with the great infrastructure gaps African countries face.

2.4.2 Special-purpose user taxes

Special purpose taxes are imposed by national, regional, or local governments to finance local airport projects. Again, it would seem that this method would suffer from competing critical infrastructure requirements as noted by Tretheway & Markhvida (2013).

In 2012 the Zambian airports authority, National Airports Corporation introduced infrastructure development levy of USD 5 for domestic departing passengers and USD 10

for international passengers. Similarity the Zimbabwean Civil Aviation Authority introduced the Aviation Infrastructure Development Fund levy back in 2012 to raise money to rehabilitate infrastructure. Gabon also followed suit in 2013 announcing its Airport Development Levy specifically directed at raising capital for the pay for the construction of a new airport Andeme. These are however the only examples where this levy has been issued on the continent.

2.4.3 Low-cost/ concessional loans or grants from international or national development banks

2.4.3.1 Multilateral Development Banks and Development Funds/Programmes

A few international, national and regional development banks fund critical infrastructure projects through low cost loans or non-returnable funds. This funding is typically intended largely for airports in developing countries. Examples of such institutions are summarised in the table below

- World Bank Groups' International Bank for Reconstruction and Development,
- African Development Bank (AfDB),
- European Investment Bank (EIB) ,
- Islamic Development Bank (IBD)
- Development Bank of South Africa
- East African Development Bank (EADB) to mention but a few
- Agence Française de Développement (AFD)
- Programme for South Africa (IIPSA) capitalised at EUR 100 million and established in 2014 by the South African Government in partnership with the European Union. The fund will provide grant funding and long-term financing from participating European and South African development finance institutions for bankable infrastructure projects in South Africa and the region.
- Programme for Infrastructure Development in Africa (PIDA), requires good regional infrastructure to be established via a partnership between the African Union Commission, the NEPAD Planning and Coordinating Agency, United Nations Economic Commission for Africa and the African Development Bank. The

programme seeks to develop a vision, strategies, policies, and a programme for priority African infrastructure development.

- Africa50 Infrastructure Fund established in 2013 by PIDA, the fund aims to provide project finance expertise as well as project development support for commercially sustainable African infrastructure it's capitalized at USD 87 million funded from the African Development Bank and African countries.

- The Emerging Africa Infrastructure Fund (EAIF) established by the Private Infrastructure Development Group (PIDG) it provides funding at commercial terms of between USD 10 million - USD 50 million, with terms of 15-20 years for private sector businesses.

- Global Infrastructure Facility, established by the World Bank is concerned with the structuring and preparation of infrastructure PPPs in developing and emerging markets, the fund is currently capitalised at USD 100 million.

- Global Infrastructure Fund invests in infrastructure projects across the globe including airports.

2.4.3.2 Bilateral Partners

Concession loans are currently a significant and popular financing mechanism for African airports, primarily originating from the Export Import Bank of China (China Exim Bank). Some examples are the Ugandan Airport Entebbe, which was financed by a concession loan of USD 200 million by the Bank, similarly Mauritius's Sir Seewoosagur Ramgoolam International Airport was for USD 260 million. (Airport-Technology, 2013) (Anguyo, 2015)

Export credits are financial instruments that are utilised in support of local businesses doing business abroad by mitigating political risks and /or commercial risks.

Foster (2008) presents the cost of capital associated with various sources of infrastructure finance in Africa, He notes for example, that due to the economic distortions of levying taxes, the cost of raising USD 1 of capital amounts to USD 1.2 , i.e. a 20% cost of capital.

Specifically from an airport perspective, the funding of Khartoum New International Airport Phase I in Sudan was secured with an EXIM Bank of China 20-year loan at an interest rate of 2.5 %, with five year grace period, also in the case of Zambia, the Bank extended a 20 year loan and 7 years grace period at a 5 % interest rate, making these agreements a particularly attractive low cost source of financing.

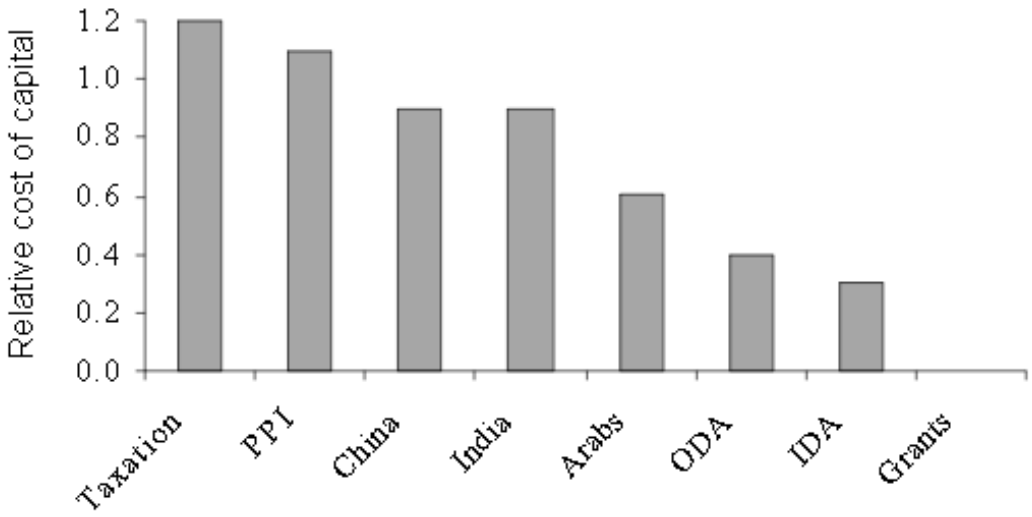


Figure 2-6 : Cost of Capital

Source: Foster 2008

The table below summarises some of the major transactions on the continent in recent times.

Country	*Project*	*Finance Source*	*Amount*	*Approval Year*
Egypt	Sharm El-Sheikh Airport Development	African Development Bank MIC Grant IsDB Government of Egypt	USD 140 Million USD 1.9 Million USD 457.56 Million USD 71.87 Million	2015
Egypt	Cairo Airport Development Project-TB2	International Bank For Reconstruction And Development National Investment Bank of Egypt Egyptian Government	USD 280 Million *division unknown	2010
Mozambique	Maputo International Airport: Design of the Rehabilitation Works of the Airside Facilities	EU-AITF TA Grant (1.6 M 2011) Agence Française de Développement (AFD), European Investment Bank (EIB) et EU-Africa	EUR 1.5 Million USD 44 Million USD 25 Million	2011 2013 2013
Kenya	Jomo Kenyatta International Airport, (Emergency work)	EU-AITF TA Grant	EUR 5Million	2009
Kenya	Emergency reconstruction of Kenya's Jomo Kenyatta International Airport	International Bank For Reconstruction And Development	USD 203 Million	2014
Kenya	Jomo Kenyatta International Airport (New Terminal)	African Development Bank	USD 612 million	2014
Zambia	Kenneth Kaunda International Airport Expansion	EXIM Bank of China Zambian Government	USD 108 Million USD 25 Million	2014
Tanzania	Kilimanjaro Airport	Netherlands's Facility for Infrastructure Development/ORIO programme, Tanzanian Government KADCO airport revenues	USD 17Million USD 25 Million	2011
Tanzania	Julius Nyerere International Airport Expansion (phase 2		EUR 130 million.	

Tanzania	Julius Nyerere International Airport Expansion (phase 2)	Tanzanian government ORET fund Dutch Ministry of Foreign Affairs			
DRC:	Goma Airport (Safety Improvement Project)	International Bank For Reconstruction And Development	USD 52.00 million		
Morocco	Mohammed V International Airport	African Development Bank	EUR 240 Million		
Kenya	Transport Sector Support Project - Additional Financing	International Bank For Reconstruction And Development	USD 203.50 Million		
Ghana	Ghana Airports Company Limited's Capital Expenditure Program	African Development Bank other development financial institutions commercial banks	USD 120-million Remaining USD 380 Million	2015	
Sudan	Khartoum New International Airport Phase II	China Exim Bank	USD 680 million	2014	15 years, a five-year grace period and a less than five percent down payment.
Sudan	Khartoum New International Airport Phase I	China Exim Bank	USD 700 million	2014	20-year loan, five year grace period, 2.5% annual interest.
Mozambique	Maputo's international airport	China Exim Bank	USD 115 million,		
Nigeria	International hub airport terminals at Abuja, Kano, Lagos and Port-Harcourt.	China Exim Bank Nigerian government 21-year build operate and transfer (B-O-T) agreement with the Chinese government	USD 500 million (of USD2 billion approved) USD 100 million	2012	seven-year moratorium and interest payments totalling $114million
Zimbabwe	Victoria Falls international airport expansion	China Exim Bank	USD 150 Million	2013	
Ethiopia	Addis Ababa's Bole International Airport Expansion.	China Exim Bank	USD 250 Million	2013	
Djibouti	New Hassan Gouled Aptidon International Airport	China Exim Bank	USD 599 million	2013	

2.4.4 Retained Earnings

Financing of airport projects through retained earnings is generally only applicable to a few of the busiest and economically strong airports in the world, which are able to generate sufficient economic surplus to fund medium and small capital projects without a requirement for external financing. These earnings come from airport revenues secured through aeronautical charges and non-aeronautical revenues from commercial, property or other interests.

For example, in July of 2012 the Kenyan cabinet approved the increase of passenger fees from USD 20 to USD 40 to help fund a number of Kenyan aviation projects. (Thome, 2012).

2.4.5 Loans from commercial banks

A few large commercial banks provide short-term and medium-term (3–10-year) loans for airport capital projects. These loans provide flexibility and readily available funds to qualifying airport operators. These loans are however unsuitable for large scale airport investment projects, reason being that they will only cover a fraction of the costs required at high interest costs. A commercial loan syndicate would be more suited to embarking on projects of this scale as the funds could be diversified amongst the group.

2.4.6 General-obligation bonds

National, regional, or local governments may issue general-obligation bonds as a means for financing airport capital projects. These bonds are essentially guaranteed by the government. In the event that airport revenues fall short of meeting their obligations to bondholders, taxpayers will meet the shortfall. The interest paid by these bonds is generally tax-exempt. The high security of these bonds along with the tax advantage typically means that these bonds can be sold at very low interest rates. In a number of countries there are restrictions or limitations on the amount that can be secured through general obligation bonds, which considerably limit their use.

From an African context, this financing of airport projects would compete with the considerable demand for funding for other critical infrastructure such as roads and energy.

Rwanda recently undertook a bond issue of USD 1 billion to fund a power plant and to build an airport in 2013. In Zambia, a USD 1.25 billion Eurobond for infrastructure was issued in 2014, it had a coupon rate of 8.97 per cent, and an average life of eleven years. Kenya issued a USD 224 million, 12 year infrastructure tap bond, to fund the expansion of Jomo Kenyatta International Airport and other infrastructure projects in 2014. Its first tranche of USD169 million was oversubscribed with an average yield of 11.3 %. The final example is that of Tanzania which was planning to issue a Eurobond to fund infrastructure projects in 2014.

2.4.7 Revenue bonds

Airports can issue revenue bonds provided they can service debt entirely through their own revenues. Revenue bonds do not offer the security of general obligation bonds discussed above and will therefore attract higher interest rates. The interest rate will depend on the judged or perceived security of the bonds. Of particular importance is the level of coverage (net revenue/debt), higher coverage will lead to lower interest rates. Some airports, elect or are forced to secure revenue bonds against long-term airline use agreements under which airline carriers commit to cover any shortfall in debt service. Although popular in the United States and a few European countries, legislation in many countries does not permit the issuance of airport revenue bonds. It is however noted that revenue bonds constitute a new and somewhat unexplored way to finance airport capital infrastructure improvement.

Empresa Nacional de Aeroportos e Segurança Aérea (ASA), Cape Verde's airport management company issued bonds back in 2012 to fund its airport expansion programme, as did Airports Company South Africa, South Africa's largest airport operator back in 2009. Issuing R1.1 billion in bonds. These were released in the following tranches:

ZAR 556 million	7 year fixed rate note at 2.8%
ZAR 500million	5 year inflation link tap at 5.5%
ZAR 50 million	4 year fixed rate tap at 2%

2.4.8 Private financing against specified rights to airport revenues (Public Private Partnerships)

Private financing has grown in popularity both in developed and developing nations. Airport operators typically sign a Build, Operate and Transfer agreement with private investors

who undertake to finance all or a portion of the development against specified rights to its future revenues. This may relate to a particular facility such as a new terminal building or it could relate to the airport as a whole. Several public private partnerships have been used in Africa, some of which are listed in Table 2.2. Foster, (2010) however he notes that the viability of future airport concessions in Africa are limited due to the fact that small airports lacks the scale required to operate profitably.

Airport / location	Main PPP Partner	Agreement Type	
Murtala Muhammed International Airport (Lagos)	Bi-Country Aviation Services Limited	Operate and Transfer (BOT) agreement	2006
Cameroon- Airports in Douala,Garoua,Yaounde,Ngaoundere,Maroua,Bamenda and Berioua	Aéroports du Cameroun	15 year operation Concession (extended by 5 years)	1994
Libreville	Egis		
Congo: Pointe-Noire, Brazzaville, Ollombo airports	Egis	Construction of new terminals and 25 year management concession	2011
Cote d'Ivoire: Abijan Airport	AERIA / Egis a special purpose vehicle owned by Societe d'Exploitation et de Gestion Aeroportuaires and the Marseilles Chamber of Commerce and Industy	15 year concession for operation and development. Contract was extended for a further 20 years in 2010	1996
Madagascar: Antananarivo Airport	ADPM	15 year operational concession	1991
Mauritius : Sir Seewoosagur Ramgoolam International Airport	British Airport Authority plc	5 year management contract with an option to extend	1999
Tunisia Enfidhna	Turkish Group TAV	40 year BOT agreement	2006
Senegal Dakar: Aéroport International de Blaise Diagne,	Fraport subsidiary Daport S.A.	25 year BOOT	2006
Tanzania: Kilimanjaro International Airpor	Kilimanjaro Airports Development Company (KADCO)	25 year concession	1998

Madagascar: Ivato International in Tananarive and Fascène Internantional in Nosy Bé	Consortuim :Aéroports de Paris Management (ADPM),Bouygues Bâtiment International,Colas Madagascar &Meridiam	TBD	2015

Table 2-3: Airport PPP's in Africa
Source: * *Multiple sources acknowledged in the reference list*

The various options available for public-private partnering and are summarised in the table below as per (Juhel, 2011)

	Complete Government Control →			***Complete Private Sector Control***
Ownership	*Government*	*Government*	*Government*	*Private Sector*
Investment	*Government*	*Government*	*Private Sector*	*Private Sector*
Management/ Operations	*Government*	*Private Sector*	*Private Sector*	*Private Sector*
PPP Options		• Service Concession • Contracting out • Management Contracts • Multiple concessions	• Build-Operate Transfer Scheme including Build-Own-Operate-Transfer, Build-Transfer-Operate etc. • Long term Leases Lease-Develop-Operate • Master Concession	• Wraparound Additions • Build-Own –Operate • Strategic Buyout for example management –employee-Buyout • Capital Markets

Table 2-4 : Options for Private Participation in Public Partnership
Source: (Juhel, 2011)

Financing of major airport projects will typically involve a combination of the funding options discussed above. The overriding local conditions will largely determine the financing mix. Credit ratings determine, to a large extent, the ability of airport operators to obtain favourable terms for the capital financing. Credit ratings are determined by specialist companies such as Fitch ICBA, Moody's Investors Services and Standard and Poor's.

Although the rating methodology differs from company to company there are common factors such as, market strength, which relates to characteristics such as hub status (origin-destination or hub) and geographic location, and regional economic characteristics such as disposable income and demographics.

Air traffic characteristics, which relates to the market share of airlines at the airport, the strength and commitment of these airlines and air traffic forecasts as well as the utilisation and need for infrastructure are also common factors. Additional factors include management and operations, airline and concession agreements and financing characteristics which speak to the level of existing debt and the extent to which it is secured by cash reserves, airline agreement and revenue.

Securities have had great success in the raising of funds for airport developments; the success of these issues has, however, been on the assurance that there will be sufficient net revenues to pay interest and amortization on the bonds as those payments become due (Buckley 1952).

North American airport operators have been regular and major participants in the bond market according to Airports Council International, (2012). In particular they have used the following municipal bonds to raise airport project financing:

- General obligation bonds supported by the tax base of the issuing entity
- General airport revenue bonds secured by the revenues of the airport and other specified revenues.
- Bonds backed either by Passenger Facility Charges revenues or by combined Passenger Facility Revenues and rental and fee generated airport revenues
- Special facility bonds supported by venues from a facility constructed with proceeds of those bonds.

According to Mua, Phelpsb and Stotskyaa (2013) Sub-Saharan African bond markets are underdeveloped with market capitalization, as a percentage of GDP, with both government securities and corporate bonds typically much lower than those of other developing, emerging, and advanced economies. They conclude by noting growth in African bond

markets is picking up as African countries attempt to close the development and infrastructure gaps with advanced economies.

Andrianaivo & Yartey, (2010) note that the African public debt markets are the most underdeveloped of the capital markets. Ojah & Kodongo,(2015) note that these markets predominately serve as short-term debt funds for government deficits and that few African countries have sufficient muscle to fund critical infrastructure.

Mezui Mbeng & Hundal, (2013) draw on the lessons learnt from other emerging economies and propose some interventions, the first being that African countries need to provide attractive conditions of investors by creating economic and political stability with falling interest rates and inflation, this will allow for investment grade credit ratings. The second is the encouragement of capital markets via long dated issuances by parastatals and government and suitable regulation. They propose the reform of pension funds to stimulate development of the investor base. And finally they note the restructuring of parastatals and infrastructure sectors and the provision of a suitable regulatory environment with suitable risk mitigation instruments.

Bond markets present significant opportunities for African airport operators and governments to raise the necessary capital for infrastructure projects. Oji (2015) notes however that the use of bonds for project financing is insufficiently explored. The author suggests possible reasons for this as the absence of vibrant secondary markets on which bonds can be traded; the underdeveloped state of non-bank financial institutions, and weak institutional investor base.

These problems present challenges for the use of bond financing for airport projects in Sub-Saharan Africa.

2.5 Current trends in infrastructure Finance

According to Davis (2008), infrastructure as an asset class has attracted greater investor participation in recent years due to its considerable high returns. He remarks that from 1994 to 2006, infrastructure produced a nominal return of 9.05 % per annum globally compared to bonds which returned 6% annually and equities at 9.10 %. They also note

that infrastructure displays a low correlation to other asset classes and therefore presents great diversification benefits. It is particularity attractive to institutional investors whose long dated liabilities are matched by the long durations of infrastructure as well as the stable cash flows, inelastic demand and high barriers of entry that are characteristic of infrastructure assets.

A recent study on infrastructure financing trends (Croce & Gatti, 2014) revealed that the overall trend is shift the infrastructure investment effort towards the public sector this is brought about by a number of realities such as; inefficient infrastructure management, budget constraints and poor public spending.

A study by Ehlers (2014) notes that there is ample global finance available for infrastructure projects however, relates that there is an infrastructural bottleneck that is restricting the harnessing of this ample funding. The main obstacle listed is the lack of investible projects. The study goes on to suggest that the greater involvement of private investors and the design of sustainable financial structures would mitigate against this obstacle and increase the overall success and efficiency of such projects.

Redirecting infrastructure investment towards the private sector presents its own challenges however. Croce & Gatti (2014) note that to do this, the financial markets and financial intermediaries and policy makers need to contribute towards the creation of financial contracts designed to attract infrastructure investors. These infrastructure investors are largely acknowledged to be insurance companies, pension funds and sovereign wealth funds whom have long term liabilities and a low risk appetite that is supported by infrastructure projects. Inderst & Stewart (2014) acknowledge academia, international organisations and industry research as all arguing that institutional investors could become a significant potential source of infrastructure capital. They also summarise the current challenges facing institutional investors in emerging markets and developing economies as being:

Infrastructure investments are characterised as being natural monopolies or quasi monopolist in nature, have high barriers of entry and are typically regulated assets with stable and predictable cash flows. The most popular method for private capital participation in infrastructure has been via project finance. Typically, the finance that has been raised,

has been in the form of syndicated loans. For equity investors however, this method has the disadvantage of being illiquid and requiring specific competencies in assessing risk and rewards of these complex projects, with the more liquid equity alternatives being mutual funds, and investments in exchange traded funds. On the debt side, project bonds have been to proven to be more attractive to institutional investors due to their liquidity however present a number of challenges to project financiers. These challenges largely relate to the inflexible nature of bond financing in that , the finance is not well suited to accommodating bullet repayments which typically are more suited to the long cost recovery of infrastructure projects but signal refinancing risks to bond investors. Bond investors' appetite for construction risk is also quite limited, making brownfield projects more suitable to this form of finance. (Croce & Gatti 2014)

Ehlers, (2014) further notes that simplifying infrastructure financing by establishing the most suitable method is far too simplistic a view and rather that because of the risks that characterise the different phases of a project, various sources are suitable in different project phases. They mention that equity sponsors in the form of governments or construction companies, debt financing in the form of syndicated loans and in some instances direct investments from pension funds and infrastructure funds are suitable sources in the planning phases of a project, with the operational phase of the project being most ideal for refinancing as many of the project risks are significantly reduced. The table below summarises these views.

PHASES OF INFRASTRUCTURE PROJECTS AND THEIR CHARACTERISTICS

PHASE	Economic and Contractual issues	Financial Characteristics	Potential Investors
PLANNING	Contracts are written in the planning phase and are critical to the success of projects. The planning phase can take a long time, 10-30 months and the involved parties may attempt to renegotiate contract commitments. Ratings from rating agencies are important to secure interest from debt investors, as are credit	The procuring authority needs to find equity investors. The equity sponsor needs to secure commitments by debt investors (mostly banks). Given the long planning period , early commitments by debt investors comes at a high cost. Leverage can be high (10:1 or more)	Equity sponors need a high level of expertise. They are often construction companies or goverments. In rare cases, infrastructure funds (Australia, Asia) or direct investments by pension funds (Canada) may be involved. Debt investors are mostly

	insurance or government guarantees.		banks through (syndicated) loans. Bond financing is rare,as projects carry high risks in the initial phases
CONSTRUCTION	Monitoring incentives are essential. Private involvement (as opposed to purely public investment) can ensure this.	This is a high-risk phase. Unexpected events are likely due to the complexity of infrastructure projects. Default rates are relatively high. Initial commitments by debt-holders must extend far beyond this stage, as a project does not generate cash flows in this phase	Refinancing or additional financing is very difficult and costly at this stage. Equity sponsors may have an incentive to provide additional finance if risks materialise.
OPERATIONAL	Ownership and volatility of cash flows due to demand risks are key. Models such as flexible-term present value contracts and availability-based fees reduce volatility , risk and financing costs, but have adverse incentive effects.	Positive cash flows. The risk of default diminishes considerably.	Refinancing of debt (bank loans) from the initial phase. Bonds are a natural choice , but they are not very common. Refinancing with bank loans or government funds is common

Table 2-5: Phases of infrastructure projects and their characteristics
Source : Ehlers, (2014)

According to Croce & Gatti (2014), new financial techniques have been developed in recent times due to two main drivers; the retreat of project finance by banks due to higher liquidity and capital requirements under Basel III rules (developed by the Basel Committee on banking supervision are a set of international reforms to strengthen risk management supervisor and regulation of banks) and greater interest in infrastructure investment by institutional investors. These new techniques are securitisation, co-investment and debt funds.

The use of debt funds is explained as institutional investors' funding provision to an infrastructure fund (with a pool of infrastructure investments) managed by an asset manager whom typically has a specific asset allocation strategy.

Co-investment refers to the partnering of the lead originator of a bank syndicate with an institutional investor, whereby the lead originator retains a percentage of the loans in the syndicate and sells it to the institutional investors.

Finally, the securitisation model refers to the purchase of pooled infrastructure loans via a special purpose vehicle. This vehicle pays for the loans by issuing securities backed by these investments. The securitisation model presents some interesting possibilities in airport financing and is thus discussed in more detail in the section that follows.

2.6 Role of Securitization in the Success of Private Financing of Airport Developments

Securitisation has been in use since the 1970's, it originated in the United States but has become a commonly utilised financial methodology by corporates and banks to raise funding globally. Securitisation in its most basic form, refers to a tool that allows the selling of assets in the form of receivables; assets, for example loans or other financial claims, are converted into securities hence the term "securitisation" (Greenbaum, Thakor, & Boot, 2015). Cardone-Riportella et al. (2010) define securitisation as a financial technique that allows for the repackaging of a set of fairly homogenous illiquid assets (loans, receivables and other financial assets) to be transformed into a liquid tradable instrument with certain flows of income payments. The transformation takes effect through a bankruptcy-remote special purpose vehicle that is legally separate from the entity that has ownership rights and the instrument itself. Andrews et al (as cited by Smith 2007) describes the SPV as a credit enhanced, asset holding structure that is bankruptcy/solvency remote from the original owner of the assets. The basic process is that an SPV is created, it purchases pools of assets that become collateral for bond investors. These investors purchase asset backed securities (ABS) issued by the same SPV. The SPV then utilises the cash flows generated by these assets to make repayments of interest and principle to investors.

Traditionally, these instruments were utilised for mortgages but growth in this sector has extended to credit card receivables, franchise debt, car loans, manufactured housing loans, commercial real estate debt, student loans, various types of leases and even whole business securitisation (Riddiough, 1997). Giddy (2000) notes that virtually any income producing assets can be securitised provided that there is some diversification of credit risk and a performance record and notes that it is their amenability to statistical and credit analysis that determines their suitability. The assets that can be securitised do however share some common characteristics, namely stable cash flows, assets should be small enough individually to allow for diversification, high quality receivables (lower quality receivables will require greater credit enhancement) homogeneity of assets (enable easier analysis of historic data using in the rating exercise) and finally the assets must be separable form the originator.

The typical structure of the securitisation model is graphically represented and in the figure below and is explained in detail in the paragraphs that follow according to Smith (2007).

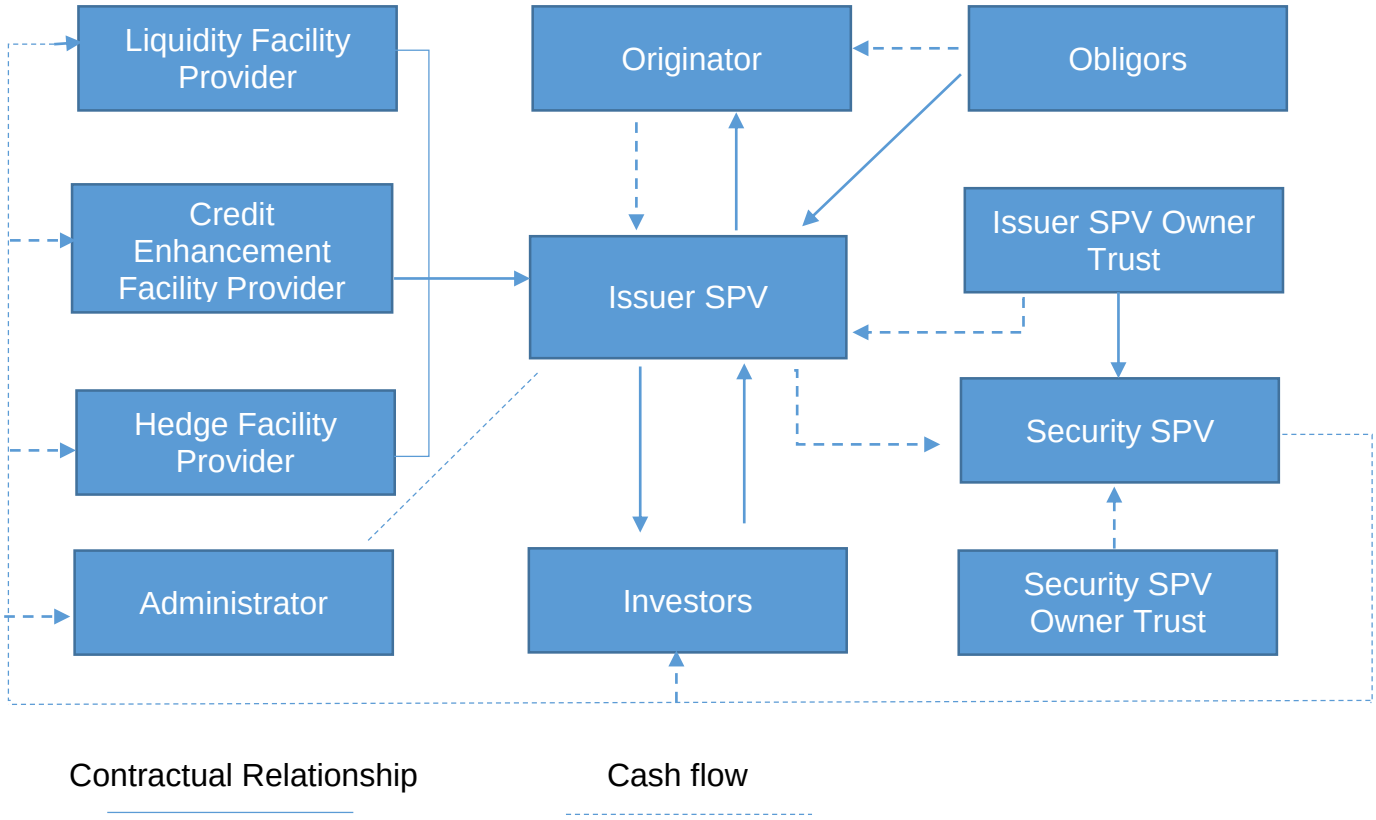


Figure 2-7: Securitisation Structure Generic
Source: Smith (2007)

The Originator (or sponsor), is the seller of the assets that will be securitised. This party (the obligator) extends financing to the obligor/borrower who is the owner of the assets and is making payments on the underlying assets that will be securitised. These cash flows are typically, stable and predictable.

The Issuer SPV which is set up purely to acquire and hold the assets to be securitised is known as the issuer or purchaser and is owned by the SPV Company or Trust. The SPV funds the purchase of assets by issuing securities to investors that are backed by the underlying assets of the obligor. The issuer SPV receives payments from the Obligor via the Originator who is also the servicer (debt collector) of the Issuer SPV. The SPV then makes regular repayments of interest and principal to the investors. The SPV will outsource its day to day operations to an administrator and will have credit enhancement, liquidity and hedging agreements with various counterparties.

The liquidly facility is required to provide funds for timely payment to investors in the event of a temporary shortfall in the revenue extracted by the assets. This facility is typically provided by a bank and any draw-down becomes a senior obligation to the SPV. Credit enhancement can be provided to support the rating of the assets being securitised, the credit enhancement is typically in the form of a financial guarantee. Lastly any currency or interest rate exposure can be hedged by the hedge facility provider.

The Security SPV which is owned by the Security SPV Owner Trust, guarantees the issuer SPV's obligations to its investors and senior creditors on the basis of priority payments. The Owner Security Trust therefore acts as surety to the Security SPV, this surety is provided for via a pledge of ordinary shares of the Issuer SPV in support of the Security SPV.

Key to the securitisation structure is the rating activity, rating agencies provide investors with their opinion of the creditworthiness of the securities to be issued in their various classes/tranches. The rating given will indicate whether the structure will be able to manage its obligations timeously, the diversification provided by the pooling of assets is therefore an important factor as the more diverse the assets are, the less likely default will be. Since the assets of the securitisation are held in a bankruptcy remote SPV, the primary

focus of the rating activity will be on the cash flows (Giddy 2000). The rating agency will also take on the monitoring activity of the structure until maturity.

Although utilised extensively by banking institutions on outstanding mortgages and loans, securitisation can in fact take on many various forms, and can also be utilised by non-financial institutions. The various structures are summarised in the table below.

Structure	Explanation	Payments
Amortising /Pass Through	Assets sold to investors. Investors therefore have true ownership of the assets. Cash flows from underlying assets are therefore passed through directly to the investors	Track the repayment of the underlying asset and are fully amortising
Pay Through	Debt collateralised by assets is issued by the SPV i.e. the debt is backed by the assets (ABS) The SPV reconfigures cash flows into separate tranches with varying risk–return characteristics.	Payments are distributed according to priority (waterfall)
Sequential Pay	The SPV reconfigures cash flows into separate multiple tranches with varying maturities or seniority.	Sequential pay, subordinate tranches do not receive payment until senior tranches have been repaid in full
Non sequential	The SPV reconfigures cash flows are separated in different tranches on a pro-rata basis.	Pro rata waterfall basis on specific structure (pure pro-rata, modified sequential prorate and modified pro-rata)
Bullet	Cash flows received are kept in a reserve account	Payment is issued to investors upon maturity
Revolving	Cash flows are structured to pay in two separate periods, the revolving period and an accumulation/controlled amortisation period. In the first period, investors receive interest payments and the remaining cash flows are utilised to purchase more assets	Payment of the principal is either secured in a reserve account until maturity (accumulation) or is issued to invested in an amortising structure (controlled amortisation)
Fast Pay	Structured is to repay certain trances quickly ,credit enhancement is built up through over collateralisation	Excess spread is distributed along with principal to investors

Table 2-6: Various Securitisation Structures
Source: Smith 2007

The following paragraphs will detail the rationale behind securitization, its merits and demerits and will close with some remarks on the plausibility of use in infrastructure financing, particularly that of airports.

2.6.1 Issuer Rationale

There are various cited reasons for financial institutions or corporations to make use of securitisation; these will be presented in the following paragraphs:

2.6.1.1 Reduction of a bankruptcy costs.

When a firm is in financial distress, it can file for bankruptcy, the firm's assets which will be considered the bankruptcy estate, and can be attached as collateral by creditors. However, because securitisation involves the transfer of assets into a special purpose vehicle (via a true sale transaction), these assets cannot be considered as part of the bankruptcy estate and therefore establishes bankruptcy remoteness, i.e. the rights of the investors on the assets held by the SPV are not affected (Ayotte & Gaon, 2011).

2.6.1.2 Funding

Financial institutions and corporates can benefit from securitisation as a funding mechanism. From a corporates perspective, securitization allows the corporate to finance their assets off the balance sheet. They would do this if they felt that investors didn't appeal to the management of the company or that the market had poor information about the company or due to other imperfections in the capital markets. Because securitisation separates the originator of the assets from the assets themselves, the corporate would benefit from the funding and investors who only wish to take the cash flow risk would benefit from the investment. Securitisation also allows smaller unrated corporates (who are not large enough to issue debt) access to the capital markets (Giddy 2000).

Banking institutions often use securitisation as a way of reducing the regulatory capital requirements. Banks must hold certain risk based capital according to Basel II and III. Securitisation allows the banks to reduce these capital requirements by removing them off their balance sheets, and thus freeing up capital to either generate additional assets or to allocate to other business lines (Smith 2000).

Corporates are also able to reduce their corporate credit risk by undertaking securitisation and therefore are able to secure cheaper funding as the credit risk premium will be lowered by the removal of assets via securitisation.

Securitisation is also an alternative form of funding, adding diversification to the sources of funding. It does this by bringing new investors, such as pension funds and other institutional investors without interrupting existing relationships with lenders.

Higher funding can also be achieved via securitisation. Bank lending is typically based on a proportion of an entities balance sheet, securitisation however is based on the expected future cash flows and thus higher funding can be arranged.

2.6.1.3 Liability Management

Securitisation allows the issuer to structure the debt issue such that the cash flows emanating from the assets to be funded are matched with the payments due. It transfers the funding mismatch with investors who are able to bear it.

2.6.1.4 Lower costs of financing

Securitisation also provides a relatively efficient and low cost of funding. This is due the credit rating of the firm being separated from the credit rating of the SPV. It allows entities to achieve a higher rating for their SPV, however there may be some operational consequences to achieving a higher credit rating. The removal of certain assets from the firm balance sheet can also aid the issuing firm in improving certain financial ratio's but one of the most critical benefits is the flexibility that securitisation lends to the issuer; the issuer for example has the flexibility to redirect its cash flows from the underlying assets. (Schwarcz, 1994) Giddy 2002).

2.6.2 Investor Benefits

Asset backed securities offer investors with a direct claim over credit enhanced and diversified assets. Cash flows are predictable and carry relatively high credit ratings. For this reason, they are often preferred by institutional investors and pension funds. They also provide investors with a number of investment options through various risk–reward tranches and allow for a superior return when compared to corporate or sovereign debt instrument of similar rating. Investors are also sheltered from event risks such as takeovers and restructuring as the assets are unaffected by these events (Giddy 2000)

2.6.3 Securitising Infrastructure Revenues

According to Davis (2008) government sponsored asset securitisation presents a financing platform that exposes government operations to the commercial marketplace. It creates a vehicle for divestment of public sector functions and allows governments to release the obligation of efficiently managing public assets and funding infrastructure investment. They remark that it facilitates privatisation and also implies a careful choice of how ownership and management control over the assets should be retained.

A collateralised debt obligation (CDO) is a securitisation structure that repackages credit risk associated with an underlying pool of bonds or loans. Project finance CDO's are purely CDO's backed by project finance loans, lease collateral or bonds and present project lenders, with vehicles in which they can refinance their project finance portfolios. Securitisation of project loans or bonds can apply equally to a single project loan as well as to a diversified pool of such loans. The project finance CDOs can either be cash or synthetic transactions. Where synthetic CDO's refer to the sale of credit protection on a reference portfolio.

At this point it is necessary to discuss how these project finance loans come about. Commercial banks are the primary lenders of project finance transactions, this is largely due to their ability to adequately access the complexities associated with project financing. Sorge, (2011) relates that the complexities of financing infrastructure projects are as follows: they require large indivisible investments in single-use assets. Secondly the construction and operation phases of the projects are characterised by different risks, post construction the risks are largely operational and demand driven. During construction however there are environmental, political and technological risks at play, these risks tend to be significant. The last is that for the project to be successful, the numerous parties involved need to jointly perform accordingly from the construction contractors, to the off-taker to the management of the infrastructure. Commercial banks have the resources and capabilities to access the technical risks, credit risks, political risks etc. and to provide the required monitoring for the project.

Typically the project sponsor (an agency or PPP) will prepare an invite for bidders for the financing of a particular project. Various commercial banks will then form syndicates in response to the bid. These syndicates will decide whether to extend financing to the project SPV based on the projected cash flows from off-taker contracts. There are usually two portions of finance provided, construction financing, typically with a floating rate and then long term financing of the project. According to Forrester, Kravitt, & Rosenberg, (1994), the syndicate will then try to sell down a portion of its unwritten commitment through a negotiated transaction with another bank or another larger bank syndicate. Once the construction is completed, the risk associated with the construction of the project will be eliminated and the project sponsors will generally take advantage of this and refinance the project with long term fixed rate financing from the bond markets. Attracting institutional investors and pension funds with long time liabilities that match the useful lives of the infrastructure projects.

Securitisation of project finance loans thus provides another avenue for refinancing of project finance loans. This can be done either by the holders of the loans or by institutional investors. A holder/s are able to pool project finance loans by selling them to an SPV, which will purchase the loans by issuing securities. Institutional investors can make a loan to refinance project loans, in this scenario the project sponsors will set up the SPV structure which will reimburse the institutional investors.

One of the first cash project finance CDOs dates back to 1998, it was called the Project Funding Corp. I (PFC I) which was a portfolio of 40 projects predominately from the United States sponsored by Credit Suisse First Boston. In 2002 Project Funding Corp II was issued backed on an international portfolio of project loans made by Citibank. 2007 saw the issue of Lusitano Project Finance I Ltd which was based on 20 pan-European infrastructure assets. Recent synthetic CDOs (credit protection on referenced loans utilising credit default swaps) transactions include that of Essential Public Infrastructure Capital Plc (EPIC) closed in 2004 and comprised of 25 public infrastructure loans from the UK's Public Private Partnership programme and its Private Finance Initiative. Similar transactions were concluded by Boadilla Project Finance which was built on a portfolio of 51 pan-European credit exposures to infrastructure, PPP/project finance loans and utilities in 2008, EPIC II in 2006 and Stichting Profile which was concluded in 2005. The first project bond securitisation was completed in 2006, namely WISE 2006-1 which was based on 31

project bonds wrapped by monoline insurance and rated AAA. In 2008, EPIC III was completed comprising 19 United Kingdom public infrastructure and utilities bonds. (Forrester , 2010).

2.6.4 Challenges to Securitising Project Finance Loans

According to Forrester, Kravitt, & Rosenberg, (1994), the main problems faced with securitising project finance loans can be summarised as the size, construction risks, the estimation of risk-of-loss and rating criteria for infrastructure projects.

2.6.4.1 Size

Reaching the appropriate size for project finance CDO's becomes a challenge as typically not a single bank will have an adequate project finance loan portfolio to securitise, a possible solution to this is to package loans from various banks, however this would add to the complexity of the structure (Buscaino, Corielli, Caselli, & Gatti, 2012).

2.6.4.2 Construction Risk

The rating of the project loan securitisation will unlikely obtain an investment grade rating due to the various risks in the construction phase of a project. Mezui Mbeng & Hundal, (2013) also note that in all markets, pension funds are reluctant to assume construction risk. The securitisation process should therefore be embarked about after completion of construction.

2.6.4.3 Credit assessments and Complexity

With more conventional securitisation, credit assessment is based on large pools of assets backed by historical data and analysis of the performance of the assets, which together decrease the likelihood of default. Buscaino, Corielli, Caselli, & Gatti,(2012) note that the most difficult task is assessing whether the contractual structure of a particular project finance loan is designed well enough to generate the revenues required to service the debt. This view is shared by (Grushkin & Bartfeld, 2013) who note that project loans are bespoke by nature, and that project loans may involve different jurisdictions, suppliers, off-takers, multiple currencies adding additional legal analysis and complexity to the structure.

However, because project finance is structured such that the different parties to the structure manage the risks they are able to best manage; operational risk is either taken by a contractual off-taker or a non-contractual off-taker, such as users. In the case of non-contractual off-takers the risk assessment will be based on user studies, demographics etc. It is also noted by Grushkin & Bartfeld, (2013) that although the default rate of project finance loans may be less certain, they do provide a higher likelihood of recovery than conventional corporate loans.

2.6.4.4 Costs of structuring

(Grushkin & Bartfeld, 2013) note that due to the complex nature of project finance CDO's, they will typically take longer to structure and cost more than would be the case with an ordinary CDO transactions.

2.6.5 Applications and Challenges in Emerging Markets

Davis (2008) notes that governments have traditionally played an indirect role as being the guarantor of asset backed securitisation of public agencies. In the United States, it was only in the early 1900's that municipalities and the government started to use securitisation to a greater extent. By the 1980's developing economies began utilising securitisation of future flows, initially in the form of hard currency that was sold the American or European investors. The originators were typically very credit worthy and entered the securitisation market to secure lower costs of funding by being able to secure higher credit ratings than those of the sovereign. Over time, the local securitisation markets began to develop and support the local bond markets until securitisation issuances in local currency were popular.

Asset securitisation in emerging markets has largely been dominated by Latin American and Asian countries. These countries have begun to explore the use of securitisation for infrastructure for example; in 2004 Hong Kong securitised toll revenues from state-owned tunnels and bridges, India successfully raised funding for infrastructure by securitising future diesel, liquefied petroleum gas and petroleum, the Indian Railways Finance Corporation also raised funding by securitising its lease receivables. Korea Highway

Corporate also raised funding via securitisation, a government centre in Thailand was funded through an asset securitisation transaction. (Davis 2008).

Asset securitisation for financing of infrastructure is therefore growing in emerging markets and presents a viable option for African governments to consider. It does however require complicated structured finance technology which consumes a considerable initial investment of both financial and managerial resources. (Davis H. A., 2008).

The challenges associated with asset securitisation in emerging markets have not been addressed with great depth in literature, a paper by Scatigna & Tovar, (2007) gives an overview of securitisation in Latin America and note the following challenges:

2.6.5.1 The scale and size of markets

They note that the scale and size of securitised assets must be sufficiently large to be economically viable. This is a challenge in the Latin American market as some asset classes have not developed sufficiently to justify being pooled in a securitisation transaction. This is likely to be a challenge from an African context with generally underdeveloped capital markets.

2.6.5.2 Legal Framework

To enable securitisation, the governing legal framework must support property rights and the transfer of securitised assets. If the legislative framework does not support this it will either limit the assets classes that can be securitised or hinder the securitisation process. For example, in Mexico there was a ban on the debt raising activities of trusts, securitisation was therefore not possible until the legal issues were amended. The authors also note the in Brazil the mortgage securitisation is still underdeveloped due to unclear foreclosure processes and issues related to the transfer of debt.

2.6.5.3 Information Constraints

Securitisation requires significant amount of data from which to base future cash flow assumptions. According to the authors, first time originators are often unprepared for this requirement leading to additional cost and time introduced into the securitisation process.

They also note that many assets have short economic histories or inappropriate databases further complicating the process. They finally note the applicability or use of the data, they refer to delinquency (failure to pay) in emerging markets may be treated differently from delinquency in developed markets. This is the case where government receivables tend to be paid late but are eventually paid up in full, this does not constitute delinquency in an emerging market context but will in developed markets.

2.6.5.4 Investor Base

The investor base in Latin American countries is still relatively small. Part of the constraints could be explained by limitations put on pension funds, they note the example of Mexico, which until recently pension funds were only allowed to invest in government paper.

2.6.5.5 Risk Considerations

The authors remark that securitisation lends itself to additional risks such as the evaluation of credit risk, they remark that the availability of good data and the volatile macroeconomic conditions add to the complexity of credit evaluation

To date, no literature could be found on African countries who have used the securitisation instrument to fund infrastructure. However securitisation in Africa is also said to be growing slowly, a study by Saayman, and Styger (2003) on securitisation in South Africa reveals some of the potential reasons for this slow growth and reaffirms some of the challenges that have been experienced by Latin American countries discussed above. These are discussed briefly in the paragraphs that follow.

2.6.6 South African Challenges to Securitisation

2.6.6.1 Regulations

The study cites regulations on securitisation as an obstacle to growth, these regulations relate to the accounting treatment of SPV’s, complex taxation structures and the regulations set by the South African Reserve Bank.

2.6.6.2 Small Illiquid Markets

Investor concerns over liquidity in these transactions resulting from the limited number of issues and the small number of transactions was also cited as an inhibitor to growth along with the concern of tradability.

2.6.6.3 Investor Knowledge

Securitisation is a relatively new financing mechanism, many investors are reluctant to invest without fully understanding the risk, and this was further worsened by the recent global financial crisis.

Whilst there is little data on securitisation in Sub Saharan Africa, one can speculate that many of the problems experienced in South Africa are common in the rest of SSA.

2.6.7 Applications to Airport Financing

Whilst there are potentially numerous challenges to the securitisation of infrastructure revenues in Sub Saharan Africa, it does present access to greater capital for infrastructure projects including airport infrastructure. In particular (Grushkin & Bartfeld, 2013) cites some reasons for optimism with regards to project finance CLO's as being that emerging market loans are finding their way into CLO portfolios, that non-bank investors have a strong appetite for project loans and do not face the same regulatory hurdles that are confronting the banking industry.

Mezui Mbeng & Hundal, (2013) provide a summary of some of the issues identified above in a few African countries , these have been summarised in the table below:

Country	Legal System	True Sale Securitisation	Investment Requirements of local pension /insurance funds	Prohibition on offshore ownership/investment in shares
Kenya	Commercial law is largely governed by English law. Courts are experienced in adjudication commercial dispute but are not experience as it related to complex financial transactions	Possible save for restrictions on insolvent sellers	Regulatory requirements are applicable with regards to the investments that are permitted	No general restrictions so long as it does not relate to tax evasion
Botswana	Well-developed Roman Dutch law, commercial transactions can be governed in English law. The courts do not have much experience with complex financial transactions	Possible save for restrictions on insolvent sellers	Regulatory requirements are applicable with regards to the investments that are permitted	No general restrictions so long as it does not relate to tax evasion
Ghana	Security Industries Law and Regulations and company law are well developed and clearly identifiable	True sale securitisation is possible	Regulatory requirements regarding what investments can be made are allowed as well as restrictions on investments	No general restrictions so long as it does not relate to tax evasion
South Africa	English, Roman-Dutch and African Customary law is practised. Country is experience in settling complex financial transaction/product disputes	True sale securitisation is possible and governed by Securitisation regulations	No minimum rating requirements for local pension and insurance funds	No general restrictions so long as it does not relate to tax evasion
Namibia	English and Roman-Dutch law, legal system is well developed and mature but lacks rules for sophisticated financial products	Dependant on circumstances of sale, where the sale is undertaken in the ordinary course of business would be enforceable. The insolvency act does however make certain sales void.	No specific restrictions related to investment rating , but there are limitation and restrictions on asset classes that may be held	An investment made by a local resident in an offshore company , which holds an investment in Namibia is prohibited
Nigeria	Governed by principals of common law. Relatively well developed as it relates to commercial contracts	True sale securitisation is possible but may be overturned if the transaction occurs 3 months prior to the winding up of a company	Pension funds are restricted to the rating they can invest in. There are also limitations and restrictions to the type of investments that can be made	No restrictions applicable

Tanzania	Highly developed, reliable and sophisticated legal system especially as it pertains to commercial contracts. Country is experience in settling complex financial transaction/product disputes		Regulatory requirements must be followed that dictate what investments can be made	Foreign investors are prohibited from investing in government securities They can invest in a local listed company, however may not acquire more than 1% individually or 5% in the case of institutional investors. Issuers are not permitted to issue more than 60% of their issue to foreign investors
Uganda	Commercial transactions are governed by Ugandan law however foreign investors commonly use English /New York law for commercial arbitration	Possible	No requirements by law	No restrictions applicable
Zambia	Well-developed legal system, specialist commercial court available for adjudication	Substance over form approach adopted,, if transaction bears the characteristics of a sale ,it will hold	No statutory restriction on investment grade, internal fund policies do however have restrictions	No restrictions

Table 2-7: County Characteristics of Securitisation Enabling Factors
Source: Mezui Mbeng & Hundal, (201

2.6.8 Airport Privatisation

Traditionally, transport infrastructure has been operated and owned by public monopolies or were closely supervised by central governments. According to Estache (2001), this began to change in the mid 1900's as the public become more and more dissatisfied by the quality of service provided by these public monopolies and started demanding competition and greater efficiency. At the same time, governments were facing large fiscal deficits and had to cut public expenditures. This forced governments to turn to the private sector to finance the improvements required to modernize transportation services and infrastructure. This saving amounted to approximately 5% of GDP in developing countries.

According to Helm (2009) the move towards privatisation was also spurred on by neglect on infrastructure maintenance; although also prevalent in private entities (short term financial performance is improved by under spending on maintenance needs) Helm argues that the case is endemic in public sector and that maintenance and capital investment are often sacrificed for current consumption needs and therefore privatisation became the answer to the perceived inefficiencies and underinvestment in the public sector. Estache (2001) notes that strong mutually committed partnerships between the public sector and private sector in transportation, can result in significant sources of funding for investments especially where the demand for such infrastructure is robust as has been the case in Latin America and East Asia in the 1990's.The Asian experience is detailed in a paper by Hooper (2002) who lists the motives for privatising airports as being the reduction of government expenditures, efficiency seeking and decentralizing decision making.

Airport privatisation only began to take form in the late 1900's. By 1980, only a few privatised airports existed and were generally either specialised or small in size. The privatisation trend has however risen steadily. According to Meersman and van de Voorde (1987) this global trend towards privatisation is linked to the severe shortage of government funds and the realisation by governments that airports are able to finance themselves as well as the metamorphosis of airports into commercial businesses that require a greater deal of freedom in order to compete effectively. The Argentinians privatised their airports to facilitate significant investments for their airport modernisation

projects to service their long term needs (Lipovich, 2008) as was the case in Asia (Hooper, 2002).

Costas-Centivany (1999) mentions that in the case of Spanish airports, privatisation also sought to remove investment and pricing decisions from the short term views of politicians and bureaucrats. Oum, Yan, & Yu, (2008) note that although there are several motivations to privatisation of airports, the typical rationale is for efficiency and easier access to private sector financing .Several Australian airports have been privatised, Mexico, South Africa, Argentina and New Zealand have also privatized some of their airports. Many European airports have moved towards privatisation with several United Kingdom airports being transferred to the British Airways, and with large privately owned stakes in Schiphol, Vienna, Rome, and Copenhagen's major international airports (Oum, Zhang and Zhang, 2003). The above privatisation includes best-practice state ownership (corporatized, state owned enterprise, SOEs) as is the case in South Africa (Juan and Andrew 2015).

Airport privatisation in Africa has also begun to take shape, albeit at a much slower pace than the developed world. The figure below was adopted from ACI and summaries some key developments in the privatisation space for African Countries.

ACI African Airport "Privatisation" Scene

Airport	**Code**	**Country**	**Date**	**Term**	**Investment**	**Type**	**% Equity**	**Operator**
Algers	ALG	Algeria	2006	8	Management			AdP
Brazzaville	BZV	Congo	2010	25	Concession	BOT	85%	Egis
Pointe noire	PNR	Congo	2010	25	Concession		85%	Egis
Ollombo		Congo	2010	25	Concession		85%	Egis
Cairo	CAI	Egypt			Management			Fraport
Al alamin	DBB	Egypt	1999	50	Concession	BOT		International Airport Company – KATO
Marsa Alam	RMF	Egypt	2001	40	Concession	BOT		Al-Kharafi Group (Kuwait)
Libreville	LBV	Gabon	1988	30	Concession			Egis
Conakry	CKY	Guinea	2011	Indefinite	Freehold		29%	AdP
Abidjan	ABJ	Ivory Coast	1996	Note	Concession			Egis
Mauritius	MRU	Mauritius	2008	15	Concession	Terminal BOT	10%	AdP
Lagos	LOS	Nigeria	2003		Concession	Terminal BOT		
Bloemfontein	BFN	South Africa	1998	Indefinite	Freehold		4.21%	ACSA

Cape Town	CPT	South Africa	1998	Indefinite	Freehold		4.21%	ACSA
Johannesburg	JNB	South Africa	1998	Indefinite	Freehold		4.21%	ACSA
King Shaka	DUR	South Africa	1998	Indefinite	Freehold		4.21%	ACSA
East London	ELS	South Africa	1998	Indefinite	Freehold		4.21%	ACSA
George	GRJ	South Africa	1998	Indefinite	Freehold		4.21%	ACSA
Kimberley	KIM	South Africa	1998	Indefinite	Freehold		4.21%	ACSA
Kruger Mpumalanga	MQP	South Africa	2002	Indefinite	Freehold		100.00%	Primkop Airport Management (Pty) Ltd
Port Elizabeth	PLZ	South Africa	1998	Indefinite	Freehold		4.21%	ACSA
Rand	CPV	South Africa	20000	Indefinite	Freehold		50%	Rand Concession Operators Association
Upington	UTN	South Africa	1998	Indefinite	Freehold		4.21%	ACSA
Enfidha	NBE	Tunisia	2007	38	Concession	BOT		TAV
Monastir	MIR	Tunisia	2007	38	Concession			TAV

Table 2-8: Africa Airport Privatisation
Source: ACI PPP for Airport Management and Development (2012)

2.6.9 Airport Ownership Models

Private participation in airports can take on many different shapes and forms and reflect the various preferences on private participation in airport financing development and operations. Estache (2001) mentions four forms of private participation in the transportation sector, full privatisation, Greenfield projects (typically in the form of build operate and transfer contracts), operation and maintenance contracts and concession contracts (these are long term leases which assume the operation maintenance, service and investment burden).

Estache (2001) notes that divestures and concession contracts have dominated the industrialised world particularly in Europe, Canada, Australia and the United Kingdom. Developing or transition economies have not made as much headway, however there has been a number of successful concession contracts in East Asia. The proposed reasons for the slow progress in these regions is noted as being; the ability of passengers to pay for

transport infrastructure services is modest ,combined with high and prevalent risks , namely commercial risk (demand driven) regulatory risk and political risk.

The various forms airport governance structures are now discussed in the paragraphs below along with their implications on financing.

2.6.9.1 Government owned/operated

Typically government owned and operated airports have limited interest in commercial activities, their primary goal is to focus on the aviation business. This governance model is used in Sweden, Spain, Singapore the United States and Finland (Gillen 2011). According to Gillen (2011) they tend to have non-commercial objectives such as that of protecting the national airline carriers, they also tend to have a less long term focus on infrastructure investment. Financing of investments are based on political decision making. With limited funding, airports tend to experience underinvestment as they compete with other government objectives. The government operation may be by municipal government, state government, a national government department or a semi-independent government agency (Tretheway 2001).

2.6.9.2 Government owned, privately operated (Concessions)

Generally in the form of Build, Operate and Transfer (BOT) agreements, these structures typically involves the cash flows emanating from the airport development as the means to service the debt incurred and provide a return on equity (Hooper, 2002).

This model is generally found in the United States and Chile; and generally airport benefits from government grants and the ability to issue tax deductible bonds are extended to the operators. The United States tends to differ with most countries in its operation of airport infrastructure, in that airlines typically lease entire terminals or concourses. From an infrastructure investment and financing perspective, this model of operation often gives significant rights, and even veto-powers, on capital programs Gillen (2011).

2.6.9.3 Independent not for profit

This type of structure, termed airport authorities, has to date only been used in Canadian airports. These airports typically operate on a 60 year lease basis. According to Gillen, (2011) this form of governance has been criticised for overly extravagant infrastructure investment which has resulted in higher passenger charges which are not subject to regulation. These passenger facility charges are utilised as a source of finance for airport investments. Gillen & Niemeier, (2007) Gillen (2007) state that the reasoning behind this model was that at the time of privatisation, there was limited experience with the fully privatised model; however, the Canadians were also critical of the US model which allows airlines to be bond guarantors for investment and therefore gives airlines some power over airports, resulting in distorted airline competition. The model however excludes the use of equity capital for financing airport investments. Investments are sourced from retained earnings (all profits must be reinvested in this not-for profit model) and through the use of an airport improvement fee at select airports.

2.6.9.4 Fully Privatised for Profit

Typically, most airports around the world were owned by government historically, the case of a fully privatised operation is where there is a sale transfer of the airport to private hand via an IPO or trade sale (where consortia bid for the purchase an airport) these airport governance structures tend to have a more commercial focus than the models discussed above, as is the case in the United Kingdom and Australia. The operation of several airports in the United Kingdom by the British Airports Authority although successful, has bred its own peculiar problems; in 2009, the company was found to have lowered their service standards and had underinvested in infrastructure due to lack of competition. By contrast, Australian airports have not been tinged by the underinvestment problem and have tended to have a more long term focus (Gillen 2011).

2.6.9.5 Partially Privatised for profit

Typically, this comprises operation by government corporations, while they still report to the Department of Transport, their corporate structure allows them to conduct their own financial planning and may issue bonds independently (Tretheway 2001). Whether the privately held portion is in the minority or majority, airports of this governance structure

tend to have a more commercial and entrepreneurial focus, examples where these models are in operation are South Africa, Argentina, Mexico and Chile. Gillen (2011) notes that this model has the potential of raising additional private capital to obtain a majority stake, he also notes however that there may be very little difference in whether investors obtain a majority or minority stake, this is due to regulatory regimes that are applicable to airports whether the government has a majority interest or not. He notes that many factors will depend on airport management transparency and objectives and government regulations and oversight.

The mere privatisation of airports has not necessarily resolved infrastructure financing problems for airports. A Study by Hooper (2002) details the case of Asian infrastructure privatisation and lists the following constraints that have provided a challenge to implementing private financing; lack of favourable legal and regulatory environments, lack of conductive private sector polices, the requirement for greater transparency and competition for public support and cost efficiencies, gaps in privatisation expectations between government and private sector, government entities' lack of risk management capabilities and local financial markets' limited capabilities.

Helm (2009) points out that in the United Kingdom, the motives for privatization were more complex and included curbing union power and implementing a share-owning democracy. He notes however that the ambitious privatisation in the transport sector led to "learning by privatising" and "learning by regulation" process. He admits that despite the considerable progress (reduction of operating costs), the British are still not the envy of Europe in terms of infrastructure, performance is mixed and investment challenges still remain.

Interestingly the study by Oum, Yan & Yu, (2008) on the operational profitability and productive efficiency of airports dispel some of the common misconceptions with regards to what privatisation can achieve. In a sample of 116 airports, they found that when they compared airports with mixed ownership i.e. majority government stakes, against full government ownership; the latter ownership structure proved to be more efficient. They found that partial (majority) government ownership and government ownership by various government entities (national, regional and local) were the least efficient ownership models. They did however find that airports with a majority private stake operated with

greater profitability than those with either a minority stake or none at all. More striking was that fully government owned and operated airports (single government) faired similarly to PPP arrangements where the private sector either has the fully operational rights or where the private sector has a majority interest.

2.7 Regulation

Increased private sector involvement in public infrastructure did not however negate government's involvement in these enterprises. In particular, their establishment created monopolies or oligopolies. The role of governments was therefore to ensure competition in these sectors as well as public safety and quality of service.

Privatised airports were no different, and were considered to be local monopolies having a captive market, and thus numerous airports around the world are under economic regulation in order to prevent them from abusing market power (Oum, Zhang and Zhang, 2004). The major challenge, however, was how to implement and design effective economic regulation of airports, as was the case in Latin America (Serebrisky, 2011).This is further echoed by Estache (2001) who cites that although the transition of transport enterprises from public to private hands was relatively smooth, it is rather the regulatory transition that have proved challenging.

2.7.1 Economic Regulation

The objective of economic regulation is to balance fair pricing to consumers with reasonable returns to operators (Estache, 2001). According the OECD's report on Airport Regulation Investment and Development (OECD 2010), aviation regulation should be designed to "increase economic welfare in a fair and democratic process".

Generally, operating and capital costs are incurred by airports for providing aviation services, airports then recover these costs and make a return on capital through user charges or tariffs (Oum, Zhang and Zhang 2004). Regulation of tariffs typically concerns the activities or services that comprise of a natural monopoly, therefore these are typically for the use of terminal buildings, aircraft parking, airport runways and technical services to aircraft such as navigational services, maintenance and fuelling.

Serebrisky (2011) mention two main methodologies for airport regulation utilised internationally. The first approach is that of independent regulator as the main decision maker, the second approach relies heavily on consultation between the airport users (airlines) and the airport; this system relies of competition law which is used by regulators to intervene where anti-competitive practices come to light. A third approach is a hybrid of the two methodologies discussed above where the regulator has the responsibility of regulation and administering competition law. Regulators can be agencies, the director general, national government departments (typically the Department of Transport), courts or tribunals, local authorities and self-regulators (Gillen 2011).

The main issue of contention with economic regulation has been the issues around how tariffs are set and whether or not regulation is required at larger airports (Gillen and Niemeier 2007). The argument being that large aircraft movements and passenger volumes will attract increased non-aeronautical commercial potential and therefore affect airport pricing incentives (Gillen, 2007). Regulation is also expensive to undertake and it has been suggested by Hooper (2002) that it only works best in countries with existing competition policies and expert knowledge on airlines; they refer to light handed regulation as a means of lowering costs for those countries not best suited to implement traditional regulatory regimes.

This discussion leads to a need to understand the various regulatory regimes and, in particular, to understand their effect on the investment and funding decisions on airport infrastructure.

2.7.2 Types of Airport Regulation

There are various methods of airport economic regulation and they have been applied at various airports, these methods will be discussed in the following paragraphs and include cost based regulation, revenue sharing agreements, hybrid price caps, pure price caps and monitoring.

The implementation of these broad regulatory regimes can be applied via a single till system or a dual till system. In a single till system, operational costs are recovered from

both the aeronautical related activities and non-aeronautical activities. Where aeronautical activities relates to the principal functions of the airport and non-aeronautical activities refer to commercial activities. In this system, the revenue stream from commercial activities allows for lower levels of aeronautical tariffs (Serebrisky, 2011). Dual till systems operate on the premise that aeronautical tariffs are determined based on aeronautical operations alone and commercial activities and concessions may be either unregulated or under a separate price-cap regulation (Oum, Zhang and Zhang, 2004).

There are investment implications to whether a single till or dual till system is utilised as discussed by Gillen (2007), who notes that capacity constrained airports using the single till, pose a pricing efficiency problem. As non-aeronautical revenues increase, aeronautical changes must be lowered to maintain the price cap. Fees therefore become more affordable when the airport is congested. Gillen (2007) further argues that airports would compare the incremental revenue with the incremental cost of expansion, and where there is no incentive to profit from commercial activities of the airport (single till), would rather delay investments in aviation infrastructure.

2.7.2.1 Rate of Return and Cost Based Regulation:

In cost-based regulation, charges are set to recover all airport costs inclusive of depreciation and a rate of return on capital. The system originated in the United States and looks at the airports historic costs and reimburses the airport accordingly. The regulatory asset base (RAB) is the basis of the rate of return calculation and is based on the historical depreciated capital costs of existing assets. The revenue requirement is then based on the rate base, the forecasted operating expenditure and this revenue requirement along with the forecast demand is used to set prices, i.e. its sets the permissible return on a defined asset base and can be single till or dual till (Gillen, 2010). Typically, a benchmark is placed on the profitability of regulated activities to the average of specific airports or businesses. According to Gillen (2007), the main issue of contention are what constitutes a fair return and what capital invested should be incorporated in the base rate.

These methods have been criticised as they can lead to inefficient pricing and infrastructure expansion. Cost based regulation does not provide incentives for operations/owners to be efficient in the reduction of operating costs, it rather incentivises

"cost padding" i.e. if costs go down, so do profits. Rate of return regulation incentivises the increase of the capital base in order to make more profits, this occurs when the approved rate of return is higher than the airports cost of capital (OECD 2010).

Airports using these regulation regimes also have no incentive to adopt peak pricing, peak pricing refers to higher charges being applicable at peak periods of the airport operation; peak pricing is typically employed at busy airports as a method to manage both congestion and infrastructure investments required to service the demand in the peak. According to the (OECD 2010) airports could under-price their peak periods in order to justify capacity expansion.

2.7.2.2 Pure Price Caps (Incentive Regulation)

Incentive regulation originated in the early 1980's in the United Kingdom when the government was undertaking the privatisation of its telecom industry. The aim was to sell what had previously been a nationalised industry. In price cap regulation, prices are allowed to increase up to a cap which represents a reasonable profit margin, prices charges are set based on a rate of inflation and a deduction for productivity gains (from increased efficiency) over a set period of time, typically 3 to 5 years. The productivity gains are decided by the regulator and are typically derived by benchmarking the airport against the rest of the competitive industry, from the airports' previous performance or can be based on the regulators drive to incentivise efficiency (Gillen, 2007).The premise of this model is to incentivise cost reduction, any gains achieved from the cost reductions are typically retained by the operators but may also be passed to users in the form of lower charges (OECD 2010).

Price caps can either be single till or dual till. This system generally requires quality monitoring as the cost reductions achieved could be the result of lower service standards. Gillen (2007) notes that price caps have the disadvantage of lacking incentives for investment and having a short-term focus and the advantages of efficiency and innovation. Price cap regulation is the most common around the world with countries such as France, Ireland, Denmark and the United Kingdom operating under price cap (Gillen 2010).

2.7.2.3 Hybrid Price Caps

This system is similar to price cap regulation however, the productivity gains are derived from the regulated cost base of the airport, for this reason hybrid price caps provide less incentives for cost reduction compared to the pure price caps which are referenced to a competitive industry. (Gillen 2007).

In hybrid price cap regulation, the regulator limits the price that a firm can earn and not the profits they can earn. The price limits are determined as the increase or decreases in the allowances prices on the previous year's charges indexed for inflation. The efficiency factor is set to allow an agreed return on capital based on operating expenditures, non-aeronautical revenue and forecast passenger demand growth after deducting for capital expenditures, a productive efficiency factor and depreciation. The model allows for the firm to earn a reasonable return on its regulated asset base, which is calculated as the cost of capital of the firm (WACC) using the capital asset pricing model. Where the regulated asset base is based on the capital expenditure program of the entity as well as depreciation (Starkie, 2005).

2.7.2.4 Revenue Sharing Agreements

In this system, passenger growth is inversely related to charges over a period of time. An average passenger charge is determined by future passenger growth via an agreement with an airline. A nominal price level is used with only percentages used as the basis of the agreement. When passenger growth exceeds a particular scale, charges may be increased by a certain percentage, however airlines will also share in the additional portion on an agreed percentage basis. In the case of lower passenger growth than anticipated, airports may recover a portion of their losses from the airlines at an agreed percentage (OECD 2010).

The advantage of this system is that it offers some stability with demand fluctuations. It can however present problems at capacity constrained airports as charges and growth move in opposite directions, leading to congestion and the requirement for capacity expansion. Although it does provide some cost reductions efficiency, it is argued that these incentives are mild as airport operators are guaranteed revenue regardless of output.

2.7.2.5 Monitoring (Conduct Regulation)

Monitoring is a light handed form of regulation and is primarily concerned with oversight and attaches sanctions for poor performance applied typically over 5 year intervals. For this method to be effective however there must be a credible sanction. (Gillen 2011).

	Rate of Return/cost based	***Price Cap***	***Price Cap Hybrids***	***Monitoring***
Airport Operational Efficiency improvement	Weak	Strong	moderate	Weak
Aeronautical fee predictability	Strong	Weak	moderate	Weak
Airport Profit predictability	Strong	Weak	moderate	Weak
Ability to attract capital investment	Strong	moderate	moderate	Strong

Table 2-9 : Airport Regulation Summary
Source: (OECD, 2010)

2.7.3 Regulation and Investment

A comprehensive study by Guthrie (2006) listed the rationale for the focus of investment within regulatory frameworks as being the following; the investment required typically involves large sums, there are significant welfare costs to delayed investments and finally regulation has a significant impact on investment.

Logical investment requires that there be some changing circumstances. Capital investments can be categorised into two distinct groups, replacement capital expenditure and expansion capital expenditure. The rationale for replacement investments is that the wear and tear on existing assets will ultimately increase operating costs over time, an investment would lower operating costs but would require a sacrifice in a higher cost of capital. Expansion investment on the other hand is triggered by demand growth.

Evans & Guthrie, (2003) acknowledge three main issues a regulator will have to make a decision on namely ; the suitable cost of the entities assets (referred to at the regulatory

asset base or the rate base) , the rate of return that is allowed to be earned on that regulated asset base and the prices the entity is allowed to charge. Although there are various regulatory regimes that exist they can all be applied to varying degrees utilising different structures and rules. The focus of this section will be on the two most commonly used systems, namely rate of return regulation and price cap regulation explained from a broad perspective.

A study by Guthrie (2006) concluded that regulation affects investment by shifting the risk allocation between consumers and shareholders; and by specifying which costs can be recovered and when prices can be adjusted. In rate of return regulation, the risk of doing business is shifted to the consumer as the firm is allowed to recover all of its prudently incurred cost and therefore encourages investment. Price cap regulation on the other hand, disincentives investment as the risk of doing business is allocated to the shareholders.

Brunekreeft & Meyer, (2011) introduce a number on reasons in support this view. The first is the cost of capital, they explain the buffering hypothesis as being that regulation, as a mechanism, should buffer the firm against demand and cost fluctuations and thereby reduce conventional business risk and therefore the variability of stock prices or profits in these firms should be lower than the conventional firm. Therefore a firm under rate of return regulation should give an investor a moderate but safe return. Price cap regulation on the other hand introduces a greater rate of return and therefore the risk adjusted rate of return on capital should differ. They also find that rate of return regulation accelerates the timing of investment, an investment under price cap regulation will not increases prices until a regulatory review is held, rate of return/ cost based regulation however can increase its prices by making investments. Because rate of return regulation is based on a reasonable return, the regulatory commitment to long term sunk investments is therefore higher whereas the regulatory risk under price cap regulation is much higher and therefore has a detrimental effect to investment. And lastly, it is argued that price cap regulation impedes investment in quality as the incentive to cut costs is high higher.

An argument is put forth by (Starkie, Investment Incentives and Airport Regulation, 2006) who investigates price cap regulation as applied in the United Kingdom’s price capped airports. He argues that the system is designed such that a limiting price is set but it is

referenced to an allowable rate on return on assets. Provided that the allowable rate of return matches the cost of capital, the price capped firm has the incentive to invest, they may even be tempted to 'gold plate' their investments. They also put forth the notion of internal costs for airport operators being high enough to curb underinvestment. They explain that for an airport operator, underinvestment coupled with capped prices would lead to sacrifices in quality (congestion) and that the reputational damage, congestion management and stakeholder and regulator complaints which encompass internal costs would be significant. They also note that firms may invest extensively to deter entry in market by competitors. They conclude by citing that price cap regulation in the UK airport system has been more skewed towards overinvestment rather than underinvestment.

When entities make investment decisions, they will have to consider the nature of the investment as well as the risks associated with it and how these are treated within their regulatory framework.

2.7.3.1 Risks

The risk of cost fluctuations; often the planning horizon for major capital projects is far in advance. Since regulatory decisions are typically ex ante, the impact of any cost overruns/variations are subject to uncertainty as they may be allowed or disallowed.

Demand risk; the investment decision make take into account that the projects costs will be recovered by its cash flows. Capacity additions are made on the basis of forecasted demand growth, which is not guaranteed and may not materialise.

2.7.3.2 Nature of the Investment

Irreversibility of investment: it is noted that many regulated infrastructure industries will take the risk that their investment cannot be easily recovered and used elsewhere for a different purpose, even if physical recovery is possible, it is generally industry specific (for example a new runway). This risk further magnifies the demand risk, as the potential losses are greater if the capital cannot be recovered.

Commitment Risk: infrastructure investments are lumpy and large, and their costs are also typically recovered over the long term. There is therefore a mismatch between regulatory cycles and the physical lifespans of infrastructure. Investment decisions must be made with the risk that regulatory settings may change before the projects costs are recovered.

Scaling; investments of infrastructure are often difficult to undertake in small additions from a practical point, for example constructing half a runway, but economies of scale also make it expensive to make small additions.

2.7.3.3 Investor Response

According to Guthrie (2006) regulated entities will have a few options in response to the above mentioned risks. They can delay the investment until such time that the payoff exceeds the opportunity cost of making the investment. They will also have the flexibility to decide whether the investment should be in capital cost or operating cost where possible. There may also be some investment flexibility decisions they can make. One is through the construction process, they can vary the rate of construction according to their needs, either accelerate or abandon. The flexibility to alter the project altogether however is typically restricted as the project must be agreed and applied for well in advance of construction. Quality is also typically difficult to alter as there are standards which must be maintained.

2.7.3.4 Investment Challenges Associated with Regulatory Regimes

Regulatory regimes have their general characteristics however it is their structure or particular features in their structure that truly determines investment incentives or disincentives.

The following section will address those particular challenge and general issues within the regulation space.

Regulatory Asset Base

Price cap regulation hybrids can also be applied using a regulated asset base, where prices are set using either historical or replacement costs of the base rate. Typically to break even, the revenues of the regulated entity must equal to the depreciation costs and the fair rate of return earned on the regulated asset base (RAB). According to Evans & Guthrie, (2003) the effect of applying a historical cost RAB is that the only risk facing the entity is that of operating cost and demand shocks subsequent to price setting. If on the other hand, a replacement cost RAB is used then the firm is subject to price shocks on existing assets as well as demand and operating cost shocks. Because the replacement cost is linked to capacity which is related to the demand on the system; this poses additional risk to the firm operating under a replacement cost RAB. They conclude that the use of a replacement cost RAB increases the cost of capital required. Allowances and disallowances in the RAB also present a problem.

Like other industries, the European energy sector, has large investment needs that have spared the need to address investment incentives by looking at adjusting regulatory frameworks. More interestingly is that the focus has moved away from the investment debate between cost based regulation and price based regulation to a focus on the implementation of cost-pass through structures for capital expenditures (Brunekreeft & Meyer, 2011).

Whilst the debate surrounding cost based regulation vs price cap regulation continues, it has opened room for various hybrid forms and has also put an emphasis towards the institutional aspects of regulation, namely the credibility and commitment of the parties engaged in regulation (Von Hirschhausen, Beckers, & Brenck, 2004). According to Von Hirschhausen, Beckers, & Brenck, (2004) whilst investment is an important factor in the regulatory discussion, it is not an object in itself and it must be considered alongside organisational structures, regulatory complexity, quality considerations and the welfare effects or over and under investment.

2.7.4 The Impact of Regulations on financing of airport infrastructure

As more and more of the world turns to privatisation of airports and more commercially/profit-driven airport management, regulatory considerations come to the centre of focus as regulatory measures by large, affect pricing, profits and airport investment, this is inherently linked to airport funding. Helm (2009) notes that the core issue with privatisation of public infrastructures has been the mistrust relationship between private investors, regulators and governments.

Although many African airports are still unregulated, if Sub Saharan African countries effectively make the move towards privatisation, they must take note that private investors will only invest in infrastructure if it is profitable to do so. Regulators must enable a fair rate of return on investors to stimulate the right amount of investment.

Another challenge in this space relates to time; investments in airport infrastructure are long term and yet regulated tariffs are determined on a short term basis. Encouraging private investment will therefore require a level of transparency and consistency in the application of regulatory rules. Hooper (2002) suggests contract regulation as a means of providing assurance to investors that the “rules of the game will not change.’ The proviso to this, is that it is supported by legislation.

3. Research Design and Methodology

3.1. Introduction

The methodology for this study was a qualitative case study. Unstructured interviews were conducted with airport operators, an economic regulatory specialist / government bodies, investment analysts and frequent users of the securitisation model from the banking and aviation communities. The research methodology was designed to capture an understanding of both the salient and more subtle issues around airport financing and as such, the chosen instrument was a combination of both face to face interviews and telephonic interviews. The paragraphs that follow detail the research design, sampling, data collection and the validity and limitations applicable.

3.2. Research Design

According to Yin (2009) research design can be viewed as the blueprint to a research project and answers four main questions namely which questions to study, which data is applicable, which data to collect and how to analysis the results.

The choice between qualitative or quantitative research methods is dependent on the research question/s: where quantitative research seeks answers to questions of “what” qualitative research focuses on understanding complex problems by asking “why” and “how” (Marshall, 1996). Yin (2009), contends that choice of the appropriate research strategy is informed by three conditions, namely: extent of investigator control, type of research questions and the study’s time focus (historic vs contemporary). The conditions are summarised in Table 3.1.

Strategy	*Type Research question?*	*Requirement of control over behavioural events?*	*Focuses on current events?*
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes/No
History	How, why	No	No
Case Study	How, why	No	Yes

Table 3-1: Relevant situations for different research strategies
Source: Yin (1994)

Based on an assessment of the above; the selected research strategy was a case study. Silverman (2010), defines a case study as a strategy that employs the use of appropriate methods to study one or more cases in detail with the objective of developing a full understanding of the case. Tellis, (1997) also notes that case study research is most appropriate when an in-depth holistic investigation is required and lends itself to an assortment of data collection methods and is qualitative in nature. Yin (2009) describes a case study as an empirical enquiry which investigates current phenomenon within its context in depth, particularly where the boundaries between context and the phenomena under study are not clearly apparent.

The study of regulations, securitisation and the financing of airport infrastructure in Sub Saharan Africa is exploratory in nature. Most of the current empirical research is carried out on more developed economies or developing economies not on this continent and therefore cannot be directly applied to an African context owing to differences at individual, institutional and environmental levels. Securitisation and particularly how it can be used for infrastructure financing is a contemporary phenomenon. This study's aim is to gain an understanding of the various forms of finance available and how the securitisation model can be used and therefore lends itself to the use of the case study research strategy.

There are two prominent research approaches quoted in literature, namely qualitative and quantitative research. Merriam (2009) describes qualitative research as a method that attempts to build on theory through intuitive understanding and observations. It combines a variety of tools including observations, documents and interviews.

Typically or Tend to	*Qualitative Approaches*	*Quantitative Approaches*
Use these Philosophical assumptions	Constructivist/Advocacy Participatory knowledge claims Phenomenology, grounded theory ,ethnography ,case study and narrative	Positivist knowledge claims Surveys and experiments
Employ these strategies	Open –ended questions emerging approaches ,text or image data	Close-ended questions predetermined approaches, numeric data
Use these practices of research as the researcher	Positions himself or herself Collects participant meanings Focuses on a single concept or phenomenon Brings personal values into the study Studies the context or setting of participants Validates the accuracy of findings Creates an agenda for change or reform Makes interpretations of the data Collaborates with participants	Tests or verifies theories or explanations Identifies variables to study Relates variables in questions or hypotheses Uses standards of validity and reliability Observes and measures information numerically Uses unbiased approach Employs statistical procedures

Table 3-2: Comparison of Qualitative and Quantitative Methods
Source: Creswell 2014

Multiple cases were conducted, comprising South Africa's Airports Company and the Zambian Airports Corporation. This was done to achieve both theoretical and literal and replication (Yin, 2009). Primary data in the form of interviews with individuals associated with airport economic regulation, securitisation and airport financing were conducted.

The research design process followed is an adaptation of Yin's (2009) framework. The first step of the process is the literature review which will guide the research questions, allow for research themes to be uncovered, the cases were then selected and the protocol instrument was drafted. An initial pilot study was undertaken to ensure the questions asked from the protocol guide were unambiguous. Data from the two cases was collected and

analysed and a cross case analysis was conducted. The findings and conclusion were then drawn up.

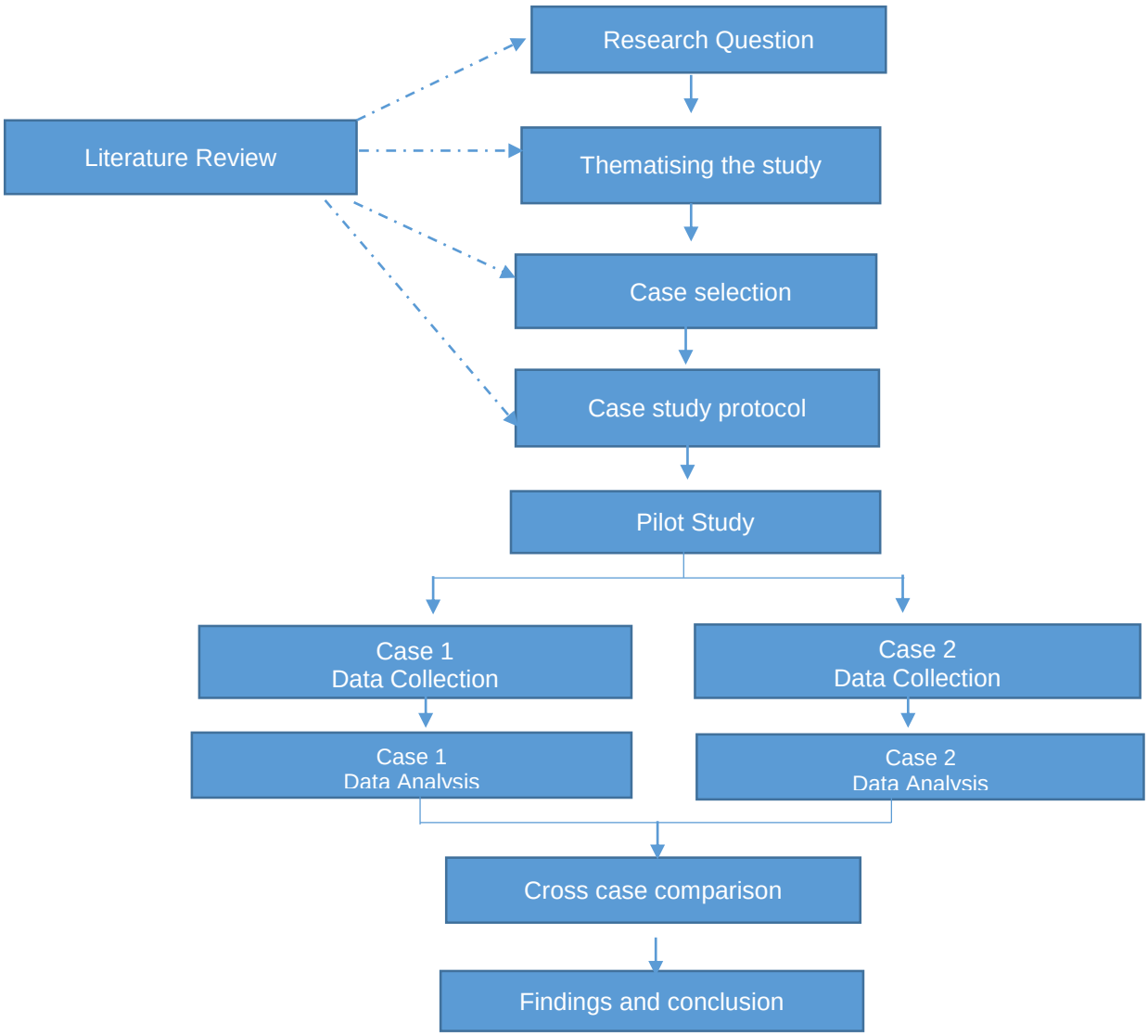


Figure 3-1: The Research Design Process

3.3. Sampling

The research design was centred on an evaluation of the three main elements of this study, namely airport finance, securitisation and regulation. As such, the research design was structured to give a detailed view of each case from various viewpoints, namely airport operators, securitisation experts and airport economic regulation experts. This is supported by Tellis (1997) who motivates for multi-perspectival analyses, considering not just the perspective of the participants but also the views of relevant groups and the interaction amongst them.

(Flyvbjerg, 2004) acknowledges that generalisation in case studies is challenge and recommends careful selection of the case/s. He notes that when the objective is to obtain as much information as possible about a given problem, and therefore a typical case will not have the richest information, making the selection of a representative case or a random sample inappropriate.

3.3.1. Case Selection

With the above in mind, an information orientated selection was adopted and in particular, the maximum variation cases method. Therefore a multiple case study was chosen to conduct an inquiry on the South African airport operator, Airports Company South Africa and the Zambian airport operator Zambian Airports Corporation Limited.

Type of decision	*Purpose*
A Random Selection	To avoid systematic biases in the sample, The samples size is decisive or generalization
Random Sample	To achieve a representation sample that allows for generalisation for the entire popular
Stratified sample	To generalise for specially selected subgroups within the population
B Information - oriented selection	To maximise the utility of information from small samples and single cases. Case are selected on the basis of expectations about their information from small samples
Extreme /deviant case	To obtain information on unusual cases , which can be especially problematic or especially good in a more closely defined sense
Maximum variation cases	To obtain information about the significance of various circumstances for case process and outcome for example three four cases that are very different on one dimension size, form of organisation, location, budget etc.
Critical cases	To achieve information that permits logical deductions of the type, if this is (not) valid for this case ,then it applies to all (no) cases
Paradigmatic cases	To develop a metaphor or establish a school for the domain that the case concerns

Table 3-3: Strategies for the Selection of Samples and Cases
Source : (Flyvbjerg, 2004)

The rationale for the cases that were selected are summarised in the following paragraphs:

Operational Profitability

The cases were first determined by narrowing the participating countries (SSA) to only those whom would be profitable and thus able to undertake securitisation. ACI (2012) notes that 70 percent of airports experience financial losses and that airports of less than 1 million annual passengers struggle to turn a profit. To utilise the securitisation model, revenues would need to support the debt service and therefore the point of departure then becomes profitable airports within the region. The table below narrowed the choice to that of 19 airports run by 13 airport operators.

	Country	***City***	***Airport***	***Million Annual Passengers***	
1	South Africa	Johannesburg	O R Tambo International Airport	18.9	ACSA
2	Ethiopia	Addis Ababa	Bole International Airport	8.9	EAE
3	South Africa	Cape Town	Cape Town International Airport	8.3	ACSA
4	Nigeria	Lagos	Murtala Muhammed International Airport	6.3	FAAN
5	Kenya	Nairobi	Jomo Kenyatta International Airport	5.9	KAA
6	South Africa	Durban	King Shaka International Airport	4.5	ACSA
7	Nigeria	Abuja	Nnamdi Azikiwe International Airport	3.1	FAAN
8	Mauritius	Plaine Magnien	Sir Seewoosagur Ramgoolam International Airport	2.7	AML
9	Ghana	Accra	Kotoka International Airport	2.6	GACL
10	Tanzania	Dar Es Salaam	Julius Nyerere International Airport	2.3	TAA
11	*La Reunion*	*Saint-Denis*	*La Réunion Roland Garros Airport*	*2.0*	*ARGR*
12	Senegal	Dakar	Léopold Sédar Senghor International Airport	1.9	Aibd SA
13	Uganda	Entebbe	Entebbe International Airport	1.5	CAA Uganda
14	Kenya	Mombasa	Moi International Airport	1.3	KAA
15	South Africa	Port Elizabeth	Port Elizabeth Airport	1.3	ACSA
16	Cote D'Ivoire	Abidjan	Port Bouet Airport	1.2	ANAC
17	Nigeria	Port Harcourt	Port Harcourt International Airport	1.1	FAAN
18	Congo	Brazzaville	Maya-Maya Airport	1.1	ANAC Congo
19	Zambia	Lusaka	Kenneth Kaunda International Airport	1.1	ZACL

Table 3-4: Airports over 1 Million Annual Passengers in Sub Saharan Africa
Source: ACI (2014)

Access to Information

The nature of case study requires in-depth inquiry, access to documentation and participants for interviews in the given time period. Of the13 airport operators that were contacted to participate in the study; only two responded positively to the request. The first was South Africa which has the most well developed securitisation activity on the continent and has well established economic regulation dating back to 1998 making the a case for the richest source of information. The literature also suggest that one of the benefits of a selection by organisation, is the ability to benchmark best practices (Baškarada, 2014). The other case selected was that of Zambia.

There is no ideal number of case, and the decision should be based on, the available resources, the nature of the question, study timeframe and either depth (within a case) or breath (across multiple sources) (Baškarada, 2014).

3.3.2. Selection of Data Sources

Purposeful sampling also known as judgment sampling is described as the selection of participants or sources of data to be used in a study, where the choice is based on their predicted richness and relevance to the research questions, (Baškarada, 2014) .Marshall (1996) also mentions that the appropriate qualitative research sample size is one “that answers the research questions.”

Purposeful sampling however includes a range of sampling strategies as noted by Gentles, Charles, Ploeg, & McKibbon, (2015) these include snowball and key informant sampling. Judgement sampling or purposeful may involve the researcher developing a framework of variables that may influence the participant’s contribution (Marshall 1996). Three such variables were identified to select the interview respondents.

Key Informant sampling and snowball sampling are subsets of purposeful samples. Key informant sampling relates to selecting subjects from a pool of special expertise. Expert knowledge was one such variable for participant selection, and as such key informant sampling was appropriate for this study; noting that securitisation, airport finance and economic regulation of airports are all specialist fields. The second variable was participant willingness to part-take in the study within the inquiry timeframe. In total 12, respondents

were identified and requested to participate in the study, however only 8 participants responded positively.

3.4. Data Collection

Case study research is a triangulated research strategy. Triangulation aids stronger substantiation of hypotheses and constructs, by using a variety of data collection sources and methods (Yin, 2009). According to Tellis (1997) the requirement for triangulation comes from the need to validify the process, in case study design this relates to using multiple sources of data.

Karim,(2007) adds that triangulation overcomes biases by checking interviewers' biasness, methodological issues, theoretical problems, reliability and data validity.

There are four types of triangulation, these are summarised in the table below:

Data source triangulation	Researcher looks for the data to remain consistent in different contexts
Investigator triangulation	Several researchers examine the same phenomenon
Theory triangulation	Investigators with different perspectives interpret the same results
Methodological triangulation	One approach is followed by another, to increase confidence in the interpretation

Table 3-5: Different types of triangulation
Source: Trellis (1997)

The major advantage of utilising triangulation is that the evidence collected from one source can be corroborated by other sources, revealing any mismatches in the data. This helps the researcher eliminate errors in the analysis. Tellis (2007) provides a list of the sources of data along with their strengths and weaknesses in the table below.

The two sources of data that were utilised in the study were documentation and interviews. The strengths of documentation is that is not time sensitive, i.e. the documentation will be available before commencement of the study, it is also exact and stable. The weaknesses

of this data is that it is exposed to selection and reporting biases, documentation can also be difficult to retrieve or blocked. Interviews on the other hand have the benefit of providing insight and focus on a particular subject but suffer from question and response biases and reflexivity, (Trellis ,2007).

Source of Evidence	***Strengths***	***Weaknesses***
Documentation	• stable - repeated review • unobtrusive - exist prior to case study • Exact - names etc. • broad coverage - extended time span	• retrievability - difficult • biased selectivity • reporting bias - reflects author bias • access - may be blocked
Archival Records	• Same as above • precise and quantitative	• Same as above • privacy might inhibit access
Interviews	• targeted - focuses on case study topic • insightful - provides perceived causal inferences	• bias due to poor questions • response bias • incomplete recollection • reflexivity - interviewee expresses what interviewer wants to hear
Direct Observation	• reality - covers events in real time • contextual - covers event context	• time-consuming • selectivity - might miss facts • reflexivity - observer's presence might cause change • cost - observers need time
Participant Observation	• Same as above • insightful into interpersonal behaviour	• Same as above • bias due to investigator's actions
Physical Artefacts	• insightful into cultural features • insightful into technical operations	• selectivity • availability

Table 3-6 : Sources of Data: Strengths and Weaknesses
Source: (Tellis, 2007 citing Yin)

Karim (2007) lists six reasons as to why triangulation in qualitative research is important:

- When a more holistic view is required , triangulation techniques are suitable.
- In the study of complex phenomenon, triangulation is especially helpful as it contrasts philosophies, practices and objectives returning multi-method view which is more realistic.
- Where various methods of learning are required, triangulation is suitable.
- Where the topic under study is on a controversial matter, the validly of the research can be increased with triangulation.
- Triangulation is useful to a researcher engaged in a case study investigation of complex phenomena.
- Where the topic under study is observed to have a distorted picture, triangulation will be useful.

Data triangulation was used in this study, i.e. more than one data collection technique was consulted. Karim (2007) notes in situations where the researcher is reliant on primary sources such as interviews, the research result may be influenced by interviewee's who provide incorrect data or misunderstand the questions asked. The author notes that due to the time consuming nature of interviews, interviewees may not give the interview adequate attention. Therefore the findings of the research will be incorrect or biased. Data triangulation assists in minimising these errors. It is also acknowledged that collecting data from authentic sources reduces biases as well. (Karim 2007).

According to Merriam (2009), a suitable data collection instrument for qualitative inquiry is one that is "sensitive to underlying meaning" when interpreting and collecting data. Merriam (2009) further explains that since the objective of qualitative research is an understanding, the primary qualitative research instrument is the researcher themselves and provides a number of advantages to this end in the table below:

Human Instrument Advantages
Responsive and adaptable
Understanding through verbal and non-verbal communication
Immediate data processing
Can clarify and summarise material
Ability to confirm accuracy of interpretation with respondents

Unusual responses can be explored	

Table 3-7: Advantages of human research instrument
Source: Merriam (2009)

They state the only disadvantage as being subjectivity and being prone to biases, however this subjectivity and interpretation is also what is required to synthesise and draw conclusions.

The instruments that was utilised in this study were individual unstructured interviews. Individual depth interviews are defined by Stokes, (2006) as a personal unstructured interview that utilises probing to get respondents to express detailed beliefs and feelings freely. In-depth interviews provide the researcher with sampling advantages as there is greater flexibility to respondent selection and thus allowing greater flexibility in the process of inquiry, greater depth and context; they also yield a preferential outcome, in terms of the comprehensiveness and depth of information they can provide and lastly can be applied to circumstances of unique applicability (Stokes, 2006).

The interviews were either conducted face to face or via telephone and were administered by the researcher. The paragraphs below summarise the advantages and disadvantages of these tools and concludes an evaluation of the suitability of these instruments to the study.

3.3.1 Telephone Interviews

Novick (2008) lists the advantages of telephonic interviews as being the ability to reach geographically dispersed respondents, researcher safety, lower research travel costs and the ability to oversee interviewers (where there are a number of interviewers). They also note several disadvantages such as lower response rates, the absence of visual cues, the requirement for shorter durations of interviews and limited telephonic coverage in certain areas.

Telephone interviews were suited to this only to the extent where it was either too costly to arrange a face to face interview due to geographic locality.

3.3.2 Face to Face Interviews

Face to face or in-person interviews are characterised by synchronisation of communication in both time and place. The major advantage of face to face interviews is the ability to observe visual cues. Other advantages include the ability to clarify responses and spontaneity of responses.

Data collection in case study research must conform to three principles according to Yin (2009). These are the use of multiple sources of evidence, maintaining a chain of evidence and the creation of a case study database. As such, all interviews were tape-recorded and transcribed and field notes were taken.

3.4 Validity and Limitations

Validity, internal validity, external validity, and reliability all relate to the quality of empirical studies including that of case studies. Validity refers to the trustworthiness of the recorded interpretations and observations, where internal validity is concerned with causal inference and external validity is concerned with the generalizability of the findings.

According to Yin (1994) the development of operational measures for the concepts under study is known as construct validity. It relates to the operational process of describing a concept through a set of variables to make it measurable. According to (Baškarada, 2014) construct validity can be improved by using three strategies, namely multiple sources of evidence, maintaining a chain of evidence and having key informants review the report. As a result, participants were given copies of the notes taken during the interviews and their transcribed interview for review.

As mentioned, internal validity is concerned with the justification of causal relationships. In case study research, data triangulation can be used to improve internal validity as was the case in this study. Pattern matching was also used in the course of data analysis to improve the internal validity of the study. Pattern matching is defined as the comparison of two patterns to determine whether they match or not (Mills , Durepos, & Wiebe, 2010).

4. Data Analysis and Results

4.1. Introduction

As discussed in the previous chapter, unstructured face to face and telephonic interviews were conducted. Eight participants were interviewed from the possible twelve that were identified, the interviews were all tape recorded with the consent of the participants.

4.2. Data Collection

The interviews were self-administered by the researcher and where face-to-face interviews took place, they were held at the respondent's offices. The persons interviewed in the study were chosen on the basis of obtaining various perspectives on the issues under study. From a securitisation perspective, an investment analyst, a banking debt markets divisional head, a vice president in leveraged finance in Africa and a frequent and large issuer of securitised products were interviewed. From an airport financing perspective, an interview was held with the treasury head and a financial head of the two operators. From a regulation perspective, an operator's head of corporate finance was interviewed and these views were balanced with an interview from the Department of Transports' Economic Regulation director.

4.3. Data and Information Gathered

The data and information gathered was based on the literature reviewed under the broad themes of airport financing, economic regulation of airports and securitisations and have been separated into the two areas of study namely South Africa and Zambia.

4.3.1. Securitisation

The research objectives as they related to securitisation were around assessing the role that securitisation could play in the financing of airport infrastructure projects and establishing the set of conditions required in order to effectively undertake this form of securitisation on the continent. As such, the interview questions were developed from the works of (Saayman & Styger, 2003) who gave a detailed view of the deficiencies of securitisation in South Africa as well as the work of (Scatigna & Tovar, 2007) who detailed the challenges that Latin American countries faced with securitisation.

4.3.2. Airport Economic Regulation

Another objective of this study was to examine the effect of economic regulatory regimes on airport infrastructure investment. Therefore the relevant interview questions were around the works of Guthrie (2006) and Brunekreeft & Meyer, (2011) who note the underinvestment and overinvestment issues within regulated entities. The questions also addressed the practicalities of considerations made by airport operators when they make investment decisions.

4.3.3. Airport Financing

Finally, the last objective was to address the various sources of financing that have been utilised for airport developments looking at the advantages and disadvantages of the utilised mechanisms. The interview guide that was utilised can be found in Annexure C of this report.

4.4. Data Analysis

Transcribed interviews and field notes were used as the basis for analysis. The analysis was performed by sorting the transcribed interview questions on separate sheets that represented different themes. Coding was then used to analyse the data, where descriptive and interpretative codes were applied.

4.5. Case Narrative: South Africa

Background

South Africa is the southernmost country in Africa. It has a total of 135 licensed airports, 19 military airports and approximately 1 300 unlicensed aerodromes (South African Government, 2016). Nine of the country's largest national airports were transferred to Airports Company South Africa, a state owned enterprise created in 1993 to manage, develop and maintain the designated airports. These airports are OR Tambo International Airport, Cape Town International Airport, King Shaka International Airport, Port Elizabeth, East London, Bram Fisher, Upington, Kimberly and Gorge Airports. In 2013 the Company's airports facilitated 39.5 million passengers. The remaining airports are generally managed by municipalities and funded through municipal budgets.

Airports Company South Africa SOC Limited

Established in 1993, Airports Company South Africa SOC Limited (ACSA) was formed as a public company under the Companies Act of 1973 and the Airports Company Act of 1993. Although the government has the majority ownership stake through the Department of Transport, it operates as a financially and legally autonomous company. In 1998 the company was awarded a 30-year concession to manage Pilanseburg airport. The Company was partially privatised in 1998, it sold a 25, 4% shareholding to, i di Roma, an airports-management firm. In 2005 the Public Investment Corporation bought 20% of the privately held shares. The company also has concession to manage Chhatrapati Shivaji International Airport in Mumbai and Guarulhos International Airport in Brazil (Airports Company South Africa, 2016).

The company's revenue stream is comprised of aeronautical revenues, namely landing fees, passenger service charges and aircraft parking fees and non-aeronautical revenues from vehicle parking, office and warehouse rental, hotels, retail concessions and advertising. The company is regulated under the provisions of the Airports Company Act which instructs the Regulating Committee, a semi-independent statutory body appointed by the Minister of Transport, to oversee the economic regulation of the company. The objective of the regulatory committee is to ensure that ACSA does not abuse its monopoly

position in price determination and that it does not comprise on the standard and efficiency of the services provided to achieve this. The applicable regulatory system is a single till price cap with aeronautical charges being determined for a five year period, with a two-year overlap. The general formula of the price cap is as follows:

$$Consumer\ price\ index - efficiency\ factor + annual\ correction\ factor + correction\ factor$$

The framework is set such that level at which the efficiency factor is set allows the company to earn a reasonable rate of return is allowed. (ICAO, 2008).

Airports Company South Africa has a Fitch rating of BBB and its domestic medium -term note program of ZAR 30 billion is rated AA-zaf. The company's debt book as at 2014 comprised of 22% in DFI loans, 48% in fixed bonds, 16% in bank loans, 4% floating rate notes and 10 % inflation linked bonds. The company managed to fund its ambitious airport development program of approximately ZAR 17 Billion in the run up to the 2010 Fifa World Cup (Airports Company South Africa, 2016).

The Financial Sector

Supported by a rigorous regulatory and legal framework, South Africa's financial sector is sound and sophisticated. The sector is comprised of 30 banks, the Johannesburg Stock Exchange, two mutual banks, a state owned Development finance institution, various smaller financial intermediaries and non-bank financial institutions. The banking sector is highly concentrated, but banking systems are well developed and effectively regulated (Making Finance Work for Africa, 2012).

The Capital Markets

Established in 1887 the Johannesburg Stock exchange is the 19th largest globally with a market capitalisation just under ZAR 12 trillion in 2015 and 393 listed companies (Financial Services Board, 2015). It introduced an automated trading platform in 1996. The Bond Exchange of South Africa was formalised in 1996 and was capitalised at ZAR 1.8 Trillion as at 2013 with roughly 1 600 listed debt instruments. Government issues dominate the

market with over 50% of the listed debt on the exchange is placed by the South African government. The corporate debt market is however less liquid dominated by few firms, largely banks and financial services firms. South African debt is primarily denominated in domestic currency (Hassan, 2013).

Securitisation is still in the early phases of development in the country, according to Gumata & Mokoena, (2005) private bank issuances have grown from ZAR 250 million in 1989 to ZAR 26 billion in 2005.

Institutional Investors

South Africa has over 5000 pension funds, in 2015 they had combined assets of ZAR 3, 2 trillion, Long term and short term insurance held ZAR 2.5 trillion in assets and local collective investment schemes managed ZAR1.8 trillion in the period. (Financial Services Board, 2015)

4.6. Interview Analysis Results

4.6.1. Securitisation

Respondent Background:

Three respondents were interviewed in the structured finance/ securitisation portion of the study and their responses are summarised in the table below.

Respondent	*Job Title*	*Area of expertise in securitisation*
1	Head of Debt Primary Markets South Africa	Established four listed mortgage securitisation vehicles; namely Blue Granite Investments ,they are also the transactors for the SA Home Loan securitisations
2	Treasury Manager	Largest securitisation issuer in South Africa. The company's business is founded on a securitisation funding platform
3	Investment Analyst	Purchasing various securitised products in the market such as RMBS,CMBS and ABS

Table 4-1: Securitisation Respondent Background

The respondents were asked to state their backgrounds as summarised above; but of particular interest, respondent 2 elaborated on the benefits of funding a start-up company via the securitisation model. The respondent noted that some companies do not have a strong balance sheet and what securitisation allowed for was access to long term funding at reasonable rates because it allows rated assets to be put in a solvency remote structure, where the rating itself is based purely on the underlying assets and the cash flows generated from those assets at different stress levels.

Theme 1: A vibrant securitisation industry requires a stable social, political and economic environment, predictable legal system and developed financial sector

There were differing views from the respondents relating to this theme. Whilst the requirement for a sound and predictable legal system, was very strongly supported, the requirement for a developed financial market was agreed to by all the respondents. However, one respondent noted that this market need not be a local market, provided that the security is not tainted. Of note, one respondent remarked that although a developed financial sector is critical, it must also be supported by a deep investor base, the limited investor pool is a current challenge in the securitisation industry in South Africa. Views on the requirement of socio economic and political stability tended to vary, one of the respondents mentioned that securitisation had been possible in other jurisdictions that did not enjoy the political and socio economic stability that South Africa has. Another remarked that South Africa is one such example where the political situation and the socio-economic environment have not been a deterrent to the securitisation industry despite the challenges that face the country currently.

Theme 2: The lack of quality data, particularly historical or statistical data, is often a major impediment to the rating of emerging market transactions

All the respondents disagreed with this statement from a South African perspective. Respondent 2 mentioned that they had been securitising for the last 15 years and were able to provide rating agencies with detailed performance data on every single loan originated, from inception and throughout the process, and that similar data were available from the various banks. A respondent did however mention that perhaps the data challenge would come in with the introduction of a new asset, and in that context, the data

required could be insufficient. They all tended to agree that there could potentially be issues related to data in many other regions of the African continent; in particular respondent 1 mentioned that the markets in emerging economies are less developed and don't necessarily have long histories and therefore systems to aggregate information in a way that is verifiable may be lacking.

Theme 3: For securitisation to be economically viable, the volume of the pooled assets need to justify the cost of the process

All the respondents made mention of the substantial fixed upfront costs required with a securitisation structure, from rating agency costs, legal costs, audit costs, monitoring costs etc. Their views were that this necessitated a large issuance to make economic sense, typically in the hundreds of millions to several billions.

In the case of SA Home loans, the typical size of an issue was approximately ZAR 3 billion. The company has issued out of 13 structures, initially they could manage ZAR 2.5 to 3 billion (these structures were called "eThekwini" 1-8) however when the global financial crisis struck, investors lost all appetite for risk, the issuance in 2008 was ZAR 1.6 billion and they stopped securitising until December of 2010 when they began a program methodology. They realised that the upfront costs of securitisation were substantial but the market was not supporting large issuances, such as that they had previously managed, and what the program methodology allowed them a greater window to cap the deal.

"So basically, your problem is that since a lot of those upfront costs are fixed, the smaller the deal size, the larger your upfront costs are relative to the paper that you have issued"

They therefore started implementing the program methodology whereby they entered the market with a certain structure and gave themselves a window period to cap the deal. This meant that on one structure they could go back to the market 3 or 4 times to raise the full ZAR 3 or 3.5 billion required in the structure.

"So really, you struggle to do more than a billion at a time"

Respondent 2 did however caution that it is dependent on the asset class that you are securitising, mentioning that with mortgages the yields are quite tight and therefore cost is a very important element for them to consider, but this may not be the case where an asset has sufficient yield that justify the cost of a smaller issuance. On maturity of the paper they issued, the respondent mentioned a 20 year maturity with a five year call option, in the event they do not redeem the notes, the price of the funding increases.

"The investor basically buys the notes on the understanding that we will call the deal. What happens is, if you don't call the deal then the price of the funding steps up so it called a step-up-in-call-date. That JIBRA 1.75 that I mentioned, will increase by, we normally do 30% of the yield, so the 1.75 would increase to around 2.25%, if we didn't call the deal."

Theme 4: Rating Agencies

The perspectives on rating agencies were quite different, whilst there was an acknowledgement that an external rating was very important to investors, and that the rating process does require a lot of data and a considerable amount of time.

"As an example we fall into MENA which is Europe, the Middle East and Africa they have a methodology for that region and then for a specific country they then need data for a specific asset class to formulate as background for their methodology that they are going to apply. …They do require… it is quite a lengthy process to get all of that detailed data to them, they interrogate you to no end".

Respondent 3, from an asset management perspective, did not place a lot of reliance on the external rating, noting that it is typically used as a cross check against their own internal rating and it facilitates certain investment mandates. The rating agency's that have been utilised have been Fitch (whom has withdrawn from operating in South Africa) Standard and Poor, Moody's and GCR.

Theme 5: Investor Base

The respondents agreed broadly that the typical investors in securitised products are asset managers who represent pension funds, insurance companies, unit trusts and banks.

Respondent 2 mentioned that the South African securitisation industry suffers from the view that the market is illiquid and therefore attracts only the investors who have a hold-to -maturity investment appetite.

"And that's one of the major pitfalls of securitisation and all the investors are of the view that there is no liquidity in the market so people don't trade securitised paper in the secondary market so what they saying is that if they ever wanted to get rid of what they bought, they don't think that there is a market to do that , I mean the problem is a bit circular because you know, we don't often get requests from investors to sell the paper… , they kind of feel like it's a hold-to-maturity investment whereas what they say with bank paper is, at any point in time when you want to get rid of it they can go to the bank, sell it back to the bank and they will take a bit of a loss but at least its liquid. So what that means is that typically, the banks are around single A rated and they are issuing 5 year paper at JIBAR plus 1.55% and we issue our AAA paper, so far better credit risk at about plus 1.75%, so you pay more and get better credit risk but there is a liquidity problem in the market, so really to get securitisation going properly, you need to sort out the liquidity issue"

In terms of investor limitations, the respondents mentioned Regulation 28 which governs the limitations on investments made by pension funds in terms of what can be purchased especially rules governing unlisted or listed issuances and those with and without guarantees. Interestingly from an asset management perspective, respondent 3 mentioned that for them, there were specific house rules that would constrain what one could potentially invest in. These house rules differ from investment house to investment house and may be based on a lack of depth in reporting, maturity, views on the market and a number of other factors.

Theme 6: Knowledge and Use of Securitisation

The respondents were all of the view that the typical investors in these assets are knowledgeable, but not necessarily the average man. Respondent 3 mentioned that there is a solid understanding and good representation at various networks such as the Association for Securitisation in South and the South African Securitisation Forum.

Respondent 1 reported that although the understanding was good, there were still instances where certain individuals are just uncomfortable with the product but not necessarily for technical reasons, but rather that it is associated with the global financial crisis.

"But I mean frankly it earned a bad reputation in the crisis because it was a mechanism that was central to the crisis so it earned a bad rep and to some extent the deceases over time, some people still have that in the back of their minds that they just don't like it because they don't trust it because it was the central villain in the story of the global crisis."

From a volumes perspective, the respondents generally agreed that although securitisation is an important component in the capital markets, very few new issues exist in the market further worsening the already pressing illiquidity problems. Another mentioned that the current slump is the market may be related to the collapse of African Bank (a commercial bank in South Africa) in 2014 and hence the general nervous sentiment in the market.

Theme 7: Demand for Securitised Products

Currency risk was seen as the major deterrent for international investors investing in local securitisation products. The case of Blue Granite 4 was used as an example, where some notes were placed in the UK; however, what was required was a cross currency interest rate swap, because the assets are Rand based and pay in JIBAR plus, these need to be swapped into pounds or the relevant hard currency. To do this, however, adds considerably cost to the structure.

"International investors don't want to take Rand risk....you need to give it to them in hard currency they want it relative to their benchmarks. And this is kind of the problem, it's so expensive to get it, that it kind of blows it out of the water but that is essentially the dynamic"

In terms of local demand, there were differing views, one respondent mentioned that there is approximately ZAR 8 trillion worth of savings and from this 50% can be allocated to the bond market, they noted that currently South Africa's bond market is capitalised at just under ZAR 2 trillion, therefore there is a substantial pool of money that needs to be invested. The respondent further noted that investors have a preference for real assets and are therefore reluctant to invest in credit card securitised products but rather prefer vehicles and mortgages as an example. From an RMBS perspective, the view was that the demand for this asset class is limited, from as asset management perspective, the view was that there is still demand for securitised products, potentially in other asset classes.

Theme 8: Securitising Infrastructure Assets

The respondents generally agreed that from a diversification perspective there would be a market for infrastructure securitisation, given that they are well structured. One respondent felt that although possible from a technical perspective, there were practicalities around the suitability of securitisation for such large, concentrated sums characteristic of project loans. It would make for a very large debt raise, and the practicalities around the "pooling" of assets to achieve a superior credit rating would also add complexity to the structure.

4.6.2. Airport Economic Regulation

Two respondents were interviewed for this portion of the study, one from the regulated entity ACSA, and the other from the National Department of Transport. The participants both had a wealth of experience with airport economic regulation summarised in the table below:

Respondent	*Title*	*Experience with Economic Regulation*
1	Group Manager: Corporate Finance	Worked at ACSA as Specialist for Economic Regulation for several years prior to current position
2	Director: Aviation Economic Analysis and Regulation	In current position for the last 8 years

Table 4-2: Regulation Respondent Background

Theme 1: Corporatisation of Airports Company South Africa

The company was corporatized by the political administration in power before the democratisation of the country. What is now considered South Africa's national airports were then ring fenced as commercial assets of the company, these comprised of the main provincial airports but excluded the airports of the homelands. The rationale for corporatizing was to ensure that the company could access the financial markets by enabling it to issue bonds or borrowing via other means.

Therefore, Airports Company South Africa was established as a network airport operator, comprising nine airports. Because the creation of the company established an environment for potential market dominance and abuse, it was considered a natural monopoly and the entity had to be regulated.

"When we look at how ACSA is set up from a pricing perspective, it is structured as a network airport so if you are paying a passenger service charge at OR Tambo International Airport (ORTIA), it will be the same amount that you pay at any other ACSA airport irrespective of the level of service that you receive at ORTIA vs say Upington. You pay the same amount. So the pricing is across the network, so the ACSA network from a regulatory perspective is really just one airport and that is where the argument of a monopoly comes in.

In 1998, the company was partially privatised with a 25, 4 percent shareholding sold to private sector shareholders.

Theme 2: Governing Regulatory Regime

The respondents acknowledged that a hybrid single till price cap was applicable in the case of ACSA.

"What the regulator has done though is that we almost don't have a pure price cap methodology. We have a bit of a rate of return methodology within the price cap, where the regulator does look at a particular rate of return that is being allowed on annual basis, in order to provide some assurance to investors in the regulated entity, in ACSA, that our business will generate some level of return, and the building blocks are not only designed to calculate what the price cap should be"

Although the guiding principles that led to the selection of the current regime could not be ascertained with certainty, it was postulated that providing efficiency incentives was largely the reasoning. The system was modelled after the UK airports economic regulatory approach. However, the application from ACSA is pricing on a network of airports rather than pricing at individual airports.

Both the respondents stated that no work had commenced to look at alternative forms of economic regulation, due, in part, to the part-time regulatory committee body that is currently in place. Because they are a part-time body there is no capacity to research into alternative forms of regulation. It was also felt that the current system was the most appropriate particularly as it allows the company to cross subsidise the smaller loss making airports in the network.

"We still believe the price cap is still the most applicable for our network of airports and for the cross network subsidisation as a result''

Rather the challenge was noted as being; that because the regulator is a part-time body, it does not have the ability to apply and maintain the methodology properly thus creating issues around the consistency and predictability of the decision making of the regulator. Of importance was the view that it is not the regulatory regime that is the issue and in particular that any system can be relatively successful because none of the systems are

applied in their pure form; rather it is the capacity and maturity of all the parties involved that is important in any regime.

"I don't think whether you are on price cap, rate of return, single-till, dual-till is where the solution lies for any economic regulatory framework, what I have come to learn is that the solution lies with the maturity of the parties involved in that framework, so if you have a mature regulator that is well capacitated and that is prepared to take time to understand the industry and the challenges of the industry and the growth path that the industry is on, whilst at the same time prepared to have open and transparent conversations with the industry and the industry stakeholders; where they also have invested in economic regulatory capacity and can have conversations around the long-term sustainability of the industry combined with the regulated entity ,in this case ACSA , if you can achieve that then it doesn't really matter which methodology you apply."

Theme 3: Regulatory regime and investment incentives

The respondents admitted that the hybrid price cap methodology currently in place can be gained from both the regulators perspective as well as the regulated entity. From a regulated entity perspective, it was noted that the only mechanism available in the price cap, to optimise returns, is to underinvest during the regulatory cycle and live with the consequences of those decisions until the next cycle. One of the respondents gave the example of the 2008-2012 regulatory cycle which was based on traffic forecasts that was prepared in 2006. The capital investment program was based on these forecasts which at the time predicted double digit traffic volume growth. The management at the time appointed contractors on a turnkey project basis, meaning there was no flexibility to phase the projects. In 2009, South Africa faced a traffic decline in tune with the recession, however the projects were already committed and could not be aborted. The projects therefore commenced and the demand risk was placed in the hands of the consumer. As a consequence of this the regulator introduced ex-post decisions, which were not previously allowed in the framework, in order to alleviate the burden to the consumers. According to the respondent this was not done in a transparent manner and has led to an impasse between the regulator, the entity and the industry in terms of capital investment decision making. The regulator having been burnt previously, no longer allows capital

investment projects to proceed without evidence of strain on certain operational indicators, which creates a short term focus.

"Because it is impossible over the period that we do the planning to prove that to a regulator [strain on operational indicators], the regulator therefore does not release these projects so that they do not pass on that demand risk to the consumers because they have now been burnt but in essence what is now actually happening is therefore, that we are not investing in infrastructure"

The way in which ACSA is therefore managing returns as a result of the exclusion of certain capital investments from the regulatory asset base is by underspending on capital expenditure, which allows for recovery of returns but creates a "vicious circle" because in the next cycle there will be a clawback from the underspent capital expenditure and reconfirmation to the regulator that the system is being gamed; leading the regulator to make further questionable decisions.

"The intention of my role was eventually, in terms your original question, was try and create a virtuous circle where we have agreement with industry, agreement with the regulator, better understanding of the long term plans of ACSA so that we start to not try and oppose each other on the gaming of a short term period within the price cap, but rather to use the price cap over the long term and to concede the benefits of that over the long term. But we have not achieved that yet"

Theme 4: Attractiveness of Cost Based Methodology in its Cost Recovery Abilities

The respondents felt that although the cost based methodology does allow for cost recovery; because the entity has such low risk, the returns are equally lower and therefore it doesn't necessarily make it a more attractive methodology to investors.

"The cost of capital is normally fairly consistent whether you invest in a utility or whether you invest in an airport, so what you want is a management team that can give you a proper return on that investment, if the methodology is so limited, like the one in a cost based methodology like in the case of an Eskom for example, that doesn't really allow you to manage upside returns."

Theme 5: Single till vs Dual till and investment incentives

It was felt that the single till rather induces investment rather than not as it is able to shield the airport operator from any adverse commercial business risks. If for example, there was a commercial investment within the till and the commercial revenues predicted did not materialise; in the next regulatory cycle, passengers and airlines would remunerate the business for that investment within a single till. Within a dual till system however, the commercial assumptions made need to be retained in terms of which portion would be contributed by aeronautical revenue and which would be contributed by non-aeronautical revenue. These assumptions would need to be retained as the entity would not be able offset aeronautical revenue performance against a bad choice of commercial investment.

"The risk of bad commercial performance or bad non-aeronautical performance from an investment is mitigated through the single till concept"

One of the respondents noted that ACSA is currently trying to increase the portion of non-aeronautical revenue in the single till, currently there is a split of approximately 60% aeronautical revenue and 40% in non-aeronautical revenues. The rationale for this is to reduce regulatory risk. It was felt that the regulatory risk is compensated for, within the single till framework as the company is assured that it will break even.

"They are trying to increase non-aeronautical revenue to overtake aeronautical revenue to offset regulatory risk. Now my view is that as a regulated company, this is risk free aspect of your business because you are protected by the regulator, it is guaranteed…….If it comes to a need for ACSA to break even, that can still be addressed through this process. Whereas with a private company, breaking even is beyond your control, so that's what I'm talking about but you can have that risk of maybe your maximum return being affected but the detriment of you being a completely liquidated company is protected. Because if you look at the Airports Act it says that you should have a reasonable rate of return, what reasonable is ,is something else but it surely guarantees you that you are breaking even , whatever breakeven plus is, is something else but that's what I'm talking about , you are now covered by the guarantee that you will break even. That is why I am saying, that as a company, the market risk is absorbed by this process behind the regulatory risk.

It was noted that where the dual till works successfully is where there are well developed financial markets supporting the airport with the financing for the identified projects and where the airport is able to aggressively pursue the generation of non-aeronautical revenues, which have largely been in the form of a property development. This is because property development mitigates the risk of traffic volume declines, whereas other commercial activities such as hotels, retail shops and car parking are linked directly to passenger volumes.

Additionally in the case of African airports it was felt that the single till, is probably the best approach for operators and government. Firstly, the respondent gave the reason that in order to implement the dual till system, the regulator and industry (airlines) would require a substantial commitment to off-set passenger charges and relayed the example of Frankfurt airport's dual till system. In this system, the non-aeronautical business was contributing approximately 10-15% of the entire cost base of the airport and yet they had to accept a 60-70% set off.

"So they were prepared to do a 40% allocation between aviation and a non-aviation costs, where they have allocated most costs to the non-aviation business that sits in the separated till and only kept 40% of the costs within the regulated till whilst probably 85% of the costs really originated from the regulated till and so there is a compromise that needs to be reached. So you need to be very confident about your future business cases that sit in the separated business till over the long term"

The dual till also require very robust commercial activity which may not be all that possible in some jurisdictions of the continent.

Theme 6: Regulatory Efficiency Factors

It was found that an efficiency factor is applicable in the ACSA context, and although the system provides the correct incentives for efficiency, the manner in which the benchmark is determined and applied has led to certain issues. These issues relate to the efficiency factor being applied to costs over which the entity has no control over, such as depreciation. The second issue under contention was the practically of the efficiency factor, the respondent referred to a report by the UK Civil Aviation Authority which stated that a

10% change in traffic volume would only produce a reduction of approximately 1% in cost, this is due to the need to continuously conduct maintenance, security, cleaning, municipal rates and electricity even though the facilities may have not reached their saturation in capacity. And therefore the efficiency factors are often seen as unrealistic and unachievable through pure efficiency gains.

"Where the regulator in our case, for example sets the efficiency factor at the price level so it is an overall efficiency factor that then applies it to our non-aeronautical revenues, to our deprecation charges and to our operational expenditure that is allowed in the building blocks calculation; which if one then translates that normally into purely operational type efficiencies which we believe it should be focused on, it then can often be a factor of 3 can be applied to it, so a 2% efficiency factor easily becomes a 6% cost reduction in the broader operational efficiency side"

The final issue with the efficiency factors, was that of scalability of operational throughput, where often it had been argued that because the facilities are not at full capacity, this should be reflected in lower operational expenditure. However the issue is that it is almost always required to provide operational expenditure up to the design capacity, as an example, even though a terminal is not full to capacity, the full terminal building would still require cleaning, security, and electricity etc. Hence some operational expenditure costs are uncontrollable and thus should not be subject to the efficiency factor. Rather this factor should be applied to controllable costs. Respondent 1 remarked that the United Kingdom applies the efficiency factor on a line by line basis, which allows consideration of what reasonable efficiencies can be made on that particular cost item.

"The argument was that company's Opex grows this much and we say, you know the Opex is growing because the infrastructure goes in, you need to man the facilities, you need to open for longer hours, maintenance of the facilities as well becomes a big issue and the Opex went up high and efficiencies are more under Opex because that is where you can be able to abuse or where you can be able to control. Now we also learn that you still have controllable Opex and uncontrollable Opex when the land of the airport grows, the municipal rates grow, when the airport grows electricity increases that's not controllable, when the airport grows the water bill grows, that's uncontrollable. But performance bonuses, and salaries and all that, those are controllable"

Given that airport infrastructure extends beyond the regulatory period whilst the efficiency factor for future regulatory periods is unknown, has led to the risk of cost recovery. The respondent noted that over the last two regulatory cycles, issues of unpredictability of the regulator have led the management team and the board to take the decision to halt investment in infrastructure as a means to mitigate the cost recovery risk.

"Therefore we find that we are not investing in any new major infrastructure projects because the board and the management team is not prepared to take on any risk in that regard due to the lack of predictability that the regulator offers so it has severe implications on airport passengers and airlines in the sense that, that level of uncertainty really does not incentive investment"

Theme 7: Regulatory Cost Variations

Issues of allowances and disallowances were found to be the principal source of debate, and uncertainty within the regulatory framework. The unpredictability of the system seems to stem from an over-reliance on forecasting and cost estimation which by their very definition are not supposed to be accurate.

"The regulator has the view that the regulated entity in this case ACSA has sufficient capacity and understanding of markets and an understanding of the scope of the project to accurately forecast the cost of that project , it does not take into account that in many cases , those projects are so far into the future that the tolerance for deviation is quite substantial because scope has not been clearly defined, because the cost elements that actually will contribute with the underlying commodities cannot be controlled etc."

Respondent 2 felt that information asymmetry was the cause of the current issues, and noted specific instances whereby the entity should have informed the regulator at the time what the prevailing conditions were and how these would affect the overall cost and made mention that from a regulatory perspective it is important to ensure that consumers are protected in that money spent on investment is done wisely.

"From an accounting and investment perspective, for the money spent there must be a return on it but from a regulatory perspective the point is, was the money spent wisely irrespective of the amount of return"

Both respondent views seemed to expose the human factors at play within the framework on both ends, the regulatory side and the entity. Noting that the process of allowance and disallowances is in fact subjective and the governing principals of what is allowed and not allowed are not adequately defined.

"There are no clear guidelines in terms of how that will work and we don't know where it is applied in practice. Theoretically it sounds fine but practically it becomes very difficult to prove. If a commodity price goes against you, let's say steel for example, and now you incur more costs. Would a regulator argue that you should have hedged that price as an example and what is now justifiable? In reverse or to the contrary if the steel price were to now reduce, would the regulator not sit back and say but you did not create that efficiency, that efficiency was created . Although you managed to buy at a very good point in time and you managed the commodity risk very well, we don't really believe that you created this efficiency, it's actually the market that created that efficiency so we are not going to allow you retain it, so it's very fluid and not really conducive to predictability"

Theme 8: African Aviation industry move towards regulation reforms to attract investment

It was felt that although regulatory reforms were being implemented in South Africa, to allow for greater predictability and thus attract investment, the rest of Africa at large had not even embraced economic regulation. In many countries tariffs were determined by submission to the government for the funds required. Of the countries the respondents knew of who had were either partially regulated or were looking into regulation were Kenya and Tanzania.

"So unfortunately within the African continent, there is not an appreciation for economic regulation. The provision of infrastructure primarily lies with the state and not within a commercialised entity where within lies an economic regulatory framework that allows private participation"

Respondent 1 also mentioned that African governments have realised that they need not provide funding to all of their airports and have thus been using PPP's or obtaining funding through exchange programs with China and the like, the challenge still remains that there are very few airports on the continent that are over 1 million annual passengers which can self-fund. The other challenge noted was that where the airports are large enough, often the funds do not get ploughed back into the airport.

"I think that there is a realisation that it can be funded with non-tax money, you can get passenger and airlines to pay for those facilities. Unfortunately, what tends to happen as well, we have seen that in the DCR, once they see that those opportunities are there for passengers to pay for facilities, they then want them to pay for more than just the facilities then those governments tend to introduce departure fees that do not get ploughed back for capital investment in the future"

Theme 9: China Exchange Program

It was found that the respondents do not view that this form of funding is the most sustainable in terms of African aviation funding. Whilst the view was that the financial offering is very attractive, the build quality of Chinese buildings was noted as still being questionable, and given that an airport will require 30-35 years to see a real return on an investment of that magnitude; the building maintenance costs could be considerable if the build quality is poor. Also in terms of skills transfer to the local people, these financing mechanisms were not seen as being beneficial to the communities at large.

"*For the country itself, I don't think it's such a great thing because first of all the built quality of Chinese, is not up to the international standards or international build quality, that is well acknowledged. So on the trip we took to China; Chinese buildings are not built to last more than 20 years, they are so used, over the last 20 years, to have had extreme economic growth that they have had to demolish buildings they built 10 years ago, so their focus on quality is not that high because they don't believe that those things are going to be standing there for 20,30,40,60 years. So I think there is a risk in terms of the sustainability of that, that 20 years from now those facilities will start to crumble and then they will be very difficult to maintain and you will not be able to achieve ….because you need probably 30/35 years out of those assets to earn appropriate returns over those assets to make it worth your*

while. And because there is no transfer of skills to the local workforce that also creates a problem, and then of course you give them access to your raw materials; so there is no true beneficiation."

Theme 10: Skill and Capacity and Knowledge in the Aviation Economic Regulatory Space

The respondents tended to agree that there was a lot of work still required in terms of upskilling and capacitating the regulatory space, not only from the regulator perspective but also from the regulated entity's perspective and even the airlines themselves. One respondent stated that the issue is related to turnover of staff that perform a regulatory function, who get poached by the private sector.

"We have differing views of what economic regulation in the business would be, currently, it is seen as a compliance activity. It is the activity in which we apply for a tariff and if don't get it, so be it, we then manage the business within those constraints. It is not seen as a strategic arm that is driving strategy in terms of changing policy decisions, creating accountability, developing capacity that would then be for the benefit of the entire industry. So currently in ACSA, there is no such view. It is pervasive throughout the entire industry, airline associations don't take time investing in that. The government has started to do a bit of that, they have started to invest in economic regulation capacity but again, you tend to get political override over many of those initiatives"

It was felt that investors however are the most proactive participants in trying to understand the regulatory regime and framework, and that they spend considerable time on the topic.

"They spend the most effort in understanding economic regulation of all …you will not find any investor not wanting to have a thorough understanding of and not having spent large amounts of time with myself for example when they want to participate in any of our debt products"

Theme 11: Regulatory Reforms to Enable Private Participation

The respondents mentioned a number of reforms currently being implemented to improve the system. The first is the development of a legislated appeals process. Where decisions of the regulator can be questioned without a lengthy court proceedings.

We are now for example working to introduce an appeals mechanism that talks to accountability of the regulator. If the regulator isn't accountable to anybody in terms of their decisions, they always take the easy route out and they would rather have us being upset with them than consumers; they don't like to be unpopular at the end of the day, they are just human. If there is no mechanism for the regulated entity to challenge a decision it's meaningless, it reduces the accountability of the regulator

Respondent 2 mentioned several historic instances where the regulatory model was tested for example the introduction of a 20% private shareholding which meant that issues of dividend pay-outs were no longer at the discretion of the majority shareholding and the implications this had on the company's' retention. The 2010 FIFA World Cup also introduced an international obligation to the country and specifically to its airports, including the major debt raise in the lead up to the World Cup that increased the company's debt 17 times over and had various implications including that of standing covenants. These were all instances in which the regulations and model was tested and the realisation was that the regulations were not well defined and thus, refinements to the regulations, the funding model and the Airports Act are currently underway to deal with these and other issues. The respondent also mentioned the establishment of a single, full-time transportation regulator is also underway.

"We turned around and realised that regulation was not so clear, the funding model for example ex-anti vs ex-post, how do we deal with the RAB issues, how do you bring in unexpected capital expenditure into the asset base for the company to be compensated, how do we deal with issues of inefficiencies …….Now there were those challenges that we realised , we need to go and amend the legislation to cater for regulations that are clearly prescriptive, ensuring that the regulatory environment is predicable"

It was again reiterated that reforms themselves will help, but it is capacitating the industry and the regulator that will ultimately reap the benefits. It is the application of the technical mechanisms detailed in the funding model and regulations that will ultimately produce the credibility and predictability sought by investors. It was also noted that investors only seek certainty of future cash flows and thus the selected regulatory regime is only a secondary consideration. Investors have different risk appetites, so long as the system is predictable, the capital will be available.

"The capacity of the regulator, the capacity of the industry and then the levers within the framework whether you apply price cap methodology appropriately , efficiency factor within that and the calculation and the allowances within the regulatory asset base etc. so those become more technical issues but you need them to be supported by the fundamentals. Because you won't be able to have a scientific conversation around efficiency factors if there is no capacity within the regulator, if they don't know that when they make a decision on this they can be challenged. If the industry cannot contribute properly to that conversation …it's no use introducing a scientific way to calculate the efficiency factor because the regulator can change the rule tomorrow again. That is the problem that we have at the moment. So the biggest incentive in decision making is not…. is just having an economic regulatory framework in place that is predictable, that is accountable and that is where the regulator is independent and the decisions are transparent. If you have that in place, investments will flow , it actually doesn't matter which framework that you have in place, that is irrelevant because you will attract different types of investors for different types of frameworks ,so if I am a low risk investor ,I'll go for a cost based method, if I'm a high risk investor, I would like a rate of return framework but that capital will always be there, it is just who you will attract, so that is ultimately the driver of investment is the certainty of returns of future cash flows, whether its high or low is actually not important."

4.6.3. Airport Operators

The respondent identified and interviewed for this portion of the study was the Group Treasurer at Airports Company South Africa.

Theme 1: Major Capital Investment Requirements

In the case of ACSA, the major capital infrastructure investments required was additional capacity in the form of aircraft parking stands at OR Tambo International Airport and the realignment to the Cape Town International Airport runway to unlock future development expansion space.

Theme 2: Historic Underinvestment in Airports

It was found that historic underinvestment was the situation at Airports Company South Africa, prior to the soccer World Cup in 2010. The reasons put forward for this was a lack of traffic demand and other more pressing priorities, the respondent postulated these reasons for other airports on the continent as well.

"I think the only development that can happen is if there is demand, so if there is traffic growth to those airports then we can see development in those airports; there are a lot of pressing issues in developing countries, you have poverty to eradicate and all of those other things, that if you are now going to build a posh airport and you are only going to have two flights a day, it starts to became a problem, you need to prioritise. So people just maintain these old assets because there is really no demand for them, but I think as the demand starts to pick up as Africa is now becoming open for business"

Theme 3: Main Funding Mechanisms Utilised

The main funding mechanism utilised at ACSA has been the debt capital market, where approximately 70% of the total funding requirements were raised (ZAR 12 Billion). They did this by registering a domestic medium term note program (DMTN) of approximately ZAR 30 Billion, this program allows for greater ease of raising funding in the future as all the required documentation and clauses can be referenced to it. The going interest rates at the time (around 2008) were 10.5-11% and due to the crisis at the time, it was difficult to secure bond financing for the full requirement and therefore other means were required to fill the gap. Commercial banks were also utilised to raise medium to long term funding with short term facilities that could be made available in 24 hours. Development finance institutions, namely the Development Bank of South Africa and the France Development

Agency were utilised and provided long maturities with a grace period, the grace period was particularity helpful in terms of flexibility. It enabled the operator to only start paying back the loans after the construction was completed. Commercial paper was also utilised and was converted into loans.

"So most of our funding, about 70% was issued under the DMTN, made up of listed and unlisted bonds, bonds that are floating, bond that are fixed, mainly we issued bonds that are fixed and we issued long term bonds so average 10 years upwards, mainly because of the assets that we are financing…..But it was difficult in 2008 because this market started becoming very expensive because of the crisis that was going on at the time. and even, most of the corporates were not issuing at the time, so it was mainly SOE's and SOC's and the government which were issuing but they still provided the access, they still provided a reasonable pricing compared to those days……even if I could get 1% lesser than the DFI but I was not guaranteed that I'm going to get the amount, because with a DFI … if you are looking for ZAR 2 Billion they can be able to provide you with ZAR 2 Billion but at the same time at a slightly expensive rate. If you go into the DCM and you want ZAR 2 Billion, they might give you a cheaper rate but only get ZAR 200 million, so you still have that gap that you still need to fill, so those were the bit of challenges that we saw when we were funding for our infrastructure."

The respondent made mention that because the entity under study is government owned, there is an indirect guarantee from the government and this may explain the good take up of the bonds at a very frail point in time in the financial markets.

Although Airports Company had not utilised an exchange program previously due to time constraints, the respondent mentioned that this would definitely be an option for consideration in the future however work had to be done to ensure that some local content would be possible within the contact.

Theme 4: The Success of Traditional Financing Mechanisms

It was found that traditional forms had been very successful and in particular it had been very important for ACSA to try and diversify their financing sources primarily to enable

better negotiating positions, and although it could be argued that some sources of funding were more expensive than others, diversification was a critical element.

"I think what we tried to do all the time was to diversify, so you don't want to put all your eggs in one basket. The more sources of funding you can have the better because even your negotiating power…. So we will continue to use all of the sources. So somewhere we might say ok, maybe it might be a little bit expensive but diversification is important, that might be a benefit vs the slight cost that it may come up with"

Institutional investors were also mentioned as having played a major role in the funding of infrastructure at Airports Company South Africa, raising 70% of the required funds though the bond issue.

"They have played a major role, they have been the biggest funders close to 70%, and they have played a major role in ensuring that we get the funding that we require, but again they didn't do it as a charity, they also needed to earn the returns that they were looking for and to be fair, for us with ACSA they are the biggest investors in our bonds, so they have played a major role in our infrastructural developments."

Theme 5: Airport Ownership and Privatisation

ACSA is 75% owed by the national government through the Department of Transport, 20% by the Public Investment Corporation, 4.21 % by minority shareholders and 1.2% by staff.

The respondent mentioned that much of Africa views airports as national assets and gateways into their countries, therefore from a security perspective, they are unlikely to fully privatise their airports, and in particular after the introduction of private shareholding within Airports Company in 1998, it was felt that further privatisation would not be ideal.

"I think in 1998, we were also in that same position, when some of the shareholding in ACSA was sold to Areports de Roma, to minorities, to staff, but later on, at a shareholder level, it was decided that, that was not the way to go and interestingly with Telkom and Sasol and others, government actually went all the way, so I think even in Africa, I won't think that government will let go completely. Mainly because the government view airports

obviously, as national assets, it acts as a security point where a lot of people enter the airports. So you don't have control over that space, it might pose challenges for you, so for that reason, that it's a gateway. I believe that they will not let it go completely"

The respondent agreed that certainly, there was pressure to introduce private partners into the airport business through concessions or private public partnerships, this was in large because governments have many other pressing issues but also because the expertise has also not been fully developed.

"*the likes of ourselves are going to Brazil, we are going into India and we are looking into Africa and there is a lot of development that is required by airports, by governments who are not willing to pull out their purses and spend their money because there are other priorities, that are facing the world at the moment so they found that the best way is then to get a private partner who knows how to do this, but not on an ownership basis, its either on a concessionaire, a public private partnership and so forth, so that the asset, because of security nature of airports, remain still in the control of the government itself so they might then say, so earn your profit and afterwards bring the assets back to us and we will continue. But because they need that development to happen now, they can't then wait to say we will get there when. For instance Brazil traffic was growing hugely and they had the World Cup, now they have the Olympics, so they need to get this done and they realised towards the end, that they can't do it, initially they planned to do it themselves but they realised that they need people to help them here and we have seen this happening a lot and I believe that it is a good thing where private partners can come with expertise , they can come with all of those things and within that period of concession, there can be a transfer of skills and so forth and hopefully leave the airport running efficiently after even the concession is over, because as I said, I don't see government relinquishing that ownership completely"*

Theme 6: Securitisation of collateralised loan obligations or project finance loans

It was established that securitisation had never been a consideration and therefore no real research has been done on this financial tool internally, primarily because it is a complex product, secondly because it lost a lot of popularity after the global financial crisis and lastly it's viewed as not being as attractive from a cost perspective.

"You don't hear a lot of securitisation around the projects and infrastructure, its more around the debtors book to say what do we do with the debtors book and so forth……to be honest we have never even researched securitisation in terms of infrastructure financing and something that maybe will talk to this as well and I keep referring to the crisis because it has a lot of impact on that. Before that, securitisation was quite popular and I think it was growing quite a lot in South Africa and it might have even spread to the infrastructure and other areas as well. But once the financial crisis happened and everything went outside of the parameters, literally securitisation almost died because no securitisation deal was now being done because it was just too expensive to do then. So I have seen recently that it is starting to revive itself again but the fact that there are also issues of trust around it …So I think that it is not the first thing you consider because it is probably complex one, two it's not less expensive, so the attractiveness of it is not there and thirdly the lack of trust around the fact that when all of these things went wrong around that time it was probably one of the instruments that felt it the most. So I think that's probably that but to be honest, even in ACSA here, we are researching in terms of ECA, we are talking to banks of that and that , ahead of our infrastructure that is coming, but at no point have we ever discussed securitisation around that"

The respondent further elaborated on the importance of simplicity in funding structures as they may have implications on how the businesses is run, it was mentioned that very little work had been done on educating the industry about how securitisation could be applied to infrastructure funding, so naturally it wasn't a mechanism that the respondent felt comfortable with. Later the respondent acknowledged that although that there is an industry wide perspective that securitisation was expensive, it wasn't something that had be analysed, actual scenarios had not been tested to verify that assumption.

"*So, from the experience that I had before, I found it to be expensive. It might be that it's not, but the perception is there that securitisation is expensive. And it's a perception that is there and I can tell you that even if I speak to anyone else about it, they also have that perception quickly. But when last did I have a look at the numbers to see whether it's really expensive or not? No, I haven't. But immediately what springs into my mind about that funding instrument is that it is expensive. So that's why I think talking , more awareness and really more digging deeper into it, in terms of practice will help and see how it goes. because one knows it in theory , one knows when it was applied there maybe home loans*

did it and this is how it went but really to get into the nitty gritties of it, I haven't even done that."

Theme 7: Airport Regulation

ACSA utilises a single till, hybrid rate of return and price cap model. The respondent went on to mention that currently the regulatory decision making is not predictable, and that this has had significant impacts on investors as this is the way in which ACSA earns its money. The issue being that how can ACSA make future assumptions about returns to investors if the decisions making of the regulator is unpredictable and not transparent. The respondent noted a downgrade from Moody's following the outcome of the latest draft tariff submission, where the regulator removed a significant amount of projects off the proposed capital investment plan.

"There tends to be decisions that are made by the regulator that are not expected or are not within the guidelines that we might be working on, so its highly uncertain, its highly unpredictable and it does hugely affects private investors. Because this is how you earn the money at the end of the day, so when you go out and borrow, all private investors are concerned about is whether you will be able to give me my money back. Yes they are concerned about the returns to say, you must give me my money back plus something else so that I can make a return but basically the fundamental issue is that at least you must give me my money back, that one must be a bare minimum, you will have failed but at least you would have given me my money back. So if then, the regulatory framework is not transparent, it's uncertain and it's unpredictable, then it poses a problem for them to say how did they then go about trying to assume this return, trying to calculate or forecast, or project what we will get in return and it becomes difficult for us as management to also go and state that case. So recently we have been involved where the regulator has issued a draft permission, we have even had a change in outlook from Moody's in terms of positive to negative because of this draft. We conduct roadshows on a yearly basis to investors as a company where senior management goes and consults with them, after our financials and in those roadshows the only questions we were answering were about the economic regulation, so they were not concerned about anything, they were not questioning whether we made profit or not, they were concerned about economic regulation and what is going to happen in the future, because it's the future that determines how much we are going to

make and then what determines how much you are going to make, then determines how much you are going to pay them and if we are going to be able to pay them. So it usually plays a huge role especially in a regulated entity like us, so it's big."

The respondent mentioned that in response to investors following the downgrade and draft tariff outcome (permission) they were fortunate in that there was still room for negotiation with the regulator, and that management still had a variety of scenarios to play with. At worst, ACSA would face a situation where they can no longer invest in additional capacity in their airports but will continue to survive by maintaining and capping the capacity of the current system.

"Nothing is final yet, luckily for us, it's not as if it's out there and they have said that's it, live with it. So there are different scenarios we as management can play about but we are pushing back because we believe that if we don't, one of the examples we were making were around the load shedding because it was a practical example to make, to say that if you do not allow investments to happen now, you then get to a point where now we can get to handle the traffic and everything, but the world grows and we get to a point where you can't handle it, and then what? You can't then go back and say but in 2015 actually these people were suggesting this, but this did not happen and whatever, you don't want to get to that point, so future growth is highly dependent on that we get the returns that we are looking for. ….but worst case scenario might be that if we do get it, we might then not be able to invest; but we will still survive as a company, but we will not actually be able to do what our mandate wants us to do. Because remember that when you invest you need to approach the investors to help you do that, they will say no, I will not when you are not being able to get the right amount. A typical example is Sanral, so Sanral went in and said that, we are going to do this, we are going to have etolls, and you are going to get your money back, that isn't happening. So Sanral, when it goes back to the market, they won't get the volumes that they were looking for"

On current impediments in airport regulation, the respondent's view was that that skills and capacity of the regulator were among the major challenges that show up as a transparency issue.

4.7. Case Narrative: Zambia

Background

Zambia is landlocked country located centrally in the Southern African Development Community countries region. It is currently one of the smallest aviation sectors in Southern Africa. (World Trade Organisation). Schlumberger, (2007) characterises the Zambian aviation market as small with uneven growth and notes that the air cargo market plays a critical role to the countries perishable exports. The growth of the aviation section has been notably marred by its excessive jet fuel costs which in 2005 were 55% higher than that of Johannesburg. (Schlumberger, 2007). The country has 144 airports and landing strips, the major four international airports are managed by a state owned airports operator, Zambia Airports Corporation previously known as the National Airports Corporation Limited. The country's provincial airports are managed by the Department of Civil Aviation.

Zambia Airports Corporation Limited

The National Airports Corporation Limited (NAC) was established in 1989 through the amendment of the Aviation Act and incorporated under the Companies Act Chapter 388 Volume 25 of the Laws of Zambia). It started operations on the 11th of September 1989.It is a 100% government owned company the Republic Of Zambia, in November of 2014 it underwent a name change and is currently known as the Zambian Airports Corporation Limited . The Corporation was established to provide air navigation services throughout Zambia and also to maintain, develop and manage the four designated international airports in Livingstone, Lusaka, Ndola, and Mfuwe.

The National Air Transport Policy paper published in 2002 by the Ministry of Communications and Transport in the Republic recognises the importance of air transport to support the development of the economy and as such lists the key objectives in the aviation sector to include the creation of a liberalized and competitive environment, promoting air transport through trade and development, ensuring effective regulation and attracting private investment in airports and airlines (World Trade Organisation). In response to this the Zambian Airports Corporation has channelled some of these objectives into its 2012-2017 strategy which includes the following five elements: the provision of high quality airport services, the delivery of safe, reliable and efficient air

navigational services, the establishment of infrastructure to support the delivery of quality services; the provision of sound financial returns that will promote the corporation as a commercially viable entity and lastly to contribute to the sustainable social and economic development of the state. (National Airports Corporation Limited, 2014)

Since the company is 100% state owned, it has not required the establishment of economic regulation of airports to safe guard the public for unfair tariffs and uncompetitive practices. According to the Aviation Act, the company may determine parking charges, landing charges, cargo charges and any other charges for services provided by the corporation at its designated airports, including navigational fees throughout the republic. These charges must be approved by the minister and gazetted (Republic of Zambia, 1995). Navigational, landing and parking fees have remained constant since 1994, however the corporation is in the process of amending the fees, Prince Chintimbwe, the Director of Airport Services is quoted as saying “these are things you cannot do without government approval” on the process to be followed to amend charges (National Airports Corporation Limited, 2014). In contrast an investment policy review study by the United Nations found that Zambia airport landing charges were excessive and creating a bottleneck to enhancing air cargo trade.

The company also generates revenues from navigational services, parking fees, office rentals, landing charges, ground handling, air navigational charges, a passenger security charge, passenger service charges and government support on capital projects (for example runway maintenance and navigational aids) (ICAO, 2010) .In June 2013, the Corporation introduced an aviation infrastructure and development , which was charged to all departing passengers, this fee is intended to contribute to the redevelopment program of its four airports. The majority of the funding for these projects was arranged by the government through concessional loans namely USD 520 Million for the relocation of the airport in Ndola and USD 360 Million for the expansion of the Kenneth Kaunda International Airport in Lusaka. The airports Corporations Managing Director, Robinson Misitala is quoted as saying “The NACL would never be able to carry out these projects without the support of the government, most of which is by the way of long term concessional loans” (National Airports Corporation Limited, 2014), this statement is echoed by (Schlumberger, 2007) who notes that although the company can fund maintenance programs it cannot invest in major infrastructural improvements.

Zambian Financial Sector

Zambian financial sector was characterised as strictly regulated prior to economic reforms which took place in 1992. These reforms included the development of capital and money markets, interest rate liberalisation, the modernising of payment systems and the regulatory framework and the adoption of a market determined exchange rate. These reforms although helpful have not met some of the existing challenges in the sector which include: limited financial instruments in the market (government issued instruments still dominate) , an inefficient banking system, underdeveloped secondary capital and money market and inadequate skills and knowledge on the use of regulation of alternative financial instruments including securitisation which is barely utilised. The market is still dominated by short term facilities such as bank overdrafts, as such legal guidelines for the trading of alternative instruments remains underdeveloped and along with it financial innovation is stagnant. Zambia's financial sector is bank dominated and relatively small. The banking sector accounts for approximately 90 percent of the financial sector assets. There are currently 19 commercial banks operating in the country. (Bank of Zambia).

Capital Markets

The capital markets are an important source of long term funding for investments such as infrastructure. The Zambian capital market has be described as small and underdeveloped (World Trade Organisation).The Securities Act was passed in 1993 to allow for the establishment of a formal capital market and regulator. Zambia therefore established its stock exchange, Lusaka Stock Exchange which began operations in 1994, the platform currently trades government and corporate bonds, equities and unit trusts. As of 2014 the exchange had 24 listed companies with a market capitalisation of ZMW 63 million. (Zambia Capital Markets, 2016)

Institutional Investor Base

National Pension Scheme Authority is the most dominant institutional investor however the country has over 240 pension funds in operation. Few of these pension funds participate directly in the securities market, many smaller funds participate through fud managers (Making Finance Work For Africa, 2014)

4.8. Interview Analysis Results

4.8.1. Infrastructure Finance Specialist

Respondent Background:

One respondent was interview for this portion of the study, although the respondent was not based in Zambia, they had worked in Zambia and other African nations specialising on corporate and infrastructure finance. The respondent interviewed was the Vice President of Leveraged Finance at Barclays Africa.

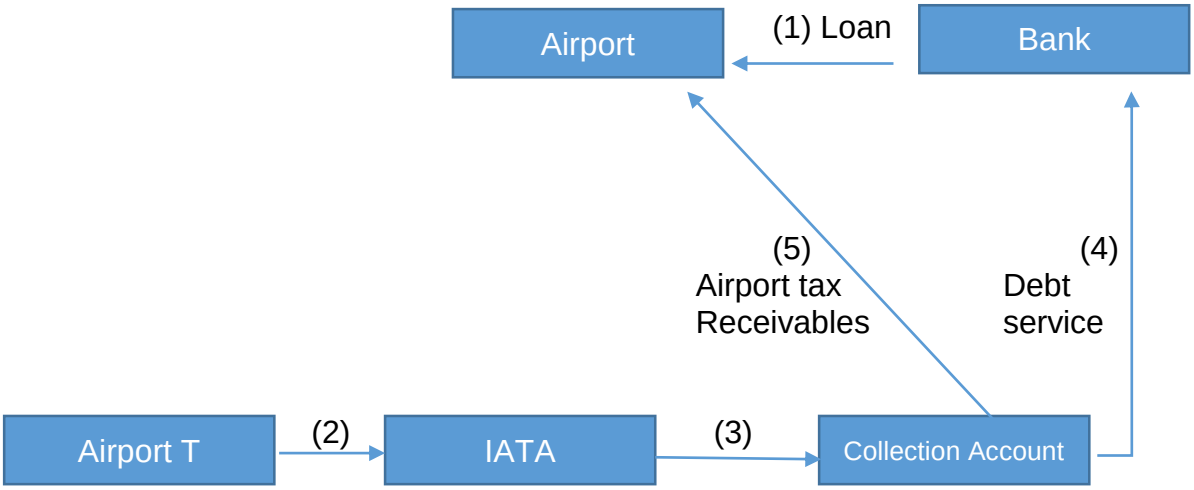
Theme 1: Securitisation of airport revenues for infrastructure

The respondent mentioned a similar structure they had completed with an African airport authority (details confidential). The airport authority had signed a deal with IATA (the International Air Transportation Association) to collect operating revenues at its airports. The authority had embarked on this agreement as it was struggling to collect revenues from airlines not physically based in the country. IATA therefore had a contract to collect ticket taxes, airport and navigation charges on behalf of the entity.

The structure entailed the airport authority requesting a loan from the bank(1), airport taxes would then be collected by IATA (2) and transferred to the collection account (3), this collection account was an SPV that issued a Promissory Note to the bank, the promissory note assured the bank that the airport tax collected by IATA would flow to the Collection Account (SPV) and thereafter to the bank ,to service the debt (4).The remaining revenues would then proceed to the Airport Authority (5). The bank has the ability to sell the instrument provided there is a market.

The respondent noted that because airports are “generally loss making” , ring fencing a contractual agreement in place (IATA Collection Account) in an SPV enables the bank ensure their debt is serviced prior to the revenues being utilised for various other purposes by the airport authority. A promissory note is also the most practical instrument as it is difficult to enforce security over state owned assets such as airports, and it is a simpler and less complex instrument when compared to bonds. For example the credit rating process need not be done by an agency as is typically required of a bond, in this case the

credit assessment was only performed by the arranging bank. The benefit for the airport authority is that the loan sits outside its balance sheet and therefore doesn't affect any covenants in place. They also have access to better pricing as the loan is not based on the credit worthiness of the entity but rather the strength of the contractual cash flows collected by a reputable international association.



"So the big issue with airports is that one, they are generally loss making so the cash flow model doesn't really work, you can't really enforce that security, it's a state owned thing no-one is going to enforce security on an airport ….. Basically the way the securitisation model would work, it's just basically creating an instrument, or a security instrument that is based on agreed or contractual cash flows that instrument in this example is a promissory note (PN) which you can then sell or use of other purpose. But that instrument is based on a contractual agreement and the benefit of that, is that you have a positive risk, you are on these IATA receivables, this international agency, you can give them better pricing. So it works better than if they were going to borrow the money themselves and secondly in some instances particularity were you have this PN, it's not actually sitting on their books"

Theme 2: Infrastructure Funding Trends in Africa

DFI's were noted as a popular and consistent source of infrastructure funding, the respondent also mentioned that concessional funding, is a very popular infrastructural funding mechanism on the continent, in particular China, and presents a problem to the commercial banking fraternity in competing for infrastructure deals in Africa. Typically the concessional finance terms are offered by the Chinese's are at LIBRO + 0 /1% with

maturities of up to 30 years. They however noted that the challenge with concessional funding is that it is ultimately government debt and there is a limit to government debt. Project finance has become less popular due to the complexity and cost of the structure and so the trend is that these companies are beginning to turn to commercial banks for funding. The respondent noted that for commercial banks the issues with infrastructure are typically the long tenors required and the currency risk; noting the current volatility in African countries for example the recent Zambian Kwacha depreciation of over 100% against the dollar in a period of two months.

DFI's have begun to encourage partnering with commercial banks, and the respondent mentioned that they were currently in the process of completing such a deal; whereby half of the loan requirements are met by the DFI and the other half by the commercial bank with the DFI providing certain guarantees. The respondent however noted that this partnering only works from a commercial bank perspective if the guarantee provided by the DFI is for full risk transfer. It was noted that often the guarantee provided is simply a guarantee against non-payment and not against political risk for example which is a reality in many infrastructural projects.

"In East Africa there is a big infrastructure drive and the thing about African countries is that they have typically been funded using concessional funding and a lot of them are now trying to get bank loans , there are a couple of reasons for that; one is that the concessional pool has dried out because its technically government debt and there is a ceiling on government debt and governments are just not willing to keep doing that and governments want these businesses to fund themselves……. now you're looking at all these businesses coming to the banks for money …the challenge is that there are used to long term money to match the nature of those assets, and the markets haven't really seen that for corporate commercial loans with no guarantees. Now we are seeing a lot of businesses where business is saying actually, I'm not going to create a project SPV, I'm not going to go through the whole rigmarole of creating an SPV because lenders are going to ask for technical advisers …its work. It's a whole lot of government businesses with this infrastructure drive where they are saying; I'm actually going to borrow this money myself"

"If you have a scenario where you have USD 500 million and half of it is commercial bank debt the other half is say, World Bank debt, the half that is commercial bank debt will be more expensive than the World Bank debt but you can only achieve that if there is full risk transfer. Because otherwise political risk is a real issue for infrastructure funding"

Theme 3: The lack of quality data, particularly historical or statistical data, is often a major impediment to the rating of emerging market transactions

The respondent mentioned that data is indeed a big problem in Zambia and much of the continent. Many businesses are not rated and therefore investors and bankers rely on the credit rating of the sovereign to rate African businesses.

"There is just not enough data or historical data for anyone to really work with some trends. To give you some context, bond ratings, if you want to issue a bond someone does the rating, the information is available in South Africa. The house view generally has been for the rest of Africa that your rating will generally be driven by whatever the country's rating is. Hopefully your country has some kind of rating, so you could be a great company in Zambia but banks, investors, everyone will defer to whatever your risk rating is as a country, is that right? Maybe not, but it's because of the lack of information. You can't go to S&P (Standard and Poor) in Zambia, it's just not there, you can't pull of things from a webpage, the information is just not there, there is no database for it …just imagine how hard it is for the M&E guys to do a valuation in Africa ,I mean you can't even get historical financial statements, forecast, it's just not readily available, you would have to fly down to that country and ask the financial director for those. It's not online, it's barely on Bloomberg, and Bloomberg is only what is listed"

Theme 4: For securitisation to be economically viable, the volume of the pooled assets need to justify the cost of the process

Theme 5: Investor Base

The African investor base was viewed as limited and unsophisticated, the respondent made the comparison of the western world where the investor base is much wider, including universities and sovereign wealth funds. The problem with Africa is that the local

investor base is much smaller and less sophisticated and often requires lengthy workshops to educate investors on new products, projects or structures. The respondent went on further to note the efforts of the International Finance Corporation in Zambia , where they issued a Kwacha bond to try to add liquidity in the local market, but the size of the issue was still very small, only 20 Million Kwacha .

"So if you were doing a big infrastructure bond, you would want to have as much information about the promoters behind it as possible, because that's what it really is transparency and information and you are also trying to attract. In Africa you don't have that, and again it goes to the underdeveloped capital markets because you don't have the investor base that you need, so who would you look to for an infrastructure bond? Probably your pension funds because they have the money whereas in the West you have a much wider pool of investors, so your pension funds, you have a lot more money and they are more sophisticated, they have more risk appetite, you have rich people, universities, government, sovereign wealth funds. In Africa you have to look at pension funds which typically have only invested in property which they just sit on. So firstly you need to explain to them what a bond is and how that works and you are going to explain to them the amounts, the decision process itself is just…you don't have enough liquidity locally to actually pull that thing off.

"A lot of the infrastructure deals we see are typically anchored by DFI's so the DFI's will pull the smart money in. it's just hard to get smart money in Africa for anything, for debt for equity. It's very hard, there is just not enough of a liquidity pool."

Theme 6: Knowledge and Use of Securitisation

The respondent noted that the knowledge gap is a major problem for some of the structures they are working with, including mezzanine finance, securitised structures and project finance. The way they have managed to deal with the problem is by introducing dedicated workshops with their clients to explain the transaction in detail prior to the preparation of the documentation.

"I think the knowledge gap is big, I think its half the battle in my view... so nobody has actually thought of securitisation as a viable means of funding simply because they don't

know that it exists. One of the challenges we are facing, even as a bank trying to get this done is that some guy in Joburg might know, but the relationship with the person in Zambia for this specific deal we are looking at, that guy, doesn't know what we are talking about , so it's really complicating the structure and even when he says he knows he doesn't actually really know .You find this at documentation stage where you have done all the work and now you have the documents and they are pushing back on everything and you are like well, we agreed this , you said you are on board with this and the deal drags."

Theme 7: Demand for Securitised Products

The respondent noted that securitisation had not taken off in Zambia, and the reason for this is that the capital market itself is still underdeveloped. This poses a challenge for many products including securitisation and particularity to its application to infrastructure.

"So securitisation in Zambia is pretty much non-existent in my view…Zambia for example sets up a stock exchange in 1994, where you can also trade bonds, but there is nothing else. So you set up a platform to trade but you don't even have a steady stream of companies looking into this , there isn't a steady stream of businesses looking to raise money via the capital markets either thought equity or debt…..so initially it was privatisations that were driving it . you privatise, then you list, once that is done not much else and that's the challenge we face it's like all the stuff is there but you actually need to …someone will set up a private equity fund and say I'm going to invest in businesses…I think that's the big challenge, its lack of liquidity , capital markets that are not developed and ecosystem that is not quite where it needs to be for the kind of stuff that needs to happen and those are challenges, it doesn't mean that they are insurmountable ,it just means that it makes doing deal on the continent just that much harder."

"In my view the use of securitisation in the way that you have explained it is limited if any, you have nascent capital market, is anything traded? No, barely. You can trade bonds on the stock exchange, not much going on. IFC has a bond, a few corporate have bonds, some that ae listed .it just not liquid, it's very little liquidity and that's also because of the nature of the investor because, they put their money in and they just sit on it."

4.8.2. Airport Operators

The respondent interviewed for this portion of the study was the Finance Director at Zambia Airports Corporation Limited.

Theme 1: Major Capital Investment Requirements

Zambia's major infrastructural requirements include new passenger terminal buildings, hotels, a landside shopping malls, additional office space, and the lengthening of some runways. They are currency embarking on an expansion of the Kenneth Kaunda International airport from a capacity of 2 million annual passengers to 4 million annual passengers and includes a new office complex, shopping complex, and hotel. The respondent also mentioned plans to relocate the Simon Mwansa Kapwepwe Airport in Ndola with the construction of a brand new airport and a new international passenger terminal building in Livingstone.

Theme 2: Historic Underinvestment in Airports

The reasons put forth were firstly that the government had viewed air travel as something reserved for the elite, and hence investment in this form of infrastructure was not a priority particularly due to the "socialist inclinations" of the government who felt that there were more pressing priorities that served the broader interests of the population. The second reason was that domestic passenger volumes were considerably low and only recently has the middle class been able to afford air-travel.

Theme 3: Main Funding Mechanisms Utilised

In Zambia, the government has been the main financer and apart from short term borrowing from banks and equipment leasing, the main financing source for major capital investments have been through export credit agencies, in particular, China. The bond market has not be utilised due largely to the non-acceptably of longer maturity bonds, the typically asking is for bonds with a maturity of 5 or 6 years maximum, the respondent alluded that this speaks to the underdeveloped nature of the country's financial markets.

The respondent provided greater insight in the use of credit export agencies with China being the bilateral partner and shared that from a cost perspective, you would be hard pressed to find a better deal, currently they have a loan structured at 5% over 20 years with a 7 year grace period. The social aspects were however less than ideal as there was no skills transfer and no local job generation. Interestingly they noted that the Chinese were far more flexible in deal structuring than DFI's, making a considerable cost difference.

"The loan does not trickle down to the common person in society. So that has always been the big problem for government. Government is not impressed with that….. The Chinese one will always be cheaper for you to do. If you look at ADB financing, the ADB financing it was actually more difficult to do things with the ADB than it was to do things with the Chinese. I think the Chinese are very flexible , you do not have to break your back to get their money….they are asking for indemnities and government needs to sign or what conditions need to be present, so basically speaking the Chinese money is easy. We did try ADB but ADB wanted us, just the insurance alone, I think they needed us to look for 1.75 of the value of the loan, just for insurance. And yet the Chinese one covers it, it makes a big difference, I think that they need to rethink their terms and conditions"

Theme 4: The Success of Traditional Financing Mechanisms

When asked about the success of the traditional financing mechanism utilised, the responded remarked that government support had dwindled over the last twenty years and that funding had only resurfaced over the last five years. On bank borrowings, the respondent noted that whilst bank borrowing was available, it was still too expensive and was therefore not a viable option especially given the level of passenger activity at their airports.

"With the current passenger numbers and flights into our airports, it's not viable to carry out major projects on bank borrowings"

Theme 5: Airport Ownership and Privatisation

The airport corporation in Zambia is a wholly owned government company, it was established in 1989 by the Aviation Act Chapter 444 of the laws of Zambia but it is run by

an independent board. Initially it was named the National Airports Corporation Limited, and acquired its assets from the Department of Civil Aviation. The Corporation manages the four international airports in Zambia, namely Simon Mwansa Kapwepwe International, Harry Mwaanga Nkumbula International, Mfuwe International Airport and the Kenneth Kaunda International Airport.

Theme 6: Securitisation of collateralised loan obligations or project finance loans

Securitisation seemed to not be well understood by the respondent but remarked that provided the product could provide the required tenure at a good rate, it would be supported. The respondent however mentioned that because the company is wholly government owned, support for any new financing mechanisms was required by government and that such approval was dependent on the political mood.

"I think given a good rate and tenure, securitisation would be a good financing option. However government support is dependent on the political mood and is never assured"

Theme 7: Airport Economic Regulation

The respondent was firstly unaware of economic regulation and conceded that tariff determination was based on a view of the finance required, once this figure had been determined, it was submitted to the Ministry of transport for approval.

"The Airports Company comes up with the costs of running the airport and then we write to the Minister of Transport so all of our charges are vetted by government. So the company has to apply to the Minister of Transport, we tell him that is how much it costs to run the airport and therefore we require our tariffs to be adjusted by so much"

5. Conclusion and Recommendations

5.1. Summary of Research Findings

5.1.1. Securitisation

Securitisation from a South African perspective is characterised by few assets, illiquidity, and limited demand. None-the-less, it is well functioning and stable despite its tainted reputation for its role in the global financial crisis, which has arguably stunted the growth and development of securitisation. Securitisation in Zambia is barley utilised and therefore very illiquid, not well understood and although its legislation and regulation support s, these are still underdeveloped. Securitisation of infrastructure assets, can work from a technical perspective, the case of Zambia illustrates its use for infrastructure, however since the transaction hasn't been sold off as yet , it is yet to be tested whether this structure would require additional credit enhancements and guarantees for investors. The challenges would be around liquidity in the market. Since project finance loans and project bonds typically involve robust project analysis, the data required for a securitisation shouldn't pose a problem although the added complexity of project loans does add considerable difficulty to credit assessment.

The benefit of securitisation is that it seeks to isolate itself from the rating of the issuer and is reliant entirely in the quality of the underlying pool of assets and various other liquidity and credit enhancements to obtain the highest ratings. For this reason, findings of this study suggest that it can breach the credit rating of the sovereign. In-so-much as there was little corroboration to the extent the political and social stability is required to make a success of this instrument, what could not be denied however is the requirement for a strong legal system. Beyond the South African borders, the mechanism can still be applied as much of the legal systems are transparent and well developed, it was also found that in many African countries a "true sale" can be effected. And therefore the only impediment is the underdeveloped nature of the financial markets which can however be resolved by trading the assets in different jurisdictions, provided the security is not tainted, to unlock diversification possibilities for securitised African infrastructure assets.

Although demand is limited from a RMBS perspective, it was noted that provided these infrastructure products are well structured, they would provide for diversification in the

market as no securitised aviation assets currently exist in the market and therefore a demand does exist. The major challenge with attracting international investors remains the currency risk, which could be managed with a currency rate swap, but would add additional costs to the structure. Although securitisation activity is on a recovery, time and energy would be required to reassure investors of the credit quality of the new asset, following the securitisations' current bad reputation incited by the global financial crisis.

With no arbitrage opportunities available and little to be gained from a banking capital reserve-management perspective, what role can securitisation play in airport infrastructure funding? The case of Zambia demonstrates that there are still margins to be made by commercial banks for securitising infrastructure however one must note that the transaction was funded through the leveraged finance arm of the bank, not many banks could have the same risk appetite. The findings also suggest that project finance is becoming less and less popular due the complex nature of the structure. Perhaps Development Finance institutions, due to their developmental mandate, would benefit the most from the ability to unlock additional funding by selling down portions of their existing loan inventories creating a diversified pool of assets.

They could utilise a variety of de-risking mechanisms which currently exist in many of their structures (for example the AfDB offers partial credit guarantees and partial risk guarantees) to enable investment grade securities to be issued. These securities would be most suited to long term institutional investors. This idea is not novel and has been proposed to finance the developing world's energy needs in a paper termed the "Big Green Bucket" (Bloomberg, 2014). Secondly, institutional investors themselves could approach airport operators to set a securitisation structure, allowing them access to assets that would diversify their portfolios, giving airport operators access to refinancing and credit consolidation.

5.1.2. Airport Financing

There are numerous mechanisms for financing airport infrastructure, and much of funding burden need not be borne by governments provided that there are sufficient revenues emanating from operations (typically 1 million annual passengers and greater) to cover the costs of the infrastructure. Whilst the continents' underdeveloped capital markets

continue to present a challenge to utilising bond financing and DFI loans prove to be inflexible and costly, export credit agencies are fast evolving as a popular funding mechanism and in particular the Exim Bank of China. Export credit agencies although attractive from a cost perspective, offer little in the form of local employment opportunities and skills transfer; and African governments are beginning to express dissatisfaction with this approaches lack of local economic and social inclusiveness. The lesson to be learnt is not which approach is best but rather that these sources are not mutually exclusive. Airports Company South Africa has been successful in putting together numerous funding sources and this has assisted them in their ability to diversify, allowing for greater flexibility and negotiating power. It is also important to realise that different sources are more suitable to certain phases of a project's life, as detailed in a study by Ehlers, (2014) who categorises the infrastructure project phase and its most applicable source of funding.

It is the combined diversification of the funding sources that a makes for an effective funding strategy. It is also clear that export credit agencies will continue to be an attractive source of funding on the continent, governments and airport operators should however attempt to make this portion of funding suited for systems and equipment that need to be imported in any event, from an airport perspective, these build be baggage handling system's or passenger boarding bridges, these components have a considerable cost and would minimise the social costs of utilising these agencies.

5.1.3. Airport Regulations

Airport economic regulation is central to the discussion of airport financing as it is the mechanism through which an airport earns its money and assures its investors that repayments of debt can be made. Very few airports in Sub Saharan Africa are however regulated and there seems to be little knowledge or appreciation for its application. Many countries are still utilising simplified tariff application processes to their governments The growing role that the private sector is playing on the continent in the form of concessions and PPP's and the requirement to harness private investment means that airports need to be supported by robust and mature regulatory frameworks, which will provide the transparency and predictability of future cash flows.

Although African governments are beginning to see the benefits of privatisation of the airports, security concerns remain at the forefront of the debate and make full privatisation of African airports an unlikely objective. It is rather suggested that privatisation in the form of corporatisation be implemented in order to gain access to the financial markets as was the case in Airports Company South Africa and the Zambian Airports Corporation.

Airport regulation as applied in the case of ACSA, the hybrid single till price cap, has enabled the operator to support a network of airports, some profitable, some not, through the cross subsidisation that is allowed in the framework. Many countries have a similar profile of airports, namely: two or three main gateways that provide the largest traffic volumes and a number of much smaller local airports that connect to the hub/s. Applying the ACSA model would enable governments to transfer much of the financial burden of these smaller airports to a corporatized entity that would ensure that maintenance and capacity is available throughout the country's network. It seems unlikely that the dual till application will be successful at this point as it needs to be supported by robust commercial activity and developed financial markets.

Despite the benefits yielded by economic regulation, the current challenges and issues from case under study are numerous. From a lack of full time capacity in the form of a regulators to the skills and knowledge of regulation from industry, the regulated entity and regulator itself to missing appeals processes; it is evident that there is much work to be done in maturing the system and its participants. The current reforms to the system however bring about an air of optimism. African governments must heed the call to learn from one another and from other nations, to smoothen and fast track the maturity of newly established regulatory regimes.

5.2. Contribution of Research Study

The contribution of this study has been to give guidance to airport operators and governments in Sub Saharan Africa on the various funding mechanisms available and secondly how to harness these mechanisms effectively. Governments will benefit from the broad overview of the economic regulatory regimes available and the postulated suitability of each to the specific context. It has also provided government with numerous lessons learn on establishing an effective regulatory system.

From a securitisation perspective, it has stirred up a new application and interest for consideration by institutional investors, commercial banks, airport operators and development finance institutions. Whilst it may still be premature to introduce securitised African aviation assets into the market given the “still nervous” sentiment in the market, securitisation is recovering especially in the South African context and calls for considerable thought and debate on its applicability and role in funding infrastructure, not only aviation infrastructure but the whole host of social infrastructure needs on the continent

5.3. Opportunities for Future Research

This study attempted to broadly cover the various financing mechanisms available however work is required to have an in-depth look at the financial arrangements and structuring of export credit agencies as they form a critical component of aviation funding in Africa, the same can be said of public private partnerships.

Another opportunity is to further the investigation of securitisation on how development finance institutions can leverage off the benefits of securitisation to unlock further funding and still maintain their developmental mandate, allowing grace periods and concessional funding rates.

5.4. Recommendations

It is recommended that the findings of this study be utilised by governments and airport operators as a reference point on the lessons learnt from the financing and airport regulatory issues experienced in aviation infrastructure financing on the continent.

The study was focused on only one study and there is much more to be harnessed from the experience of other nations; it is therefore recommended that this study be furthered with reference to other cases.

Finally is recommended that Development Finance institutions undertake a research effort with the aim of unlocking potential funding with the use of the securitisation model.

6. References

Bank of Zambia. (n.d.). *Financial Markets.* Retrieved from http://www.boz.zm/FSDP/Chapter7_FinancialMarket.pdf

World Trade Organisation. (n.d.). *Trade policies by sector.* Retrieved from https://www.wto.org/english/tratop_e/tpr_e/s219-04_e.doc

Abbott, M. (2015). Reform and efficiency of New Zealand's airports. *Utilities Policy, Vol 36*, 1-9.

Africa Infrastructure Knowledge Programme . (2011). *Handbook on Infrastructure Statistics .* Tunis: African Development Bank.

African Development Bank Group. (2012, November 20). *Africa's Aviation Industry: Challenges and Opportunities.* Retrieved from http://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-across-africa/post/africas-aviation-industry-challenges-and-opportunities-10025/

African Development Bank Group. (2013). *At the Centre of Africa's transformation Strategy for 2013–2022.*

Air Transport Action Group . (2014). *The Air Transport Focus Groups Aviation Benefits Report.*

Airports Company South Africa. (2016, February 21). *Company Profile*. Retrieved from Airports Company South Africa: http://www.acsa.co.za/about-us/airports-company/company-profile

Airports Council International. (2012). *Municipal Bond Market A Critical Funding Source For Airport Projects.* Retrieved from http://www.aci-na.org/sites/default/files/municipal_bond_market_fact_sheet.pdf

Airports Council International. (2012, November 5). *PPP for Airport Management and Development.* Retrieved from http://www.aciafrica.aero/Media/ACI%20AFR/Events/assembly2012/Speeches%20and%20Presentations/PPP-for-Airport-Management-and-Development.pdf

Airports Council International. (2014). *Annual World Airport Traffic Report 2013.* Airports Council International .

Airport-Technology. (2013, September 3). *Mauritius airport opens new terminal, doubles capacity*. Retrieved from Airport-Technology: http://www.airport-technology.com/news/newsmauritius-airport-opens-new-terminal-doubles-capacity

Ajakaiyea, O., & Ncubeb, M. (2010). Infrastructure and Economic Development in Africa: An Overview . *Journal of African Economies 19(1)*, i3-i12.

Akwei C., T. M. (2012). Deregulation, Competition, and Performance Measurement of an African Airport: The Case of Kotoka International Airport of Ghana . *Thunderbird International Business Review, Vol 54 (4)* , 537-549.

Andrianaivo, M., & Yartey, C. A. (2010). Understanding the Growth of African Financial Market. *African Development Review 22(3)*, 394–418.

Anguyo, I. (2015, August 26). *Entebbe airport expansion starts on Saturday*. Retrieved from New Vision: http://www.newvision.co.ug/news/672647-entebbe-airport-expansion-starts-on-saturday.html

Ayotte, K., & Gaon, S. (2011). Asset-Backed Securities: Costs and Benefits of "Bankruptcy Remoteness". *The Review of Financial Studies, Vol 24, (4)*, 1299-1335.

Baškarada, S. (2014). Qualitative Case Study Guidelines. *The Qualitative Report (19)*, 1-8.

Bates, J. (2014, March 17). *Investing in Africa*. Retrieved from Airport World: http://www.airport-world.com/features/economics/3783-investing-in-africa.html

Bates, J. (2014, March 17). *Investing in Africa*. Retrieved from Airport World: http://www.airport-world.com/features/economics/3783-investing-in-africa.html

Bhattacharya, A., Romani, M., & Stern, N. (2012, October 7). *Infrastructure for Development: Meeting the Challenge.* Retrieved from Policy Paper, Centre for Climate Change Economics and Policy : http://www.cccep.ac.uk/Publications/Policy/Papers/2012.aspx

Bjerre, C. (2002). Project Finance ,Securitisation and Consensuality. *Duke J. Comp. & Int'l L., 12,*, 411-437.

Bloomberg. (2014). *White Paper Discussion Draft, Big Green Bucket: towards a large-scale refinance facility for clean energy debt.* Retrieved from Bloomberg New Energy Finance: http://about.bnef.com/content/uploads/sites/4/2014/04/bfmEB50.pdf

Boeing. (2014). *Current Market Outlook 2015-2034.* Retrieved from http://www.boeing.com/resources/boeingdotcom/commercial/about-our-market/assets/downloads/Boeing_Current_Market_Outlook_2015.pdf

Boot, A. W., & Thakor, A. V. (1993). Security design. *Journal of Finance*, 1349-1378.

Brunekreeft, G., & Meyer, R. (2011). Regulation and regulatory risk in the face of large transmission investment. *Bremen Energy Working Papers N.05*.

Buckley, J. (1952). Revenue Bond Financing for Airport Improvements. *The Analysts Journal, 8(5)* , 85-91.

Buckley, J. (1952). Revenue Bond Financing for Airport Improvements. *The Analysts Journal 8(5)*, 85-91.

Buscaino, V., Corielli, F., Caselli, S., & Gatti, S. (2012). Project Finance Collateralised Debt Obligations: An Empirical Analysis on Spreads and Determinants. *European Financial Management, 18(5),* , 950-969.

Cardone-Riportella, C., Samaniego-Medina, R., & Trujillo-Ponc, A. (2010). What Drives Bank Securitisation? The Spanish Experience. *Journal of Banking & Finance 34*, 2639–2651.

Carruthers, R., Krishnamani, R., & Murray, S. (2009). *Improving Connectivity: Investing in Transport Infrastructure in Sub-Saharan Africa.* Washington: AICD Background Paper 7,Africa Region, World Bank.

Centre for Aviation. (2014). *Airport investment in Africa - overlooked by airport and other infrastructure investors.* Retrieved from http://centreforaviation.com/analysis/airport-investment-in-africa---overlooked-by-airport-and-other-infrastructure-investors-181092

Costas-Centivany, C. M. (1999). Spain's airport infrastructure: adaptations to liberalization and privatization. *Journal of Transport Geography, Vol 7,(3)*, 215–223.

Creswell, J. (2014). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, Second Edition,.* London: Sage Publication.

Croce, R. D., & Gatti, S. (2014). Financing infrastructure–International trends. *OECD Journal: Financial Market Trends, 2014(1)*, 123-138.

Davis, H. A. (1996). *Project finance: Practical case studies.* Euromoney Publications.

Davis, H. A. (2008). *Infrastructure Finance: Trends and Techniques.* London: Euromoney Institutional Investor.

de Neufville, R., & Odoni, A. R. (2003). *Airport Systems: Planning Design, and Management.* New York: McGraw-Hill.

Dempsey, P. S. (2008). *Airport Finance.* Montreal: McGill University.

Dillingham, G. (2014). Airport Funding: Aviation industry changes affect airport development costs and financing. *GAO Reports GAO-14-658T*.

Doganis, R. (1992). *The Airport Business.* London: Routledge.

E, J., & D, A. (2015). *Air Transport Infrastructure The Roles of the Public and Private Sectors.* Retrieved from Infrastructure Economics and Finance Network, World Bank: http://pubdocs.worldbank.org/pubdocs/publicdoc/2015/6/317661434652909047/Air-Transport-infrastructure.pdf

Ehlers, T. (2014). *Understanding the challenges for infrastructure finance.* BIS Working Papers No.454.

Estache, A. (2001). Privatization and Regulation of Transport Infrastructure in the 1990s. *The World Bank Research Observer 16(1)*, 85.

Evans , L. T., & Guthrie, G. A. (2003). *Risk,Price Regulation and Irreversible Investment.* Wellington: New Zealand Institute For The Study of Competition and Regulation.

Farruggioa, C., & Uhdeb, A. (2015). Determinants of loan securitization in European banking. *Journal of Banking & Finance*, 12-27.

Fay, M., Toman, M., Benitez, D., & Csordas, S. (2011). *Infrastructure and Sustainable Development" in S. Fardoust, Y.-B. Kim, C. Sepúlveda (eds.), Postcrisis Growth and Development: a Development Agenda for the G-20.* Washington: World Bank.

Financial Services Board. (2015). *Financial Services Board Annual Report 2015.* Retrieved from https://www.fsb.co.za/NewsLibrary/FSB%20Annual%20Report%202015.pdf

Flyvbjerg, B. (2004). Five misunderstandings about case-study research. In C. Seale, G. Gobo, J. F. Gubrium, & D. Silverman, *Qualitative Research Practice* (pp. 420-434). London: Sage Publications.

Forrester J.P. (n.d.). *Securitization of Project Finance Loans.* NYU Stern School of Business.

Forrester, J. P., Kravitt, J. H., & Rosenberg, R. M. (1994). Securitization of Project Finance Loans and Other Private Sector Infrastructure Loans. *The Financier, Vol. 1 No. 1*, 7-19.

Forrester, P. (2010). Project Finance CDO's After the Credit Crisis. *Infrastructure Journal*.

Forsyth, P. (2007). The impacts of emerging aviation trends on airport infrastructure. *Journal of Air Transport Management Vol 13*, 45–52.

Forsyth, P., Gillen, D., Knor, A., Mayer, O., Niemeier, H., & Starkie, D. (2004). *The economic regulation of airports: recent developments in Australasia, North America and Europe.* Aldershot: Ashgate Publishing Limited.

Foster, V. (2008). *Africa Infrastructure Diagnostic :Overhauling the Engine of Growth.* The World Bank.

Foster, V. a.-G. (2010). *Africa's infrastructure. A Time for Transformation.* Washington: The International Bank for Reconstruction and Development (IBRD) and The World Bank,.

Gasser, R. M. (2000, December 8). *European secondary market perspectives: Whole business securitisation: The new corporate finance.* Retrieved from WBS-NYU Stern School of Business: http://people.stern.nyu.edu/igiddy/ABS/wbsubs.pdf

Gentles , S. J., Charles, C., Ploeg, J., & McKibbon, K. A. (2015). Sampling in Qualitative Research: Insights from an Overview of the Methods Literature. *The Qualitative Report (20)11*, 1772-1789.

Giddy, I. (2000). *Asset Securitisation in Asia.* New York University .

Giddy, I. (2002, October 23). *European Securitisation--A Resource Guide.* Retrieved from European Securitisation Forum : http://www.stern.nyu.edu/~igiddy/ABS/resourceguide.pdf.

Gillen, D. (2007). The Regulation of Airports. *Centre for Transportation Studies Working Paper 2007-5*.

Gillen, D. (2011). The Evolution of Airport Ownership and Governance. *Journal of Air Transport Management (17)*, 3-13.

Gillen, D., & Niemeier, H. (2007). Comparative Political Economy of Airport Infrastructure in European Union: Evolution of Privatisation, Regulation and Slot Reform. *Centre for Transportation Studies Working Paper 2007-6*.

Greenbaum, S. I., Thakor, A. V., & Boot, A. W. (2015). *Contemporary Financial Intermediation, Third Edition.* San Diego : Academic Press.

Grushkin, J., & Bartfeld, D. (2013). Securitising Project Finance Loans: Are PF CLO's Poised for A comeback . *Journal of Structured Finance, 19(3)*.

Gumata, N., & Mokoena, J. (2005). *Note on the impact of securitisation transactions on credit extension by banks.* Pretoria: South African Reserve Bank.

Guthrie, G. (2006). Regulating Infrastructure: the Impact on Risk and Investment . *Journal of Economic Literature, (44)*, 925-972.

Gwilliam K. (2011). *Africa's Transport Infrastructure Mainstreaming Maintenance and Management .* Washington: The World Bank .

Haaranen, T., & Nisar, T. M. (2011). Innovative ways of raising funds and adding value: A stakeholder approach to whole business securitization. *Business Horizons, Vol 54 (5)*, 457-466.

Hakfoort, J., Poot, T., & Rietveld, P. (2001). The Regional Economic Impact of an Airport: The Case of Amsterdam Schiphol Airport. *Regional Studies 35(7)*, 595-604.

Hanouz, M., Geiger, T., & Doherty, S. (2015). *The Global Enabling Trade Report 2014.* Geneva: World Economic Forum.

Hassan, S. (2013). *South African Capital Markets: An Overview.* Pretoria: South African Reserve Bank.

Helm, D. (2009). Infrastructure investment, the cost of capital, and regulation : an assessment . *Oxford Review of Economic Policy , Vol 25*, pp.307-326.

Helm, D. (2009). Infrastructure Investment, the Cost of Capital, and Regulation :an Assessment. *Oxford Review of Economic Policy 25(3)*, 307-326.

Helm, D., & Thompson, D. (1991). Helm, D. and Thompson, D. (1991), ``Privatised Transport Infrastructure and Incentives to Invest,'' . *Journal of Transport Economics and Policy, 25,* , 231-246.

Hooper, P. (2002). Privatisation of Airports in Asia. *Journal of Air Transport Management Vol 8*, pp.289-300.

ICAO. (2004). *Aerodrome Design and Operations , Fourth Edition.* Annex 14 International Standards and Recommended Practices.

ICAO. (2008). *Case Study: South Africa.* Retrieved from http://www.icao.int/sustainability/Documents/South%20Africa.pdf

ICAO. (2010, December 6). *Workshop on the development of national performance framework for air navigation systems.* Retrieved from http://www.icao.int/ESAF/Documents/meetings/2010/wdnpf_ans/docs/presentations/zambia.pdf

Inderst, G., & Stewart, F. (2014). *Institutional Investment in Infrastructure in Developing Countries.* World Bank Policy Research Working Paper 6780.

International Civil Aviation Organisation. (2014, December 6). *Safety Report.* Retrieved from http://www.icao.int/safety/documents/icao_2014%20safety%20report_final_02042014_web.pdf

InterVistas. (2015). *Economic Impact of European Airports.* Retrieved from http://www.intervistas.com/downloads/reports/Economic%20Impact%20of%20European%20Airports%20-%20January%202015.pdf

Jaun, E., & Andrew, D. (2015, August 26). *Air Transport Infrastructure The Roles of the Public and Private Sectors, Infrastructure Economics and Finance Network.* Retrieved from Infrastructure Economics and Finance Network, World Bank: http://pubdocs.worldbank.org/pubdocs/publicdoc/2015/6/31766143465290904 7/Air-Transport-infrastructure.pdf

Juhel, M. (2011). *Increasing Trends Towards PPPs in Emerging Markets.* Dubai: IFC Global Airport PPP Seminar.

Karim, M. R. (2007, December 5). *Analysing the Role of Triangulation in Research.* Retrieved from Munich, GRIN Verlag: http://www.grin.com/en/e-book/207958/analysing-the-role-of-triangulation-in-research

Lemmon, M., Liu, L. X., & Mao, M. Q. (2010, March). *Asset-backed securitization in industrial firms.* Retrieved from CiteSeer: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.184.1141&rep=rep1&type=pdf

Lipovich, G. A. (2008). The privatization of Argentine airports. *Journal of Air Transport Management Vol 14 (1)*, 8–15.

Luke, R., & Walters, J. (2010). The Economic Impact of South Africa's International Airports. *Journal of Transport and Supply Chain Management 4(1)*, 120-137.

Luke, R., & Walters, J. (2010). The economic impact of South Africa's international airports. *Journal of Transport and Supply Chain Management, 4(1)*, 120-137.

Making Finance Work for Africa. (2012). *South Africa: Financial Sector Profile*. Retrieved from Making Finance Work for Africa: https://www.mfw4a.org/south-africa/financial-sector-profile.html

Making Finance Work For Africa. (2014). *Zambia: Financial Sector Profile*. Retrieved from https://www.mfw4a.org/zambia/financial-sector-profile.html

Marshall, M. N. (1996). Sampling for qualitative research. *Family Practice, Vol 13, (6)*, 522-525.

Meersman, H., & Van de Voorde, E. (1978). The Privatization of Air Transport in Europe: Interaction between policy, economic power and market performance. *Built Environment 22(3)*, 177-191.

Merriam S.B. (2009). *Qualitative Research: A Guide to Design and Implementation.* San Francisco: Joessy-Bass.

Mezui Mbeng, C. A., & Hundal, B. (2013). *Structured Finance: Conditions for Infrastructure Project Bonds in African Markets.* Tunis: The African Development Bank.

Mills , A. J., Durepos, G., & Wiebe, E. (2010). *Encyclopaedia of Case Study Research.* Sage Publishers.

Mirondo, R. (2013, April 27). *Tanzania secures $164m for new airport terminal*. Retrieved from The EastAfrican: http://www.theeastafrican.co.ke/-/2456/2456/-/1bxxmm/-/index.html

Mu, Y., Phelps, P., & Stotsky, J. G. (2013). Bond Markets in Africa. *Review of Development Finance 3(3)*, 121–135.

Mua Y., P. P., Mua, Y., Phelpsb, P., & StotskyaaInt, J. G. (2013). Bond markets in Africa. *Review of Development Finance*, 121–135.

National Airports Corporation Limited. (2014). *National Airports Corporation Handbook 2014-2015.* Retrieved from https://issuu.com/landmarine/docs/zambia-airports-2014

Niemeier, H.-M. (2002). Regulation of airports: the case of Hamburg airport—a view from the perspective of regional policy. *Journal of Air Transport Management*, 37-48.

Novick, G. (2008). Is there a bias against telephone interviews in qualitative research ? *Research in Nursing & Health*, 391–398.

OECD. (2010). *Airport Regulation Investment & Development of Aviation,.* Retrieved from International Transport Forum: http://www.internationaltransportforum.org/2010/pdf/Fraport.pdf

Ojah, K., & Kodongo, O. (2015). Financial Markets Development in Africa: Reflections and the Way Forward. In *Oxford University Press Handbook of Africa and Economics .*

Oji C.K. (2015). *Bonds: A Viable Alternative for Financing Africa's Development.* South African Institute of International Affairs .

Opdenakker, R. (2006). Advantages and Disadvantages of Four Interview Techniques in Qualitative Research. *Forum: Qualitative Social Research*.

Oum, T. H., Zhang , A., & Zhang , Y. (2004). Alternative forms of economic regulation and their efficiency implications for airports. *Journal of Transport Economics and Policy 38, (2)*, 217-246.

Oum, T. H., Yan, J., & Yu, C. (2008). Privatization, corporatization, ownership forms and their effects on the performance of the world's major airports. *Journal of Urban Economics, Vol 64, (2)*, 422-435.

Özcan, İ. (2013). Air passenger traffic and local employment: Evidence from Turkey. *EJTIR Issue 13(4),* , 336-356.

Özcan, İ. (2013). Air passenger traffic and local employment: Evidence from Turkey. *EJTIR Issue 13(4)*, 336-356.

Profillidis, V., & Botzoris, G. (2015). Air passenger transport and economic activity. *Journal of Air Transport Management*, 23-27.

Republic of Zambia. (1995). *Aviation Act, Chapter 444 of the Laws of Zambia .* Retrieved from http://www.zamlii.org/zm/legislation/consolidated-act/444

Riachi, I., & Schwienbacher, A. (2013). Securitization of corporate assets and executive compensation. *Journal of Corporate Finance, Vol 21*, 235-251.

Riddiough, T. J. (1997). Optimal Design and Governance of Asset-Backed Securities. *Journal of Financial Intermediation*, 121–152.

Saayman, A., & Styger, P. (2003). Securitisation in South Africa: historic deficiencies and future outlook. *South African Journal of Economic and Management Sciences, 6(4)*, 744-764.

Scatigna, M., & Tovar, C. E. (2007). Securitisation in Latin America. *BIS Quarterly Review, September*.

Schlumberger, C. (2007). Air Transport : Revitalising Yamoussoukro. In A. Mattoo, & L. Payton, *Services Trade and Development: The Experience of Zambia* (pp. 191-212). Washington: The World Bank and Palgrave Macmillan.

Schwab , K., Snabe, J. H., Eide , E. B., Blanke, J., Moavenzadeh , J., & Drzeniek-Hanouz, M. (2015). *The Travel & Tourism Competitiveness Report 2015.* World Economic Forum.

Schwarcz, S. L. (1994). The Alchemy of Asset Securitization. *Stanford Journal of Law, Business, and Finance, (1)* , 133-145.

Serebrisky, T. (2011). *Airport Economics in Latin America and the Caribbean: Benchmarking, Regulation and Pricing.* Washington: The World Bank.

Silverman, D. (2010). *Doing Qualitative Research 3rd Edition.* London: Sage.

Smith W.P.C. (2007). The Implications of Basel II on Securitisation Transactions of Banks. *(Doctoral dissertation, University Of Johannesburg)*. Retrieved from (Doctoral dissertation, University Of Johannesburg).

Sorge, M. (2011). "The nature of credit risk in project finance. *BIS Quarterly Review, December*.

South African Government. (2016). *National Department of Transport*. Retrieved from South African Government: http://www.gov.za/about-sa/transport#aviation

Stanlib. (2016, January 5). *Regulation 28 Table Summary*. Retrieved from http://www.stanlib.com/Institutional/KnowledgeCentre/Pages/Regulation28.aspx

Starkie, D. (2004). Testing the Regulatory Model: The Expansion of Stansted Airport . *Fiscal Studies 25(4)*, 389-413.

Starkie, D. (2005). Making airport regulation less imperfect. *Journal of Air Transport Management* , 3-8.

Starkie, D. (2006). Investment Incentives and Airport Regulation. *Utilities Policy* , 262-265.

Stokes, D. (2006). Methodology or 'Methodolatry"? an Evaluation of Focus Groups and Depth Interviews . *Qualitative Market Research: An International Journal, Vol 9 (2)*, 26-36.

Tellis, W. (1997). Application of a Case Study Methodology . *The Qualitative Report 3(3)*.

The infrastructure Consortium of Africa. (2012). *Opening up Aviation Services in Africa.* African Development Bank.

The OPEC Fund for International Development. (2001, October 10). *Ethiopia receives US$4 million loan from OPEC Fund for airport expansion project*. Retrieved from The OPEC Fund for International Development: http://www.ofid.org/NEWS/PressRelease/ArticleId/219/Ethiopia-receives-US-4-million-loan-from-OPEC-Fund-for-airport-expansion-project

The World Bank. (2014, March 26). *World Bank Injects New Funding To Kenya's Transport Sector* . Retrieved from The World Bank: http://www.worldbank.org/en/news/press-release/2014/03/26/world-bank-injects-new-funding-to-kenyas-transport-sector

Thome, W. (2012, December 11). Kenya President Kibaki's cabinet approves airport financing. Uganda.

Tretheway , M., & Markhvida , K. (2013). *Airports in the aviation value chain: financing, returns, risk and investment.* Germany.: International Transport Forum.

Tretheway, M. (2001). *Airport Ownership, Management and Price Regulation , Report to the Canadian Transportation Act Review Committee.* Ottawa.

United Nations. (2014). *United Nations Conference on Trade and Development.* Retrieved from Report on the Implementation of Investment Policy Review: http://unctad.org/en/PublicationsLibrary/diaepcb2014d2_en.pdf

Uwaleke, I. (2015, June 19). *Cash crunch cripples ongoing airports' projects*. Retrieved from The Guardian Nigeria: http://www.ngrguardiannews.com/2015/06/cash-crunch-cripples-ongoing-airports-projects/

Von Hirschhausen, C., Beckers, T., & Brenck, A. (2004). Infrastructure regulation and investment for the long term-an introduction. *Utilities Policy*, 203-210.

World Economic Forum. (2014). *The Travel and Tourism Competitiveness and 2014.* Geneva.

World Economic Forum. (2015). *Africa Competitiveness Report 2015.* Geneva.

Yin, R. (2009). *Case study research design and methods.* London: Sage publications.

York Aviation. (2004). *The Economic and Social Impacts of European Airports, Report for ACI Europe.* Leeds: York Consulting.

Zambia Capital Markets. (2016). Retrieved from Zambia Invest: http://www.zambia-invest.com/finance/capitalmarkets

7. ANNEXTURE A: Regulation 28 Table Summary

Asset Sub-Category	Total Limit	Per issuer
Cash up to 100%		
SA cash	100%	25%
Foreign cash	As prescribed*	5%
Debt Instruments, incl. money market and Islamic debt - up to 100%		
SA government debt instruments and loans or loan/bond guaranteed by SA government	100%	N/A
Debt instruments issued /guaranteed by state owned entity/provincial government or local government (SA)	25%	5%
Foreign government debt	As prescribed*	5%
Debt instruments issued or guaranteed by SA bank against balance sheet	75%	Market cap < R2bn - 10% Market cap R2bn to R20bn - 15% Market cap > R20bn - 25%"
Other listed debt instruments	25%	5%
Other unlisted debt instruments	15%	5%
Equities - up to 75%		
Listed preference and ordinary shares in companies (excl shares in property companies)	75%	Market cap < R2bn - 5% Market cap R2bn to R20bn - 10% Market cap > R20bn - 15%"
Unlisted preference and ordinary shares in companies (excl shares in property companies) Incorporated in SA	10%	2.50%
Unlisted preference and ordinary shares in companies (excl shares in property companies) Not incorporated in SA	5%	2.50%
Commodities - up to 10%		
Kruger Rands and other commodities listed on an exchange, incl Exchange Traded Commodities (SA & Foreign)	10%	N/A
Property - up to 25%		
Immovable property (SA & Foreign)	25%	N/A
Listed Preference and ordinary shares in property companies or units in a CIS in property	25%	Market cap < R3bn - 5% Market cap R3bn to R10bn - 10% Market cap > R10bn - 15%"
Immovable property and claims secured by mortgage bonds thereon; Unlisted preference and ordinary share in property companies; Secured loans and debentures	15%	5%
Alternative Investments - up to 15%		

Asset Sub-Category	Total Limit	Per issuer
Hedge funds	10%	Fund of hedge funds - 5% Hedge funds - 2.5%"
Private equity funds	10%	Fund of private equity funds - 5% Private equity funds - 2.5%"
Other assets not referred to in this schedule (excl hedge fund or private equity fund)	5%	2.50%

Source: Stanlib (2016)

8. ANNEXTURE B: Determination of Securities, Classes of Securities, Assets or Classes of Assets That May Be Included In A Portfolio Of A Collective Investment Scheme In Securities And The Manner In Which And Limits And Conditions Subject To Which Securities Or Assets May Be So Included

Table 1 Item	Categories of non-equity securities	Limits being the maximum percentage of the aggregate market value of the portfolio	
		Per issuer/guarantor as applicable	In aggregate for all issuers/guarantors as applicable
1	Non-equity securities issued or guaranteed by:		100%
1.1	the government of the Republic of South Africa;	100%	100%
1.2	any foreign government which has been assigned a foreign currency sovereign rating not lower than that of the Republic of South Africa;	100%	100%
1.3	any foreign government that does not comply with 1.2;	30%	100%
1.4	the South African Reserve Bank; and	100%	100%
1.5	The African Development Bank.	30%	30%
2	Non-equity securities issued or guaranteed by a local or foreign bank which forms part of a group of companies (in terms of international accounting standards) of which the holding company is listed on an exchange:		100%
2.1	with a market capitalization for the listed group holding company of more than R 20 billion;	30%	100%
2.2	with a market capitalization for the listed group holding company of between R 2 billion and R 20 billion.	20%	100%
3	Non-equity securities issued or guaranteed by a foreign bank which forms part of a group of companies (in terms of international accounting standards) of which the holding company is listed on an exchange and does not comply with 2.1 or 2.2	10%	100%
4	Non-equity securities issued or guaranteed by:		100%
4.1	a public entity under the Public Finance Management Act,1999 (Act No.1 of 1999); and	10%	100%
4.2	any local or foreign entity which is listed on an exchange, including foreign companies, foreign public entities, foreign local authorities and foreign development institutions	10%	100%
5	Non-equity securities issued or guaranteed by entities not described above where such security is:		25%

5.1	listed and traded on an exchange	5%	25%
5.2	not listed on an exchange, including, participatory interests in participation bonds	5%	10%

Source: CISA (2013) Collective Investment Schemes Control Act, 2002

9. ANNEXTURE C: Interview Guide

University of the Witwatersrand
Wits Business School

Semi-Structured Interview Questionnaire:
Regulations, Securitisation and the Financing of Airports in Sub Saharan Africa
Phumzile Dlamini
October 2015

AIRPORT OPERATORS

State of Airport Infrastructure

- What would you say are the major infrastructure investments required at your airports?
- Many African airports have suffered years of underinvestment, would you say this accurately describes the situation at your airport or airports, and if so can you elaborate on the possible reasons why this was the case?

Financing and Securitisation

- What have been the main mechanisms for raising funding for your airports?
- Have traditional sourcing of funding been fairly successful in raising the required funding for airport development?
- Have bonds previously been utilised to sources funding? Why or why not?
- How big a role have institutional investors played in the financing of your airport developments?
- How would you characterise your experience of credit rating agencies?
- Securitisation of airports has typically been applied at European airports, in your view is there an appetite for such a source of funding? Why or why not?
- In your view, what would hinder securitisation of your airport /airports?
- In your view, is there sufficient interest in the African capital markets in securitisation? Why or why not?

Privatisation

- What is the current ownership structure of your airport business?
- Would you say there is pressure to provide for private participation in airport ownership or management, if so why?

Regulations

- What regulatory framework is in place for your airport/airports?
- Would you say the type of system i.e. single till or dual system has an impact on private investment?
- In your view, is regulatory decision making transparent and predictable, if not does this have an impact on
- What do you view as impediments in airport regulation?

PROJECT FINANCE/SECURITISATION SPECIALIST

- Please share your experience with securitisation particularity in the African /South Africa/Zambian, market
- How prevalent would you say securitisation is in terms of volume in the country/continent?
- For a vibrant securitisation industry to thrive it requires a stable social, political and economic environment, predictable legal system and developed financial sector. How true would you say this statement is this? And in the context of Africa do you foresee this to be a challenge for some countries?
- For securitisation to be economically viable, the volume of the pooled assets need to justify the cost of the process; how true is this statement? Can you elaborate from your experience of particular at is issues?
- “The lack of quality data, particularly historical or static data, is often a major impediment to rating emerging market transactions” in your experience, would you agree or disagree with this view and why?
- Who are the main rating agencies in the African market
- Legal property rights and legislation within South Africa are relatively well developed and allow for a broad range of assets to be securities, would you support this statement?
- Who are the typical investors for securitisation transactions?
  Are there any investment limitations on these investors?
- Would you say that there is a very good understanding of the securitisation model by institutional investors, in particular pension funds?
- In your view, is there sufficient interest in the African capital markets in securitisation? Why or why not?
- Would you say there is a market for securitised infrastructure assets?
- In your view, would securitisation of African infrastructure work, why or why not? What challenges do you foresee?

ECONOMIC REGULATORY SPECIALIST

- What regulatory regime is undertaken in your country’s airports? And what were the guiding principles to adopting this system?
- In your view, what are the particular problems you have experienced under this regime?

- The role of the regulator is obviously to balance both commercial needs and social needs; however the emphasis may differ depending on the ownership structure of the airport and the governing aviation policy; given this, is the commercial viability of the airports you regulate a major concern, why or why not ?
- Has the privatisation of airports introduced additional pressure on regulators/ why or why not?
- Information asymmetry is the key problem in regulation, how big o a challenge is this for the airports you regulate?