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# **The economic growth impact of commercial casinos in South Africa**

by

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## **Abstract**

The controversial subject of casinos as an economic growth tool has received extensive supportive and opposing research over the last decade or so, becoming more and more popular as an economic growth tool. However, the extensive literature on the economic impact of casinos has not always been backed up by empirical support to justify its means as an economic growth mechanism. Research conducted by Walker and Jackson (1998) noted this shortcoming and applied econometric analysis to provide more information on the relationship between casino growth and economic growth in the USA. However, no similar study could be found in South Africa, a country where casinos has long been used as an economic growth tool. The aim of this minor dissertation is to shed some light on the relationship between casino growth and economic growth in South Africa by using the Granger causality statistical test. The results found that casino growth causes economic growth supports the use of casinos as an economic growth tool in South Africa. Finding causality from casino growth to economic growth creates the incentives to also test the degree of causality and analyse the structure behind casino growth causing economic growth. Both these incentives were also analysed in this minor dissertation. A weak causal relationship was found from casino growth to economic growth and supplying vital information by segment analysis of the various channels by which casinos effect economic growth.

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## **List of Acronyms**

ADF	Augmented Dicky Fuller
AIC	Akaike Information Criterion
CASA	Casino Association South Africa
CSI	Corporate Social Investment
GCR	Gross Casino Revenue
GDP	Gross Domestic Product
ILO	International Labour Organization
IR	Integrated Resorts
KZN	KwaZulu-Natal
LED	Local Economic Development
NGB	National Gambling Board
PwC	PricewaterhouseCoopers
S.E.	Standard Errors
SC	Schwarz Information Criterion
USA	United States of America
VAR	Vector Auto Regression





## **CHAPTER 1: INTRODUCTION**

### **1.1 BACKGROUND**

Casinos have long been a popular form of entertainment and have seen a rapid rise in demand throughout the last decade (Walker and Jackson, 2007). Countries like the United States of America, China and numerous other developing countries are realising the benefits legalised casino gambling can unlock for the economic performance especially of a country's economic growth prospective.

South Africa also came to this economic realisation and since 1996 South Africa has introduced and expanded numerous industries whose importance was neglected during time. One of those is the gaming industry where government officials realised the gains the gaming industry and especially casinos could bring to economy as well as the overall well-being of the population (Tyawa 2012).

History has shown casinos to have various economic benefits when implemented in an underdeveloped area. Anderson (2005) states that casino institutions are used by the government to create a new taxpayer in the form of the casino itself. These casino institutions are required to pay a tax amount to the government so any increase in Gross Casino Revenue (GCR) would lead to higher tax revenue for the government and allow the government to utilise these extra funds in an economically beneficial way. Eddington (1999) supports the governmental benefits of casinos and adds that casino institutions are able to achieve the same results as some of the main economic growth tools. These results include job creation and economic growth, both which are considered important macro-economic objectives by any policy maker.

Opposing arguments for casino institutions having a positive impact on the country's population are made by authors like Grinols and Mustard (2006) and Stitt, Giacomassi, and Nichols (2003) who found that through economic and social costs, like gambling addiction increases and the exportation of funds out of the communities, casino institutions can harm the overall well-being of citizens and lead to increased problematic gamblers, referring to those who spend more than what they can afford. Reith (2005) confirms this social impact of casinos and cites the negative social impact casinos can have on communities where people spend all

their money on gambling and thus suffer the risk of bankruptcy, unemployment and increased crime near casino areas. However, the issue of social cost is a controversial one as indicated by Walker (2007). This minor dissertation will mainly focus on the economic impact of casinos rather than the social cost as the modelling of social cost has been hugely debated over the years.

## **1.2 RESEARCH PROBLEM**

The economic benefits and various negative social impacts of casinos, is a field of study covered by some extent over the past decade. Yet, it is bound to a discussion-based framework as little empirical evidence exists for casinos' effect on economic growth (Walker and Jackson, 2007). The bulk of the research done on the economic performance of casinos is also mostly based in the USA with authors like Eddington (1999) and Kearney (2005) who studied the effect Native American casinos have had on the economic performance within various American states.

An author like Richard (2009) analysed casinos' economic performance outside the USA, but this study was done for more developed countries like Canada and European countries. The lack of research in South Africa is evident as only Tyawa (2012) and Sallaz (2009) are amongst the few papers found regarding South Africa's economic performance of casinos. But these papers take the form of a discussion-based approach and thus a need exists to study the econometric evidence of a relationship between casino growth and economic growth within South Africa.

After more than twenty years since the legalisation of casinos in South Africa, the question has to be asked whether there is any econometric evidence to support the use of casino institutions as an economic growth tool in South Africa. Research based on casino institutions have shown numerous economic benefits such as job creation, infrastructure improvements and the attraction of finance to undeveloped areas (Eddington, 1999). But these benefits should be backed up by econometric evidence and since there exists little econometric evidence of casinos' economic impact, it should be cause for concern whether the statements made about casinos' economic impact so long ago, are still valid today in South Africa. The question posed by this minor dissertation will be to statistically determine whether commercial casino growth causes economic growth in South Africa.

Knowing whether or not an increase in GCR can cause an increase in Gross Domestic Product (GDP) is empirically important as it justifies the economic statements made about casinos' impact, not just globally but in South Africa in particular. South Africa is still suffering from an unemployment rate higher than most countries and a need for economic growth in specific areas in South Africa is obvious (Kingdon and Knight, 2005). If casino growth is able to cause economic growth then it would be an industry worth expanding as it is a government-controlled growth tool, allowing policy makers to operate casinos within their choice of underdeveloped areas taking into account the social cost in South Africa (Tyawa, 2012).

### **1.3 RESEARCH DESIGN**

#### **1.3.1 Research design**

This study involves determining whether commercial casino growth causes economic growth within South Africa by making use of econometric testing. An econometric test is needed as past studies on casinos' economic impact have been more discussion-based in nature, lacking valid econometric evidence to justify a relationship between casino growth and economic growth within South Africa. By applying a valid econometric test of causality, the justification of these discussion-based papers especially for South Africa, will be achieved by finding a direction of causality between commercial casino growth and economic growth.

In econometrics, there are various tests that can be used to test for causality between two variables, with the most reliable one being that of the Granger causality test. The Granger-causality test that will be used in this minor dissertation was constructed in 1969 by Granger (1969) and provides an efficient estimator of the relationship between two variables. It is said that variable X Granger causes variable Y if past values of X can enhance a stronger prediction for future values of Y.

One popular case study in which the Granger causality test was used in terms of the economic impact of casinos was by Walker and Jackson (1998). Their paper focused on USA casino industry and its impact on the country's economy. Walker and Jackson (1998) used state level data to test the relationship between casino growth and economic growth. But due to the lack of significant data points the standard Granger causality test had to be adjusted to fit the panel data used within their study. In this minor dissertation the same kind of adjustment of the Granger causality had to be made because casino revenue data could only be found from 2002

to 2014. In order to use the Granger causality to test the impact of casinos on the South Africa economy \ a provincial panel dataset had to be used to increase the number of observations.

To adjust the Granger causality test for panel data, there needs to be a three-step process as proposed by Walker and Jackson (1998). This process includes firstly filtering the trend and province specific effects from the data; secondly, finding the best time series process that generates each variable; and lastly, the Granger causality test will be conducted based on the previous two tests.

The first step of filtering the data is required to eliminate the trend effect and province-specific effect (for example laws and institutions) that may arise in different South African provinces and which have a significant impact on the Granger causality results. The test involves calculating a filtering equation for both GCR and economic growth. From these filtering equations the residuals for both the GDP and GCR equations are estimated.

These residual variables will then be used in the Granger causality test. However before the Granger causality test can be run one first needs to test for residuals being stationary. The residual of these filtering equations will be tested for stationary using the Augmented Dicky-Fuller test. If the residual are stationary, the second step of lag identification can be implemented.

The second step involves determining the time series process for each of the two variables. This is done by examining the Akaike information criterion (AIC) and the Schwarz information criterion (SC) of the filtered variables. Once the number of lags required has been identified, the third and final step can be implemented, namely the Granger causality test

The test for Granger causality on the joint significance of the two residual variables GDP and GCR will be carried using the Vector Auto regressive model (VAR). By using the lags specified in step two, the f-stat of the VAR will be looked at from a critical point of view and the Null Hypothesis of no Granger causality will then either be rejected or accepted based on the f-statistic and critical values of the f-statistics.

As an extension of the work done by Walker and Jackson (2007) this minor dissertation will also test the degree of causality as presented by using the Sims test (1980). Using an impulse-response function and variance decomposition, these tests will be used to examine the dynamics of the relationship between GCR and economic growth beyond just the direction of

causality. This study will then also observe the trends of some of the main economic casino benefits in South Africa. The benefits to be analysed will include: casino visitations, casino employment, casino tax revenues, secondary economic impacts and the addition of Corporate Social Investment (CSI) in South Africa.

### **1.3.2 Data**

The variables present in a discussion of the causation between commercial casino growth and economic growth will be represented by GCR and Gross Domestic Product (GDP) respectively. The reason for using GDP as the indicator for economic development lies within the aim of this study to focus on finding empirical results for casinos growth having an impact on the South African economy. While economic development cannot be defined by economic growth alone economic growth is still a sufficient indicator for economic development. The National Gambling Board of South Africa has already reported most casino statistical information in South Africa in their financial reports and in the Casino Association of South Africa (CASA) surveys. The GCR data can be extracted from the National Gambling board of South Africa from 2002 to 2014. The economic growth figures which are represented by GDP are obtained from the Quantec. The dataset for GCR and GDP which will be collected for each of the nine provinces in South Africa will be presented as a panel dataset collected on an annual basis. This is done to strengthen the number of observations used within this study as the time frame only consists of thirteen years.

### **1.3.3 Aims and objectives of this study**

Theory suggest casinos should play their part in the South African economy, either by a beneficial or destructive nature casinos influence the economy and community in which they are developed. This minor dissertation focusses on answering the question of whether casinos have a positive impact on the South African economy. The aim and objective of this study will then be to shed some light on the current knowledge portrait around casinos and their impact on economic growth in South Africa.

### **1.3.4 Significance of the study**

Literature on the economic impact of casinos in South Africa has been scarce to say the least. The research field of casino has not been as popular as other more standard economic growth

tools, reason being the controversy that comes with casinos as an economic growth tool. Using casinos as economic growth tool is not straightforward and the economic and social negative impacts of casinos hinders the process of establishing casinos as clear economic growth tool. This study attempts to shed some light on the topic around the economic impact of casinos and valuable information regarding the dynamics of the relationship between economic growth and casino growth. The econometric analysis provide information not only from a discussion based point of view but also provide significant econometric results on the relationship between economic growth and casino growth in South Africa.

This study will contribute to the scarce literature on the economics of casinos and provide policy makers with evidence on the existing or non-existing impact of casinos on the South African economy. Answering the question of whether the usage of casinos as an economic growth tool has been successful in South Africa, a country where any economic growth is welcomed with open arms.

#### **1.4 ORGANISATION OF THE STUDY**

The remainder of this minor dissertation is organised as follows:

Chapter 2 highlights the literature behind the economics of casinos. Starting out with the broad worldwide research on the economies of casinos the Chapter will then later shift focus to South Africa specifically where research has been more absent. Chapter 3 will provide a detailed explanation on the method and tests used to analyse the relationship between economic growth and casino growth in South Africa. Chapter 4 will present the results of the Granger causality test explained in Chapter 3 and also present the results of the impulse response function, variance decomposition test and the graphical analysis of the economic benefits of casinos in South Africa. Lastly Chapter 5 will conclude the work done in this study and mention areas for future research on the development of casinos in South Africa.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

As an economic growth component, the impact of casinos has been a heavily debated topic in recent years and these debates are accompanied by extensive research to support arguments for and against the economic benefits of casinos. There are numerous approaches to casinos and their economic impact and this Chapter will focus on identifying the literature of the expansion of casinos from a Local Economic Development (LED) point of view. Ultimately, the aim of this Chapter is to discuss the important components in the literature of the economics of casinos.

The first section of this Chapter will cover the theory of LED combined with the theory behind casinos as an LED component, concluding with specific reference to South Africa. The second section of the Chapter will then discuss the positive and negative economic and social impacts of casinos. The fourth and last section of this Chapter will introduce the South African case and how casino growth has had an impact on the economy of South Africa since its legalisation in 1996.

### **2.2 THE ECONOMIC IMPACT OF CASINOS**

This section will cover the introduction to LED while also referring to the theory behind casinos as an LED component. It will explain the implementation of casinos as an LED tool in various developing and developed countries. Thereafter, a brief overview of the South African LED implementation policies will be discussed with specific reference to how casinos can be considered an LED tool to be used in the cause for more LED implementation in South Africa.

### **2.2.1 Local economic development theory behind casinos**

“This war will be fought not on the frontier or on some distant battlefield, but amongst us - among our homes.” These are the famous words once uttered by actor Mel Gibson in the popular “Patriot” movie. It is a quote that can sum up the reason behind LED perfectly, as the war referred to, can be regarded as the attempt to reduce poverty and the victory lies within LED. Where better to fight poverty if not on the doorsteps where it arises? The concept of LED refers specifically to this. LED refers to a process where the control of central governments over an environment is reduced in such a way that the development process within the community is based more on a decentralised and bottom-up economic development approach (Rogerson, 2010). One of the ways for local economies to achieve development and fight poverty is to attract new business. This not only leads to an increase in local employment but also to an increase in the welfare of the local community, because of their renewed access to products and services (Walker and Jackson, 1998). One particular business that has shown success in this regard is casinos.

Casinos possess some vital characteristics to be classified as a pro-LED tool. Casinos are normally seen as traditional economic growth tools because of two aspects. Firstly, casinos show highly visible results this construction of a casino will have a significantly visible change in the region where it is constructed. This has become central to local economic practitioners especially in developing countries: to show visible results for the success of development (Blair and Kumar, 1997). Secondly, local economic practitioners are normally pressurised to deliver instant results. One of the areas where casinos have proven to be very successful is in the short run impact they have on economies (Loveridge, 1996). Casinos have the ability to create rapid short run results that would benefit the region in the short run.

However, one key difference between casinos and the other traditional growth tools is the fact that the government creates and regulates the market for the development of casinos in a country (Felensentein and Klacik, 1999). As explained by Felensentein and Klacik (1999), the government has control over the number of casino licences in a country and corporations compete against each other to obtain these licences. Once casino licences have been obtained, the private cooperation owning the casinos would oppose the increase of other licences in the



region or country so as to maintain a certain oligopoly or monopoly on the casino market. This was proven in some of the USA regions like East Michigan and Northeast Illinois (Przybylski, Felsenstein, Freeman and Littlepage, 1998).

The reduced competition in the casinos industry in the USA is justified by research done by Gazel (1998) who shows that the impact of casinos on the local economy is dependent on whether the casinos can earn abnormal returns. If they can earn abnormal returns, their impact on the local economy would be far greater than a casino which is earning normal profits. The only way in which to earn these abnormal profits will be to have an oligopoly or monopoly over the market. In the local economy the oligopoly or monopoly nature of the casino industry has remained the most economically efficient way to implement casinos.

Casinos also have the ability to align with one of the most important objectives of LED. According to Gaule (2001:27) “Local economic development is a process that brings together resources from within and outside the community to promote economic growth in a systematic and organized manner at the municipal level.” Gaule (2001) proposes that LED should be built on the strengths of each environment specifically, and allow for development in key areas unique to the specific area under development. This is also seen in especially River Boat casinos in the USA, owned by Native American shareholders. These casinos have incorporated defining characteristics from their home regions into the casino. They supply tourists with background to their community and in the process they create an incentive for foreign visitors to look beyond the casino into other tourist attractions in the region (Rephann, 1997).

### **2.2.2 Casinos and LED in developed countries**

The historical success of casinos and LED has been researched in the USA, by the likes of Gazel (1998) and Garrett (2004). Gazel (1998) studied the impact of casinos on a local economy level in the USA, finding that the positive impact of casinos normally depend on the ability of the casino to earn high profits and then reinvest these profits into the local economy or local shareholders. Garrett (2004), who analysed the impact of casinos on the local employment in six USA counties found that casinos increased local employment. The impact of casinos on local employment is evident more in rural areas than the metropolitan areas which could indicate that casinos would have the biggest impact on rural economies (Garrett, 2004).

The local economic impact of casinos is not just USA-specific and has been debated in other countries like the United Kingdom and Canada. McMahon and Lloyd (2006) conclude that casino gaming has had an impact on the sectoral physical infrastructure in the UK since its legalisation in 1993. Henriksson (1996) also analyses the impact casinos could have on the local economies of Canada.

The need for more regional development is evident as the exposure the USA, Canada and the United Kingdom have suffered at the hand of globalisation. This led to more regional development in countries like the USA and UK and over time, development tools like casinos have become successful regional growth strategies. Since then, casinos have become a worldwide standard policy instrument, even in some developing countries (Amin and Thrift, 1994).

### **2.2.3 Casinos and LED in developing countries**

The motivation for any regional development plans for developing countries should differ from the ones of developed and more established countries. Rodríguez-Pose and Tijmstra (2007) gives several reasons for the adaptation of LED in developing countries. Firstly, the high poverty rates and the sluggish economic growth within these countries combined with the ever-changing conditions in international economics have led to a pro-LED attitude in developing countries (Rodríguez-Pose and Tijmstra, 2007). Secondly, due to the failure of the central government in most developing countries to have a significant impact on the local community, combined with the inability to support local enterprises have served as rationale for LED to become a popular strategic policy in most developing countries (Rodríguez -Pose and Tijmstra, 2007). The reason behind legalising casinos within developing countries has mainly been due to the challenges mentioned above.

In South Africa LED remains one of the country's primary objectives, due to the large divide between rural and urban areas (Hoogeveen and Olzer, 2005). Given the security and stability that LED can bring not only to the targeted underdeveloped areas, but also the national economy, it is of no surprise that LED is considered one of the most promising development strategies in South Africa (Hoogeveen and Olzer, 2005). The use of casinos as an LED component in South Africa is also confirmed by Sallaz (2009) who explains that one of the main reasons behind the South African government's decision to legalise casinos, was due to

the growth factor of casinos and the economic benefits that casinos can have on historically disadvantaged ethnic groups.

When considering the impact of casinos in South Africa, there are numerous characteristics that need to be satisfied for casinos to be considered a pro-LED tool. The ILO divides LED into four criteria. The first is the participation by the key members within the community and efficient communication among these members (Rodríguez -Pose, 2008). Secondly, there needs to be planned interventions dedicated to the local area. Thirdly, the community's resources and the competitive advantage brought about by these resources should be mobilised (Rodríguez-Pose, 2008). Fourthly and lastly, is the fact that after the intervention has been achieved, there should be a local management and ownership component (Rodríguez-Pose, 2008).

In an analysis of whether casinos satisfy the four criteria mentioned above, the justification is made by the vast research that supports or rejects the usage of casinos as LED tools. In South Africa there are not a lot of research that has been done on the economic impact of casinos in South Africa to support its implementation as a LED tool. Studies done by Tyawa (2012) and Sallaz (2009) are amongst the few who have investigated the economic impact of casinos in South Africa. Tyawa (2012) analyses the role that the government should play in casino expansion and how efficient management could play a significant part in determining the success of casinos in underdeveloped areas. The research by Tyawa (2012) is more discussion-based and lacks a general econometric overview of the effect casinos have had on the economic growth in South Africa.

Sallaz (2009) studied the dimensions of the casino industry legalisation in two contexts: the South African case and the Indian Lands in California case. According to Sallaz (2009), the legalisation of casino gambling in South Africa was motivated purely by the economic benefits it possess. Sallaz (2009) reveals the positive effect gambling institutions like casinos can have on economic growth, job creation, tax revenue and foreign investment. He argues that the casinos have had a positive impact on the South African economy and with no negative effects within the economy overall the contribution casinos have been positive (Sallaz, 2009). Since the 1996 Gambling Act was introduced to promote job creation, possible tax revenue and infrastructure development benefits, South Africa's casino industry have grown at a rapid rate. Through job creation, casinos have given the local communities reason to support this

movement as casinos in South Africa have assisted in alleviating the high unemployment rate the country faces (Sallaz, 2009).

Sallaz's (2009) study offers vital macro information on the economic impact of South Africa, but what is still lacking is an in-depth study of the various geographical provinces and the people living in these areas of South Africa where casinos have had an impact on their wealth and utility. To fully understand how the people of South Africa have been impacted by casinos, one has to explore the full detail of the various positive and negative economic and social implications of casinos. The next section of this Chapter will be dedicated to understanding in full the theoretical and practical implications of casinos all around the world.

## **2.3 THE POSITIVE AND NEGATIVE IMPACTS OF CASINOS**

Casinos have the ability to satisfy the criteria for LED mentioned in the previous section and therefore should be considered a pro-LED component. According to Wu and Chen (2015: 286) "A casino, which is a place that legally allows people to engage in the activities of gambling and recreational consumption, can also directly and indirectly cause impacts. These impacts are somehow tangible and intangible in the host community, in which casino gamblers interact with the local environment, economy, and society." The impacts referred to by Wu and Chen (2015) can either have a positive or negative impact on the host economy, be it from a social or economic viewpoint. It is essential to analyse and understand all the positive and negative impacts of casinos if one is to consider the full impact of casinos in a country or region.

The research on the economics of casinos has always taken a promotional or opposing stand. The likes of Eddington (1999) and Walker and Jackson (2007) advocate the promotional view of casinos as an economic growth tool. Opposing these studies are the likes of Goodman (1994) and Grinols (2004) who both takes a stand against casinos as a tool for positive economic impact. The next section of this Chapter will be dedicated to explaining the various positive and negative impacts of casinos with referral to various case studies where casinos have either had a positive or negative impact on an economy.

### **2.3.1 Positive impact of casinos**

Wide research on the economic impact of casinos has led to the main economic benefits of casinos being identified in studies done for example by Kearney (2005), Eddington (1999),

Walker and Jackson (1998) and Rephann (1997), all giving supportive arguments for the economic benefits of casinos. The benefits of casinos include being a job creator and tax revenue generator within a specific region. These and other benefits will be discussed below.

Kearney (2005) argues that unlike other industries, the casino industry is not driven by supply and demand only. It is government-controlled, meaning that the government has the final say whether casinos could be legalised and operate within a region. The government does not keep ownership of the casino, but they do have control over the expansion of the casino industry in a country or region. Anyone who wants to open and run a casino needs to follow the specific governmental channels. This makes it possible for the government to place casinos within areas they believe to be underdeveloped and in need of LED. The control a government has over the location of casinos means casinos have the ability to transform underdeveloped areas. Given the great and sometimes addictive demand for these casinos the problem of distance, demographic quality and other constraints for the consumer do not always have an influence on the choice of the consumer.

Another benefit for the government of casino expansion and probably one of the main reasons for a government to support casinos, lies within the tax revenue gained from casino industries as the casinos are required to pay an amount of taxes to the government. In the USA, casinos also normally pay taxes that are in excess of other enterprises (Rose, 2002). This adds to the government's public finance budgets and provides additional revenue to be used by the government in the development of the economy. In South Africa this is no different: tax levies from casino gaming totalled R1.8 billion in 2011 (PwC, 2012). This tax revenue gives the South African government some much needed revenue to be used for development and growth causes. Interestingly, the amount of tax revenue is also dependent on the casino growth, meaning there is a positive relationship between the GCR and tax revenue. Any increase in GCR will lead to an increase of casino revenue tax payable to the government, making the casino taxes a progressive tax system. (Anderson, 2005).

Eddington (1999) specifies that casino institutions are also able to assist in job creation, economic growth and foreign investment, all of which are considered important objectives by most policy makers. Eddington's arguments are supported by Siegal and Anders (1999) who propose that casinos have the ability to generate economic growth and create jobs similar to

that of any new industry entering a market. The jobs created in the casino industry in the USA are normally low skilled, low paying jobs, but the fact remains that employment is created from nothing. The casino employees normally receive full medical aid and pensions exceeding that of the national average (Rose, 2002). This is confirmed by the California Economic Forecast (2008) which shows the economic impact of casinos in Santa Barbara. The casino industry is one of the largest employers in the Santa Barbara County with employees receiving wages that exceed that of the general Santa Barbara average income levels. The impact of casinos on the income of the local community is also confirmed by Rephann (1997) who, from a purely discussions-based aspect, confirms that casinos do have a significant impact on the per capita income of the community of interest. It plays an important role in job creation in the community where casino expansion takes place.

From a South African viewpoint, the impact of casinos on job creation within a local region is vital. South Africa suffers from one of the highest unemployment rates in the world (Kingdon and Knight, 2005). This makes job creation one of the main objectives of any policy dedicated to development and growth in South Africa. Another casino economic benefit specifically for a developing country like South Africa is the spill-over of skills development for the community at hand. The construction of a casino includes the development of skilled workers for managerial and other skill sets (Rose, 2002). This is regarded as one of South Africa's key focus points in terms of achieving its economic development and economic growth objectives. The skills that casino managers and even lower skilled workers like card dealers bring to the table, improve the skill set in areas where South Africa is heavily lacking, especially with regards to higher end skills.

Tax revenue and job creation are some of the clear economic benefits of casinos. These well-known benefits of casinos have shaped the arguments for the promotion of casinos and their contribution to LED within an underdeveloped area. However, when one looks deeper into the economics of casinos there remains other lesser known benefits that could have as big an impact on the local economy as the more well-known benefits. There are various secondary impacts of casinos on other industries within a community.

According to Brome (2006) the secondary effects do not only include the tax revenues or the jobs created directly by the casino, this is known as the feedback effect of casinos and shows how the casino have an impact on local businesses within the host community of casinos. This includes the local restaurants and the local entertainment areas found inside the casino, all of

which grew from the expansion of the original casino and have in their own right contributed to the local community economically. A positive impact, for instance, would be that it leads to higher tourism numbers visiting the local restaurants and local entertainment areas. Any money spent by a tourist would have a multiplier effect on the local economy as this is money brought from outside the community (Markham, Doran and Young, 2014). Thus, if the casino attracts tourists from outside the region more intensively than the local market then the negative impact where casinos harm local business would be substantially lower than in a case where the market is only the local residents. This is the preferred impact of the secondary industries generated by casinos as the development of these industries has a positive impact on the local communities with more jobs being created and new business entering the community.

According to Figart and Mutari (2014), in the past decade, casinos in the United States of America constituted a larger part of consumer expenditure than theme parks, video games, recorded music, movie tickets and spectator sports combined. Interestingly, the growth within the casino industry was not dedicated to casino floors but rather to other entertainment facilities inside the casinos (Bryant and Walker, 2011). Bryant and Walker (2011) analysed the financial gains of hotels and other recreational facilities in the casino industry in the USA and found that hotels and casino floor expansions show negative returns over time, while investments in food and beverages supply show neutral returns. The positive returns are seen in other types of entertainment that is more family friendly and shows the degree to which casinos have shifted from being gaming institutions to a holiday resort with gaming facilities as an added activity.

All around the world casino industries have moved beyond just being a casino floor, making money from gamblers. Kim, Crompton and Botha (2000) confirm that casino expansion in the USA cannot be only analysed from a purely casino growth point of view but focus has started to shift to the importance of the recreational value of casinos and the impact these added entertainment areas has had on the economy in the USA. From a developmental perspective, Benar and Jenkins (2008) showed that numerous developing countries like Northern Cyprus and the Caribbean Islands use casino gaming as a package to their entertainment areas. These entertainment areas that arise from the casinos form a formidable partnership with the tourist activities in these developing countries to enhance growth within the country by tourist expansion.

It is also worth mentioning that when focus shifts from the casino industry to the recreational entertainment areas and their economic impact, the negative social impact is lessened as these entertainment facilities are not harmful with regards to any social conflicts within the community. The only negative impact of these casino-inspired industries expanding is if they drain the demand of local businesses. The overall impact should be positive with job creation, increased supply and the attraction of new business being a few of the advantages to the community.

Another notable attribute of casino gaming that has surfaced during the last couple of years with casino gaming moving into the centre of entertainment and tourist attractions, is the charitable contribution casinos have made to the poor within developing countries. This is evident especially in South Africa where casinos have submitted substantial support and formed various charity organisations.

One of the major casino social investment contributors in South Africa is Sun International Limited. Sun International operates casinos, hotels and various holiday resorts in South Africa, Latin America and other African countries. Having more than 30% of South Africa's casino licences in their possession, Sun International is the most significant GCR generator in the country (Sun International, 2014).

With more than 2% of Sun International GCR donated to social investment organisations, casinos in South Africa have shown another reason for its economic contribution to the community (CASA, 2009). More than R228 million was spent in 2013 on social programmes by Sun International Cooperation in South Africa to alleviate poverty through the support of education, health and other benefits (Sun International, 2014). This gives casinos a type of Robin Hood characteristic and it gives an added dimension to the positive impact of casinos on the economic growth of a developing country like South Africa.

As a developing country South Africa is heavily reliant on any social relief programmes introduced in the country's poorer communities. The CSI programmes developed by Sun International and various other casinos' cooperation in South Africa have increased their contribution over the last couple of years and diversified their contribution to various health



and educational charities (CASA, 2012). Health and education are both seen as key issues in South Africa's future prospects of achieving higher employment, lower poverty and increased overall well-being of the entire country. The CSI programmes of casinos in South Africa seem to have a large impact, with an amount of over R286 million spent on CSI from 2006 to 2009 (CASA, 2009).

The positive economic impacts of casinos are justified by various case studies where the introduction of legalised casinos has had a positive impact on the economies of various regions. None more popular, is the case of Nevada in the USA, where a small insignificant state was transformed into a state of high economic value to the USA, all due to the expansion of casinos in Nevada (Eddington, 1999). The key to the success of Nevada is the large number of foreign tourists visiting the casinos in the area. By attracting people from outside the region, Nevada is an example of how potent a casino can be in a region's economy. Nevada has become the standard case for all other countries or regions wishing to use casino gaming as a tool for economic growth.

All the success in Nevada led to the creation of the casino city - Las Vegas. Las Vegas quickly became the ultimate tourist destination not only in the USA but all around the world, due to its lucrative entertainment areas and exotic desert-like nature (Eddington, 1999). The expansion of casinos in Nevada was all due to the shift in the ownership structure of casinos within the state. In the 1930s, Las Vegas was owned by the mob with crime playing a big part in the development of Las Vegas at that time. That was the case until the ownerships shifted to public trade cooperation's when the rapid growth of Las Vegas took place. Casinos shifted away from being an illegal activity to becoming part of recreational entertainment activities in Nevada by receiving the public's acceptance (Johnston, 1992).

After the success in Nevada, casinos were legalised in numerous countries and the impact of casinos on each of these countries differs according to the impact they have on the economy in which they operate. Grinols (2004) divides the economic impact of casinos into two categories: either being a factory or a restaurant in the region. An example of a factory would be Las Vegas where the casinos are seen as a producer selling its product to the rest of the world. Examples of the restaurant case is where casinos are just a substitute for local business where any increase in business for the casinos would lead to less demand for local enterprises. Grinols (2004) argues that the case of Las Vegas is a rare outlier and in most cases the "restaurant" theory will hold when casinos are used for economic growth. The chance of any country or region

achieving the same success as Nevada and Las Vegas is slim to say the least. This being said, the expansion of Nevada has led to both developed and developing countries trying to achieve some of the success bestowed upon a once small and insignificant state in the USA.

The expansion of casinos is not just prominent in the USA; other developed countries like Canada and numerous developed European countries are all aligning with the promotional view of casinos and expansion in this previously illegal industry. States in the USA and other developed countries have used casinos as an economic growth tool with great success (Eddington, 2007; Richard 2009). All originate from the injection of a legalised casino gaming law in Nevada that shaped the foundation for the promotion of the economics of casinos.

A developing country that used legalised casinos to substantial economic success is that of Macao, a small region in China (Zheng and Hung, 2012). This region has built its own economy on casino development with a revamped introduction of liberating the casino industry. With this decision, Macao has experienced a huge boom in economic growth through higher GDP per capita, higher employment and an increase in Chinese tourist numbers since 2003. The success of Macao has given them the nickname “the Las Vegas of the East” and rightfully so, as this small country has been the only country to show growth within the casino sector during the financial crisis of 2008, all due to the rapid growth in the casino industry (Zheng and Hung, 2012).

Another country that has introduced casino gaming as a means of creating jobs and expanding on a heavily competitive tourism sector in the Middle East, is Singapore. Singapore has introduced Integrated Resorts (IR). IR are leisure and entertainment areas where casinos only form a small part of the resort (Leu and Ko, 2012). These IR allow the tourism sector to add to the already substantial revenues generated in Singapore. The success of Singapore’s legalised casino gaming, while still heavily debated, is just another economic success story in the use of casino expansion as growth accelerator (Leu and Ko, 2012).

Casinos do not only have positive impacts on an economy and therefore the negative economic and social impacts need to be considered whenever the full impact of casinos on a community is analysed. The next section will be dedicated to explaining just what these theoretical drawbacks of casinos are and how they could impact an economy.

### **2.3.2 Negative impact of casinos on a social and economic front**

The impact of casinos cannot just be qualified as positive and there remains some negative implications of casinos. The negative impacts of casinos are normally divided into two parts: social problems and negative economic impacts (Grinols, 2004). Each of the two parts will be discussed in the next section of this chapter with referral to case studies in which casinos have had an actual negative impact on the social or economic conditions of a local community or country.

When a casino opens there are various social implications for the relevant community (Wu and Chen, 2015). These social implications have been heavily researched in the past where social costs have been identified as the best proxy for these social implications. Social costs are a difficult phenomenon for researchers and policy makers to measure and it plays an important role when the impact of casinos on a local economy is analysed. Social costs include the social harm caused by casinos on the community, increasing the number of pathological gamblers and leading to the destruction of families (Janes and Collision, 2004).

Another negative social effect of casinos is the increase in crime when a casino is opened in a particular area. Crime has become a major point of discussion when referring to the negative impact of casinos (Reith, 2005). Other studies done by the likes of Allcock (2000), Chhabra (2007) and Petry (2003) indicate that there could also be a correlation between casinos and some social deviations like bankruptcy, divorce and alcohol abuse.

But the negative impact of casinos cannot just be regarded as social; there are also some negative economic implications of casinos. Grinols (2004) postulates that although job creation remains an important objective for any policy maker, the true value of a local development tool like casinos lies in its ability to enhance the utility and welfare of the community. It is here where casinos could have a negative impact on the welfare of a community by increased local prices and an increase in imported workers. This is true especially when casinos act as restaurants, where their revenues are at the expense of local business within the region.

This is not the only case where the harmful nature of casinos has been analysed. Goodman (1994), for example showed that casinos can drive up the cost of production and lead to small

firms in the area being “cannibalised” or even driven out of the economy by the casino development. Rose (2002) also argues that if casinos are owned by businesses outside the community, it could lead to money being exported out of the area that could have been used for development in the particular area. This will have an adverse effect on the community’s economy because all the profits earned by the casino leave the community. This impact can be multiplied if labour is also imported for the casinos. This will result in the local community not enjoying any of the major economic benefits of the casino.

The secondary industry mentioned in the positive impact section can also generate negative effects if the casino entertainment areas consume business from other local enterprises and drain the demand for these already established local facilities. Rose (2002) discusses the sometimes negative nature of casinos to consume and overpower small local businesses. The small business expansion is a key component of LED and if small business expansions are harmed in a community, it would lead to the exportation of resources in the region. The exportation of resources from the community casinos and these secondary industries could lead to the depletion of the community’s resources, if there is no correlating expansion of the community itself during casino expansion.

Lastly, another one of the main negative implications of casinos is the added cost of public services such as road maintenance and the increased cost in crime prevention. This negative impact all depends on the capacity of the community relative to the size of the casino (Rose, 2002). If a casino leads to the drainage of public services it presents a form of cannibalism on the local economy that would decrease the welfare of the local community.

The negative social and economic impacts of casino have been proven in various case studies. For instance, in the case of Macao, a country where casino expansion has flourished as an economic growth tool, the results are not all positive. Research done by Zheng and Hung (2012) found that from a quantitative point of view, the casinos’ liberalisation has had a positive impact on economic growth. However, a qualitative study of household surveys by Zheng and Hung (2012) of Macao shows that the impact on the population is opposite to that on the economy, with the Macao population being opposed to the liberation of casinos in the country. The legalisation and rapid growth of casinos in Macao has led to higher domestic prices for necessities. There has also been a large influx of illegal workers consuming the lucrative jobs created by casinos and therefore the economic benefits of casino growth in Macao are not fully reflected in the population’s standard of living (Zheng and Hung, 2012).

The impact of casinos on local business can also be negative. This was seen in Atlantic City, where the number of retail business in the city decreased from 243 to 146 in the first four years of the establishment of casinos in Atlantic City. This indicates that casinos could have an adverse impact on the local economy and local businesses (Oddo, 1997). This is proven by the likes of Truitt (1996) who found that riverboat casinos in Illinois did not spark the expected economic growth and tourism impact due to tourists not staying long enough to make use of the local hotels and restaurants. The local community was more attracted to the restaurants opened by casinos and it hurt small local restaurants business in Illinois.

Social deviations have also been tested by the likes of Roehl (1999) who did a qualitative study and found that most of the residents in Massachusetts reject the view that casinos lead to development in the region. Interestingly, the results show that residents actually feel that the cost of living and not the standard of living has increased. Another case where social deviations were tested was when criminal activity was proven to have increased due to the legalisation of casinos in South Dakota, where criminal activities showed an upward trend due to the development of casinos in the state (Long, 1996).

### **2.3.3 Comparing the positives and negatives of casinos**

The successes and failures of the case studies highlighted in the previous section have led to various countries contemplating the introduction of legalised casinos in their countries. Japan is one of the countries where the introduction of casinos as a growth accelerator has been proposed on numerous occasions but rejected due to the vehement debate around its economic and social impact. The debate around casinos has led Japan to being the only industrialised country without legalised casinos (Argusa, Lema, Asage, Maples and George, 2010). Some of the regions in Japan are suffering from not being able to make use of casinos as an economic growth tool to spur economic growth in their region.

A specific example of this in Japan is the province of Okinawa, a region known for its unstable economic conditions and some of the lowest average salaries in Japan. Okinawa is contemplating the legalisation of casino as an economic growth tool to solve some of their economic problems. Having large numbers of tourist visitations every year to the region (Argusa et al., 2010).

There is no clear way to conclude whether the negative impact outweigh the positive economic impact or vice versa. The outcome will differ with every case and thus regionally based studies

need to be done to decide whether the economic benefits outweigh the negative ones in every case. Missing in the literature are empirical studies of the impact of casinos on economic growth. Walker and Jackson (1998, 2007 and 2013) are the only papers that investigate this relationship between GCR and income per capita. Yet, these papers are based on the different American States, while no research is found on the South African case. The methodology used by Walker and Jackson (1998) will be discussed in Chapter 3. Since this study focusses on South Africa and the impact of casinos in the country, the next section will explain the nature and history of casinos in South Africa in more detail.

## **2.4 THE SOUTH AFRICAN CASE**

This section will focus on the South African case and will firstly discuss the history of casinos in South Africa before and after the legalisation in 1996. Thereafter, the economic implications of casinos in South Africa will be analysed. The expansion of casinos will be the concluding focus point of the Chapter, highlighting the redevelopment of casinos in South Africa.

### **2.4.1 History of casinos**

South Africa's history of casinos goes back to 1978 when Sol Kernzer was responsible for building and operating the popular casino Sun City in Bophuthatswana, better known today as the North West province. Due to the fact that casinos were banned in South Africa, the independent region of Bophuthatswana was exempt from the South African laws on casinos. This made it possible for Sol Kernzer to build a casino in Bophuthatswana and attract visitors not only from other countries, but most of the visitations came from South African citizens. In the process a once rural wasteland known as Bophuthatswana became one of the most popular foreign tourist destinations on the African continent (Knight, 1984). The impact that the construction and expansion of Sun City over the next 20 years had on the North West region became evident in the feedback effect such as the number of tourist attractions expanding near Sun City. Places like Pillanesberg and other notable tourist attractions in the Rustenburg and Magaliesburg areas all made use of the large tourism influx in the North West region (North West Development Cooperation, 2014). These areas have combined their rich cultural history with a large scale tourism expansion to ensure growth within the community. These developments highlight the key factors that make LED a successful policy.

. Casino gaming was illegal in the rest of South Africa at that time - any gaming activities were only allowed to take place in South Africa's homeland regions referred to as Bantustans – one of these being Bophuthatswana. The other regions where gambling was legal was Ciskei, Transkei and Venda. It was due to the success of Sun City that the National government in 1996 introduced the National Gambling Act, in an attempt to use gambling as an economic growth tool for the entire South Africa. The South African government used legalised gaming in an attempt to capitalise on the economic benefits of the ever-growing illegal gaming sector in South Africa (Sallaz, 2009). South Africa's public acceptance of casino gaming meant the National Gambling Act in 1996 had the support of the South African public to construct a maximum of 40 nationwide casinos around the country.

By the early 2000s the number of casinos in South Africa was eighteen in seven South African provinces. Sun City remained by far the most popular and successful casino. Although Sun City lost its casino monopoly in 1996 with the legalisation of casinos in the rest of South Africa, it has remained one of South Africa's most popular tourist destinations. It won the award for the best African resort in 2010 (South African Tourism, 2011).

The statistics clearly show the significant contribution of casinos to the South African economy where the casino industry contributed R21.9 billion (0.8%) to the GDP in 2012 and created more than 30 000 direct casino jobs in 2012 (National Gambling Board, 2014). All these statistics support the argument that the gambling industry has benefits for a developing country like South Africa.

#### **2.4.2 The redevelopment of existing casinos**

Currently, the number of casinos in South Africa stands at 37 (CASA, 2012). The National Gambling Act introduced in 1996 specified a maximum of forty casinos that could be built in South Africa. There remains room for expansion but this expansion will not take place in increasing the number of casinos in South Africa but rather the expansion of existing casinos in the country.

GCR is used to measure casino expansion in South Africa. In 2011 GCR rose by 7.4% across all provinces, the largest increase since 2007 (PwC, 2012). It indicates that the casino industry is still growing in South Africa, and this demand-driven industry is able to achieve the same economic objectives as the more popular known growth tools like achieving economic growth

both on a local and national scale for South Africa. Currently the casino spread in South Africa is fairly even. Table 2.1 indicates the provincial distribution of casinos in South Africa in 2012.

**Table 2.1: Number of legalised casinos in South Africa in 2012**

<b><u>South African Province</u></b>	<b><u>Sun International</u></b>	<b><u>Peermont Global</u></b>	<b><u>London Clubs Int</u></b>	<b><u>Tsogo Sun</u></b>	<b><u>Not CASA Members</u></b>	<b><u>Total</u></b>
<b><u>Eastern Cape</u></b>	2			2		4
<b><u>Free state</u></b>	2	1		1		4
<b><u>Gauteng</u></b>	2	1	1	3		7
<b><u>KwaZulu-Natal</u></b>	1	1		3		5
<b><u>Limpopo</u></b>	1	1				2
<b><u>Mpumalanga</u></b>		1		2		3
<b><u>North West</u></b>	2	2				4
<b><u>Northern Cape</u></b>	1				2	3
<b><u>Western Cape</u></b>	2			3		5
<b><u>Total</u></b>	13	7	1	14	2	37

Source: CASA (2012)

Table 2.1 shows that Gauteng is the South African province with the most commercial casinos (CASA, 2012). Limpopo is more traditionally known as a rural province and it has the least number of legalised casinos within the country. If the total number of casinos in South Africa in 2012 is compared with the number 20 years ago then the growth of casinos has been tremendous, since Sun City in the North West Province was the only legal casino in the country at that time. In the 1996 legalisation of casinos in South Africa, the country took a stand on the debate around casinos being used as an economic growth tool in a country desperate for development. However the growth of casinos in South Africa has reached maturity in terms of the number of casinos and any attempt to construct more casinos could lead to more harm than good as this will only take business away from the existing casinos (PwC, 2014).

There is still a lack of research other than the biased governmental reports on the economics of casinos in South Africa. The lack of research done on the economic impact of casinos in South Africa is accompanied by even more lacking econometric evidence on the economic impact of casinos in South Africa. This is therefore the main goal of this study: to test the relationship between casino growth and economic growth within South Africa on a provincial level.



## **2.5 CONCLUSION**

The vast literature on the economics of casinos shows that this topic has been heavily debated over the last decade or so. When consulting the literature on the economics of casinos it is normally divided into a promotional or opposition stance for and against casinos as an economic growth tool, supported by the various positive or negative economic and social impacts of casinos. Positive impacts explained in this Chapter include that of job creation, tax revenues and the benefits of secondary industries. The negative social and economic impacts were also discussed and highlight the increase in criminal activities, the drainage of local resources and the cannibalism of the local economy. Various cases studies have proven both the positive and negative impacts of casinos to be true.

South Africa finds itself in the situation where poverty, inequality and unemployment dominate the nature of any growth objective or policy. The casino industry in South Africa contributes to help solving these problems not only directly through its impact on job creation, tax revenue and infrastructure but also indirectly through secondary industries and CSI contributing significantly to the poor population.

Very little economic research has been conducted on South African casinos over the course of the last 20 years since its legalisation in 1996. Thus, the incentive for this study is to focus on the economic growth impact of commercial casinos in South Africa, a field of study yet to be explored in full using reliable econometric techniques. The next Chapter will be dedicated to the method this study will use to analyse the economics of casinos in South Africa.

## **CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY**

### **3.1 INTRODUCTION**

Very little empirical evidence exists of the relationship between casino growth and economic growth globally (Walker and Jackson, 2007). The work done by Walker and Jackson (1998, 2007 and 2013) is dedicated to shedding some light on the empirical evidence of the existing or non-existing relationship between economic and casino growth. Their work has been solitary to propose a vital econometric analysis regarding the impact of casinos on an economy.

The theoretical impact casinos has on economic growth has been investigated thoroughly; empirical evidence should be vital for any LED policy maker as this socially rejected entertainment industry has grown significantly over the last 20 years. This is true especially in South Africa where the casino industry has matured with 37 legal casinos operating in the country in 2012. The contribution of these 37 casinos include positive economic impacts like job creation, tax revenues and infrastructure development (as was explained in Chapter 2). This study will focus on the overall impact of casino growth on the economic growth of South Africa by making use of econometric evidence to determine the causal relationship between economic growth and casino growth in South Africa.

The first section of this chapter will cover a research overview of the economics of casinos in South Africa and the reason behind testing for the relationship between economic growth and GCR in South Africa. The second section will provide an in-depth look at the methodology of this study with a detailed explanation of the Granger causality test used to analyse the relationship between economic growth and casino growth and how the panel Granger causality test used in this study has to be modified from the original test used by Granger (1969). After the discussion on the modified Granger causality test for panel data, the impulse response function and variance decomposition analysis will be explained theoretically. These tests will give a clearer indication of the degree of causality between the variables if any such causality is found. The study will go beyond just focusing on econometric techniques like the Granger causality test and will also show how casino growth has had an impact on other sectors of the South African economy by making use of graphical representations. The analysis of these factors mentioned above will give vital insight to policy makers regarding the use of casinos as an economic growth tool in South Africa.

### **3.2 RESEARCH OVERVIEW**

South Africa is a country constrained by high unemployment, low economic growth and high poverty levels. This is the milieu of an economy that has been in a constant struggle to rectify the wrongs of the past and move out of the lingering stage of being classified as a developing country to a more structured developed economy. Development, as defined by Sen (1999), is the use of any means to promote the welfare of the people in a region or country. Any tool that can be used to realise this developmental goal should be considered in policies aimed at development, especially in a developing country like South Africa.

One of these development tools is the promotion of economic growth within a region or country and as casino growth is seen as one of the promoters for economic growth casino growth has an impact on the economic development. The impact of the gambling sector has been visible in the economic performance of South Africa for a number of years. Statistics prove that the gambling industry in South Africa has directly contributed R11.1 million to the GDP in 2012. If the indirect spill-over effects of the gambling sector are taken into account as a contribution to other sectors in the economy, gambling in South Africa has contributed to well over R20 billion, which represents 0.8% of the South African GDP in 2012 (National Gambling Board, 2014).

Casino gaming contributes 78% to the gaming revenue in South Africa. The other 22% consist of sports betting, bingo and limited pay-out machines. This makes casino gaming the biggest gaming revenue earner by some margin and makes casino gaming the most important role player in the overall economic impact of gaming in South Africa (PwC, 2014). Although casinos have proved to have an economic impact, the industry of casino gaming in South Africa has not received enough research attention since its legalisation in 1996. Sallaz (2009) and Tyawa (2012) provide the only non-National Gambling Board (NGB) research done on the economics of casinos in South Africa. There is other research on casinos in South Africa but this research only views casinos as a sub-section of tourism - failing to provide concrete evidence of the economic impact of casino in South Africa specifically. Research conducted by Rogerson (2010), for instance, focuses on tourism as a whole and only adds casinos as a sub-section of tourism in his study on the LED impact of tourism in South Africa.

The empirical work done to justify the economic impact of casinos on the South African economy is even scarcer, the lack of empirical work is due to the incomplete information about

casinos in South Africa. Empirical evidence is needed to make any decision policies based on the growth of casinos as an economic beneficial concept in the attempt to achieve economic development.

The objective of this study is to do just that by providing empirical estimations and results on the relationship between economic growth and casino growth in South Africa. The study will attempt the determination of whether commercial casino growth causes economic growth within South Africa's nine provincial regions using Granger causality test. Past studies on the economic impact of casinos has been more discussion-based in nature, lacking valid econometric evidence to justify a relationship between casino growth and economic growth in South Africa. By applying an econometric test of causality, the empirical support structure from discussion-based papers, especially in South Africa, will be achieved by finding a direction of causality between commercial casino growth and economic growth and analysing this relationship.

Finding out whether there exists causality between commercial casino growth and economic growth as well as the direction of the causality is the first step in determining the effect casinos have on the economic performance in South Africa. This study will also include various graphical representations as casino employment, tourism statistics and tax revenue all play an important part in the assessment of the relationship between casino and economic growth. This will give vital policy-making information in terms of the impact casinos have had on the provincial economies in South Africa over the last couple of years.

### **3.3 METHODOLOGY**

Determining the relationship between casino and economic growth in South Africa will give valuable information to policy makers in terms of the impact casinos have on the South African economy. It will also answer the vital question of whether GCR spurs economic growth. The following section of this Chapter will be dedicated to the Granger causality test, the test used to answer this important question.

The methodology of this study will commence with an overview discussion on causality and specifically the Granger causality test formulated by Granger (1969). The second part will be dedicated to explaining the theory behind the impulse response function and variance decomposition test used to analyse the degree of causality when Granger causality is found.

The section will conclude with an explanation the various channels by which casinos have an impact on the South African economy.

### **3.3.1 Causality**

“The full title of Adam Smith’s great foundational work, *An Inquiry into the Nature and Causes of the Wealth of Nation* (1776), illustrates the centrality of causality to economics” (Hoover, 2001:1). The importance of testing for causal relations should be considered by policy makers, as it allows them to understand the implications of the actions they take and how these actions could influence economic variables.

The information that is obtained from the knowledge of a causal relationship between variables has led to various statistical tests being used to explore these causally important relations. Tests like the Group Method of Data Handling (Ivakhnenko, 1968) and Zellner’s approach (Zellner, 1979) are but a few causality tests that have been applied to answering the question of causality among variables in econometric models. The widely applied causality test is the Granger causality test of Granger (1969). In terms of casinos and granger causality tests previous studies done by Walker and Jackson (1998, 2007 and 2013) used the Granger casualty test to great success in determining whether casino growth can cause economic growth. The Granger causality test was used by Walker and Jackson (1998) to test for causality between casinos and economic growth in the USA, where they found there to be a causal relationship from casino growth to economic growth. This study uses the study of Walker and Jackson as a guidance to test for the same sort of causality in the South African context. Thus one of the main reasons for using Granger causality test is based on the following similar methodology then that of Walker and Jackson (1998). This minor dissertation will also conclude with a comparison between the results found in the USA by Walker and Jackson (1998) and this minor dissertation results on South Africa’s economic impact of casinos using the same Granger causality test.

### **3.3.2 Granger causality test**

CJ Granger (1969) developed the Granger causality test for testing for the causal relationship between variables in econometric models. Before the work done by Granger (1969) econometricians and economists regarded causal relationships as asymmetrical relationships.

This implies that economic variables could not be proven to be the cause of one another. There was a need to develop statistical tests that could support the notion of causality it would still provide valuable information on the dynamics of economic-related variables and their relationship with one another. This is how Granger (1969) derived the Granger causality test by using foreseeability as yard stick for causality.

The Granger causality test is defined as a case where variable X Granger causes variable Y if past values of X can enhance a stronger prediction for future values of Y (Granger, 1969). The simplest form of the Granger causality test requires the estimation of the following two equations if the variables of X and Y can be regarded as a pair of linear covariance stationary processes (Stern, 2011):

$$y_t = \beta_{1,0} + \sum_{i=1}^p \beta_{1,i} y_{t-i} + \sum_{j=1}^p \beta_{1,p+j} x_{t-j} + \varepsilon_{1t} \quad (1)$$

$$x_t = \beta_{2,0} + \sum_{i=1}^p \beta_{2,i} y_{t-i} + \sum_{j=1}^p \beta_{2,p+j} x_{t-j} + \varepsilon_{2t} \quad (2)$$

In the estimation of equations (1) and (2), there exist four hypotheses that can result from the Granger causality test:

- i) The X variable causes changes in the Y variable, where the null hypothesis indicates that no Granger causality present;
- ii) The Y variable causes changes in the X variable, where the null hypothesis indicates that no Granger causality present;
- iii) There is bi-directional causality, meaning that both the X and Y variable have cause and effect on each other. In this case both the null hypothesis in i) and ii) would be rejected;
- iv) There is no causality between X and Y and neither between Y and X, concluding that there is no causality between the two variables. In this case both the null hypothesis in i) and ii) will not be rejected.

“Granger causality is not identical to causation in the classical philosophical sense, but it does demonstrate the likelihood of such causation or the lack of such causation more forcefully than does simple contemporaneous correlation” (Stern, 2011:5). This description of Granger causality by Stern (2011) summarises the restrictions and advantages of Granger causality that will be explained in more detail in the following section.

Granger causality was derived for the main purpose of understanding the relationship between time series variables. It is herein that the most important advantage of causality lies. The problem of misspecification of economic models could lead to biased coefficients and this can lead to incorrect econometric models, drawing incorrect conclusions on these econometric models (Swamy, 1970). Thus one of the advantages of the Granger causality test is that it has contributed significantly to the specification of an econometric model between time series (Schwert, 1979).

Another benefit of Granger causality is the ability to show a relationship between time series variables in cases where parameter estimates of normal regression techniques applied to one way distributed lag models would be insignificant (Schwert, 1979).

Some of the criticism relating to the Granger causality is the number of variables under consideration when the statistical test is applied. By definition, the Granger causality test centres around the relationship between two variables. This means that the Granger causality test will be most efficient in situations where one considers two dimensional models, this indicates that only two variables are included in this test and no other factor can have an influence on the two variables being analysed (Toda and Phillips 1994).

Some other criticism of the Granger causality include that of Roberts and Nord (1988), which suggest that functional forms of the time series are a major determinant in the sensitivity of the Granger causality test, thus if data has been transformed logarithmically, it will not show any sign of causality while the untransformed data do show causality. The functional form of time series thus has an influence on the results of Granger causality. This study will avoid this problem as the variables used within the Granger causality test is stationary on level and therefore no need for transformation of variables are required.

Granger causality cannot in itself imply that X causes Y or that X is the most important determinant in Y, but it does give valuable information regarding the direction of causality (Walker and Jackson, 2013). Granger causality has historically been significant in determining a causal relationship between economic growth and the various determinants of economic growth. Therefore, in terms of economic growth specifically, the Granger causality test has been successful to determine the components that make an economy grow. The effectiveness of the Granger causality test to determine these determinants of economics is supported by the cases described by Aqeel (2001) and De Jager (2004) both who have found causal relationships

between different variables and economic growth. This study's aim is to test whether there is causal relationship between casino growth and economic growth and thus the Granger causality test will be applicable to produce the required results surrounding the economics of casinos.

However, in this study the standard Granger causality test is not entirely suitable due to the fact that panel data are used. The Granger causality test has to be adjusted to suit the description of the stacked panel data used for GCR and GDP in this study. The adjustments made will follow the same method as that of Walker and Jackson (1998) who investigated the impact of casinos on the USA economy and had to adjust the standard Granger causality test due to the insignificant number of observations that follow from using the standard Granger causality test for each state individually. What follows is a complete description and explanation of the modified Granger test used in the Walker and Jackson (1998) study with specific focus on the adjustments also needed to use their model in this study of the South African case.

### **3.3.3 Adjustments in terms of the standard Granger causality test**

Walker and Jackson (1998) did not use the standard Granger causality test for an analysis of the economic impact of casinos in the USA. The reason for this was that only two states in their study had casinos legalised prior to 1990. Their study ended in 1996 and it would have meant that using the standard Granger causality test for every state individually would not have been suitable, leading to an insignificant number of observations in their study. Walker and Jackson (1998) had to adjust the Granger causality test to include all the different states into one time series. According to Walker and Jackson (1998) the preferred method would have been to test the income per capita and GCR on a state-to-state basis. On this state-to-state basis the Granger Causality test would then best have been used in the application of the linear, covariance-stationary time data for the different states in the USA.

Similar to the Walker and Jackson (1998) this study a lack of data dictates the method of panel Granger causality and the use of Granger causality using stacked panel data, to address the number of observations problem. Each province only has 14 time periods and by analysing each province individually one could fall into the trap of not having sufficient observations to ensure robust results.

The Granger causality test is modified to account for panel data in this study. To accomplish this modification, there needs to be a three-step process to adjust the Granger causality test as



proposed by Walker and Jackson (1998). This process includes firstly filtering the trend and province-specific effects from the data; secondly, finding the best time series process that generates each variable; and lastly, conducting the Granger causality test based on the previous two tests.

### **Step 1: Filtering equations**

The first step of filtering the data is required to eliminate the trend effect and the specific provincial effects that may arise in different South African provinces and which will have a significant impact on the Granger causality results. These provincial effects refer to the laws and institutional differences in each province in South Africa. South Africa consists out of nine provincial regions namely Gauteng, Limpopo, Mpumalanga, North West, Northern Cape, Eastern Cape, Western Cape, Kwazulu-Natal and the Free State. Each one of these nine provinces will be included as stacked independent variables in the filtered equations of GCR and GDP, to assist in removing the trend and provincial characteristics in the stacked time series data to be tested. The filtering equation will consist of the following variables for GDP and GCR:

**Table 3.1: Filter equation variables**

<b><u>GDP</u></b>	<b><u>GCR</u></b>
<b>Constant term</b>	Constant term
<b>Trend variable to account for annual changes (2002=1 for each province).</b>	Trend variable to account for annual changes (2002=1 for each province).
<b>Provincial dummies (i=8 different dummy values one for each province) to account for the differences among provinces. The Gauteng province will be regarded as the benchmark dummy variable.</b>	Provincial dummies (i=8 different dummy values one for each province) to account for the differences among provinces. The Gauteng province will be regarded as the benchmark dummy variable.
<b>Provincial dummy-trend interaction term to allow for different trends and intercepts. (Province(i) * Trend(i), i = 1, . . . , 8).</b>	Provincial dummy-trend interaction term to allow for different trends and intercepts. (Province(i) * Trend(i), i = 1, . . . , 8).

*Source: model estimations*

The results of the filtering indicate three types of dummy variables to be included within the equation to remove the trend and provincial-specific effects from the stacked panel data of the nine South African provinces. The first is where a provincial ( $i=1 \dots 8$ ) dummy is created to account for the provincial characteristics in the data for GCR and GDP. The second is the trend-specific data dummy to account for the trend-specific nature of the stacked panel data. This is done by giving the value of 1 to all the first observations for the nine provinces. In this case, the year 2002 takes the value 1 while all other years will be 0. The last is the time and province-specific interaction term dummy. This is created by multiplying the trend dummy with each of the provincial dummies and thereby removing the provincial and time-specific trends in this data series.

When estimating dummies within a model, a benchmark dummy variable to allow for all other variables for comparison is needed. In this study the Gauteng provincial dummy will be the benchmark and the other provinces will thus be compared to Gauteng.

The variables identified will generate a filtering equation for each of the dependent variables, namely GCR and GDP. After the filtering equations have been estimated, the residual of the GCR and the GDP filtering equations will then be generated. These residual terms will be the variables used for the Granger causality test.

Before the Granger causality test can be estimated, stationarity has to be confirmed first within the variables under study. Stationarity has to be determined as it is a prerequisite for the Granger causality test (Stern, 2011). There exists numerous tests to test for stationarity in a time series, some of the more popular ones being the Dickey-Fuller, Augmented Dickey-Fuller test and the Phillip-Perron test (Mackinnon, 1996). This study will use the Augmented Dickey Fuller due to its simplicity and being the most commonly used unit roots test in macroeconomic time series (Mackinnon, 1996).

Stationarity is one of the most important conditions for the Granger causality test to be met for all the variables in the Granger causality test. By not meeting this condition, the common trends shown within the time series could lead to spurious regression problems showing misleading Granger causality results. If stationarity is confirmed in both the residuals for GCR and GDP one can continue to the second step of the method, namely lag length identification.

### **Step 2: Lag length identification**

The second step involves determining the lag length for each of the residual variables (GCR and GDP). To test for the lag length selection, this study will make use of the Akaike information criterion (AIC) and Schwarz information criterion (SC). These two criteria are the most reliable when it comes to a small sample size and the most optimal criteria in minimising the risk of under estimations in lag length (Khim-Sen, 2004). Once the number of lags required has been identified, the third and final step can be implemented, namely the Granger causality test.

### **Step 3: Granger causality**

By estimating the Vector Autoregressive Regression (VAR) the residuals of GCR and GDP and their lagged values are run against each other and within the estimation of the VAR model, the Granger causality can be estimated.

To test for the presence of Granger causality the F-statistic of joint significance will be used where in the case of GDP causing GCR, the null hypothesis of no Granger causality is tested to see if economic growth Granger causes casino growth. In the case of GCR causing GDP the null hypothesis of no Granger causality is tested to see if casino growth Granger causes economic growth. In both cases the probability of the F-statistic will be compared against the critical value of 0.05.

Finally, after the estimation of the Granger causality test with specific coverage of the F-statistic, the results can be concluded as to whether casino growth causes economic growth or whether economic growth causes casino growth. Two further cases are also a possibility: that bi-directional causality for both the GCR and GDP can be present, meaning that there is causality relationships from casino growth to economic growth and vice versa and that there is no Granger causality between economic growth and casino growth represented by growth in Gross Casino Revenue (GCR).

The method used by Walker and Jackson (1998) has been similarly applied to some degree in this study, but it is vital to detect the differences that will make this study and method unique in its cause. The following section explains the key differences between the method in this study and the one used in the Walker and Jackson (1998).

### **3.3.4 Adjustment in terms of Walker and Jackson (1998)**

This study will follow a similar approach to the one used by Walker and Jackson (1998) with some adjustments for South African data. One notable difference will be the economic growth indicator. In Walker and Jackson (1998) the GDP per capita was used to measure economic growth. This study will make use of nominal GDP due to the population distribution and limited casinos within South Africa. Both these factors will make the GDP per capita not an appropriate indicator for this particular study.

Another difference between this study and the one done by Walker and Jackson (1998) lies in the exclusion of the new casino dummy variable. The Walker and Jackson (1998) problem of having a time difference at the beginning of casino gaming legalisation in different states is not the case in South Africa, where casino gaming was legalised by the National government of South Africa, in eight of the South African provinces 1996. The North West province, formerly known as Bophuthatswana, is an outlier because casino gaming has been legal in this province since 1978, where the Sun City casino has operated with great success. This will not influence the study because the time frame used is from 2002 to 2014.

### **3.4 GOING BEYOND GRANGER CAUSALITY**

The Granger causality test indicates relationship between economic growth and casino growth, but it does not show any information regarding the various channels by which casinos impact the South African economy.

Direction of causality estimated by the Granger causality test forms only one part of the causality story. Equally important, is the test of the degree of causality. The degree of causality provide vital information regarding the strength and weakness of the casual relationship that could be very helpful to the economic growth models used by policy makers.

This study will thus also extend the work done by Walker and Jackson (1998) by focussing on the degree of causality and providing some graphical presentations through impulse response analysis of key economic benefits of casinos in South Africa. The following section explains the theory behind the impulse response and variance decomposition methods.

### **3.4.1 Impulse response function and variance decomposition**

After confirming causality, the next step would be to test just how strong the causal relationship is that was found. To test the degree of causality this study will use the impulse response function and variance decomposition test (Sims, 1980). The impulse response function and variance decomposition tests will be used to examine the dynamics of the relationship between GCR and economic growth further than just the direction of causality, extending also to the degree of causality.

Granger causality might not tell a complete story of the interactions of variables in a system. In practice it is often of interest to be cognisant of the reaction of a variable through an impulse or shock to another variable. The impulse response function does exactly this: by measuring the effect of a shock on future values of variables in a dynamic system (Peseran and Shin, 1998).

The impulse response function has been criticised as it sometimes imposes harmful and arbitrary restrictions on the system and incorrect specification of these restrictions could lead to misleading results in the impulse response functions (Ronayne, 2011). However, the impulse response function still provides information on the dynamics of a relationship in a two variable system that can be very helpful for policy makers. Divided into four graphs, the impulse response function shows the short run and the long run effect of shocks to the system (De Jager, 2004). In this study the impulse response function will give valuable information regarding the degree of causality between GDP and GCR.

The variance decomposition test proposed by Sims (1980) provides a different way to depict system dynamics. Sims (1980) bases his work on the variance decomposition of some variables forecasting error variance. This indicates that the forecast error variance is either due to the variable itself or other variables. This is particularly helpful in Granger causality studies as the variance decomposition can detect the degree of causality, not testable in the simple Granger causality test (De Jager, 2004). For this particular study the variance decomposition test makes it possible to determine how many of the fluctuations in GDP are due to a shock to GCR.

### **3.4.2 Extensive casino model.**

Objective economic indicators such as GDP, the unemployment rate, public revenues and visitations to casinos are important when analysing the economic impact of casinos (Zheng and Hung, 2012). The model used by Walker and Jackson (1998) only analyses the relationship between GCR and GDP per capita. This study will expand on that particular study and, from a simple graphical point of view, also look at the various channels by which casinos have an impact on the GDP in South Africa. These channels include casino employment, casino visitations, tax revenue contribution of casinos, secondary industries growth and the CSI contribution made by casinos in South Africa. The ultimate goal is to supply vital policy information regarding the various channels of the economic impact of casinos in South Africa. The data on these economic benefits were collected from the CASA surveys and could only be found from 2005 to 2013. Therefore, these graphical presentation timelines will differ from the Granger causality test that started in 2002 and ended in 2013.

One of the more popular economic channels of casinos is the job creation that results from casinos. Directly related to the GDP, any job created by casinos should have an impact on the GDP in any of the nine South African provinces. By collecting data on the employment for each of the provinces from casinos from 2005-2013, it is possible to analyse the trend of casino employment over the last eight years. This will be done through simple graphical presentations to view the trends within the employment of casinos. By analysing this on a provincial level it will be possible to assess the performance of each province specifically and then compare the growth of casino employment in each one of the South African provinces.

When analysing the jobs created by casinos it is worthwhile to identify the contribution of casino employment to the wholesale and retail employment segments under which casinos fall in each province. This study will thus also calculate the contribution of casino employment to wholesale and retail employment and analyse the results in a histogram from 2005 to 2013.

Another one of the major channels where casinos influence the economy is the contribution of casinos to public revenue. In order to analyse the benefits that the South African government receives from GCR, one does not have to go further than the casino tax revenue collected by the South African government. Casinos are generally known as a high taxpaying industry and the benefits should thus be evident. This study will use a graphical representation to analyse the trend and growth in casino tax revenue in the nine South African provinces over the last

couple of years. This will show indicate the importance of casinos generating public revenue for South Africa.

For a casino to have an impact on the economy there needs to be growth in the demand for casinos. The demand for casinos is analysed best by investigating the casino visitations statistics over the last couple of years in South Africa on a provincial level. The data on casino visitations for the provincial regions in South Africa are available from 2005 to 2013. This allows this study to analyse the trend in the casino visitations in a graphical representation with regards to the number of casino visitations in these years. Information drawn from the trends could show the growth potential in all the nine South African provinces. This will help to detect the maturity reached by some provinces and the growth possibilities that can be still be achieved in other provinces.

Another channel, is the impact of the secondary industries that originate from casinos but are mostly characterised as non-gaming industries. These are known as the feedback effects of casinos. These secondary industries have become popular tourist attractions and in certain cases the expansion of casino resorts are driven even more by these secondary industries than the casinos themselves. In South Africa, these secondary industries include theatres, restaurants, hotels, retail outlets and cinemas. The impact of these secondary industries on the South African economy has become a very important component of the economic benefits of casinos. It would thus be beneficial to analyse the growth of the secondary industries of casinos in South Africa. In the CASA survey reports from 2009 to 2014 there is some useful information regarding retail and hotel industries in casinos and their growth in each of the nine South African provinces. An analysis of the growth of these non-casino industries will give an indication if South African casinos are moving in a different direction that does not centre on casino activities in the expansion of casino resorts, but rather on the redevelopment of existing casinos into luxurious holiday resorts.

The last of the channels to be analysed is the contribution of casinos to the social development in South Africa. Casinos have made some major strides in their contribution to social programmes in education, health in poor areas all around South Africa. This impact can be studied from the CASA surveys give vital numerical information on the contribution of casinos' social investments in South Africa from 2009 to 2012. This is found in the statistics of CSI which is the amount of money spent by casinos on social programmes. The social contribution and trends can thus be analysed from a graphical representation by observing the

CSI data. An analysis of this figure will present important information as to how casinos' social contribution has grown and will continue to grow in the future.

### **3.5 CONCLUSION**

Empirical research on the economic impact of casinos is scarce (Walker and Jackson, 1998). This led to Walker and Jackson (1998) dedicating their research to shed some light on this relatively unknown issue in the USA. There is even less empirical research on South Africa's casinos and their impact on the development and growth of the South African economy. This study's main objective is to present empirical support for the economic contribution by casinos in South Africa.

Having illustrated the effectiveness of the Granger causality test to analyse economic growth relationship with other variables, this study will now use the Granger causality test to determine the dynamics of the causal relationship between casino and economic growth. Combined with degree of causality tests like the impulse response function, variance decomposition test and other graphical representations the next Chapter will analyse the various channels of the economics of casinos in South Africa from 2002 to 2014. The results of this study will be presented in Chapter 4 with a detailed interpretation of the results found on the economic impact of casinos in South Africa.



## **CHAPTER 4: EMPIRICAL RESULTS**

### **4.1 INTRODUCTION**

Casinos have widely been regarded as facilitator of job creation, infrastructure development and public finance in an economy (Eddington, 1999). Considering these positive economic impacts of casinos, casinos have been a popular economic growth tool used worldwide. This is evident also in South Africa where the national government legalised casinos as a means of achieving economic growth in a country in desperate need of new growth structures to contribute to its new democratic nature (Sallaz, 2009). The question is now: did the casino industry have an impact on the economic growth in South Africa? Research done by the likes of Walker and Jackson (1998) has answered this question to some degree for the USA, but in South Africa the body of knowledge about casinos and its impact on the economy are lacking behind global information on the economics of casinos. This Chapter presents the empirical results on the impact of GCR on GDP in South Africa by making use of the methodology specified in Chapter 3.

This Chapter will be divided into four sections. Firstly, the data section will be explained in terms of the data collection process. Secondly, the results of the three-step procedure to estimate a Granger causality relationship between GDP and GCR will be presented. Thereafter, the Granger causality, which should be considered the main findings in this study, will be estimated. The next section will analyse the impulse response function and the variance decomposition results in a comprehensive interpretation of the results. The last section of Chapter 4 will be dedicated to analysing the graphical representations of the economic benefits of casinos, already explained in Chapter 3. By analysing the casino characteristics in each province of South Africa, one will be able to deduce vital policy information to apply to the current LED policies in the country.

## **4.2 DATA SELECTION PROCESS**

The variable casino growth will be represented by GCR for each of the nine South African provincial areas. The quarterly data collected for GCR was obtained from the National Gambling Board of South Africa (National Gambling Board, 2014). The NGB reports most of the statistical information on casinos in South Africa in their NGB financial reports dating back to 2002. GCR is included in these reports and allows for the extraction of the data from 2002 to 2014. Another source of statistical information on the casino performance in South Africa is the Casino Association of South Africa (CASA, 2012) surveys. Both the financial statement reports of the NGB and the CASA surveys provide comprehensive statistical information on casinos in South Africa.

It's important to mention that no other sources were found in terms of GCR information for South Africa. Data in this particular field are limited, especially in South Africa, where empirical research is substantially lacking, most probably due to the lack of casino data in South Africa. The reason behind using GCR is the fact that it represents the growth in casinos over the years from 2002 to 2014. The other option would have been to use casino turnover as a casino growth proxy. The reason for using GCR rather than casino turnover is due to the fact that most expenses of casinos result from paying out winnings. These winners' pay-outs reflect in the casino turnovers and thus do not necessarily capture the growth of casinos. The GCR thus provides a far better reflection of the expansion and growth in casinos, aligned with total visitations to casinos. Any increase in the GCR can be viewed as growth in the casino industry of South Africa. This gives one a clear indication of the growth of casinos in South Africa.

The economic growth variable will be represented by GDP. The data for regional GDP were obtained with fewer constraints than the GCR data. The main source used for the regional GDP in this study was Quantec: Easydata. This data were obtained in annual format as the quarterly data on regional GDP for South Africa were unavailable.

One of the problems in the data collection was that regional GCR and regional GDP have different frequencies. GCR is reported quarterly and has to be adjusted to fit the annual regional GDP data in South Africa. Generating quarterly data for GDP to fit the original quarterly data of GCR was not an option as this study did not want to lose the true values around GDP and GCR. Research by Yan and Zivot (2003) confirms that while it is not always suitable to lose data points by converting to a lower frequency, the negative implications of generating

variables to fit a high frequency are far greater. The GCR data were therefore transformed to annual data. This resulted in a shorter time series available to work with. In order to understand and estimate the relationship between these two variables using the Granger causality test, it is preferred to have at least 30 observations included in the model. Due to the lack of GCR data available in South Africa, the time frame for this study only starts in 2002 and concludes in 2014, indicating a number of 13 years under study, if each province had to be analysed separately.

The same problem arises in the Walker and Jackson's (1998) paper on the economic impact of casinos on a state level in the USA. Thus, in order to resolve the lack of observation challenges, the Walker and Jackson (1998) paper adjusted the standard Granger causality test. The annual state level GCR and GDP information was stacked to form a time series with a sufficient number of observations. After that the Granger causality test was modified to fit the stacked dataset.

The dataset for this study also uses stacked up regional GCR and GDP data, (panel dataset) collected on an annual basis. By using regional figures the number of observations is strengthened by making up for the fact that the time frame only consists of a thirteen-year period. This study will thus use a pooled panel model of all the provinces in South Africa to create a sufficient number of observations.

The inclusion of GDP and GCR for all nine South African provinces will allow for the assessment of demographic differences in the nine very differently characterised South African provinces. Provinces like Gauteng and Western Province are the front runners in GDP growth and have a significant advantage over some of the other more rural provinces like Eastern Cape Province, Northern Cape Province and the Free State. This difference will be considered in the province-specific dummy variable in the filtering equations to account for the large gap among South African provinces.

It should be mentioned that it would have been preferable to have the data for GCR for each province in South Africa since the legalisation of casinos in 1996, but the data do not allow testing for the origin of casinos, but rather the most recent impact of casinos on the economies of the nine South African provinces.

Ultimately this study will contribute to the research on the economic impact of casinos in South Africa as it is the first of its kind in South Africa, something that has been assessed in countries

like the USA, but not in South Africa. So, while the number of years under the study is low, there will still be some significant results to illustrate the relationship between casino growth and economic growth specifically, as this study will make use of panel data to analyse the economic impact of casinos on South Africa on a provincial level. This study will then also contribute valuable information to policy makers to assess the effectiveness of casinos on the economies of the South African provinces.

### **4.3 RESULTS OF THE 3-STEP PROCEDURE**

The process to calculate the Granger causality, as discussed in Chapter 3, is divided into three steps. These three steps are crucial for the adjustment of the standard Granger causality test to the modified Granger causality test. The adjustment of the Granger causality test allows this study to use the stacked panel data as simple time series variable to analyse the casino economic growth relationship in South Africa. The stacked panel data variables are firstly detrended through filtering equations and thereafter the lag length will be specified. Lastly, the Granger causality test will be estimated. This three-step procedure was explained in detail in Chapter 3 and the following section will describe and discuss the results of the unit roots tests, lag length selections and Granger causality test.

#### **4.3.1 Test of stationarity**

The first step revolves around estimating the filtering equations to detrend the time series of the stacked GCR and GDP datasets. After the filtering equation was regressed, the residuals of both the GDP and GCR filtering equations were calculated. These two residual variables were then tested for stationarity since stationarity is needed to test for Granger causality. The stationarity test was carried out using the Augmented Dickey-fuller (ADF) test. The following table summarises the results of the ADF test:

**Table 4.1: Stationarity test**

<b><u>Variables</u></b>	<b>Augmented Dickey Fuller-statistic</b>	<b>Probability</b>	<b>Null Hypothesis</b>
<b><u>GCR</u></b>	-6.702897	0.0000	Reject $H_0$
<b><u>GDP</u></b>	-6.771421	0.0000	Reject $H_0$

*Source: Model estimations*

From results in table 4.1, it is evident that both the residuals of GDP and GCR were found to be stationary on the 1% level. The ADF statistic of GCR has an absolute value of 6.703 which is larger than the critical 1% value of 3.4876. The same applies to GDP where the absolute value of the ADF statistic (6.771) was larger than the 1% critical value of 3.4902. Both these residual variables were found to be stationary on the level and it implies that the study can continue with the lag length selection process and Granger causality test.

### **4.3.2 Time series process of the filtered variables**

After stationarity was confirmed the next step was to calculate the lag order of the stationary residual variables. Table 4.2 shows the results of various criteria to determine the optimal lag length to use within a VAR model. This study used the AIC and SC. The two criteria's show that the most optimal lag length was either two or eight lags. The time frame used in this study is annual so the best lag length should be two lags.

**Table 4.2: Lag length selection criteria**

<b>Lag</b>	<b>LogL</b>	<b>LR</b>	<b>FPE</b>	<b>AIC</b>	<b>SC</b>	<b>HQ</b>
<b>0</b>	-4938.586	NA	8.04e+36	90.65295	90.70233	90.67298
<b>1</b>	-4889.518	95.43429	3.52e+36	89.82602	89.97417	89.88610
<b>2</b>	-4876.923	24.03500	3.00e+36	89.66831	89.91522*	89.76844
<b>3</b>	-4869.837	13.26100	2.84e+36	89.61170	89.95737	89.75188
<b>4</b>	-4867.770	3.793063	2.94e+36	89.64716	90.09160	89.82740
<b>5</b>	-4864.975	5.025896	3.01e+36	89.66927	90.21248	89.88956
<b>6</b>	-4860.906	7.168420	3.01e+36	89.66799	90.30997	89.92834
<b>7</b>	-4847.693	22.78942	2.54e+36	89.49895	90.23969	89.79934
<b>8</b>	-4836.679	18.59235 *	2.24e+36*	89.37025*	90.20975	89.71070*

### **4.3.3 Granger causality test**

Before the Granger causality test could be performed, the Vector Autoregressive model was estimated. The results of the lag length specification in the previous section specified the optimal number of two lags for the residuals of both GDP and GCR. The VAR equations were

regressed to determine whether there exists Granger causality between the variables of GDP and GCR. The results of the lagged regressions VAR model can be viewed in table 4.2 below.

**Table 4.3: Vector autoregressive model**

<b>Dependent variable: GCR</b>	<b>Coefficients</b>	<b>Probability</b>
<b>C</b>	21218467	0.3956
<b>GCR (-1)</b>	0.879601	0.0011
<b>GCR (-2)</b>	-0.671072	0.0123
<b>GDP (-1)</b>	0.000897	0.8086
<b>GDP (-2)</b>	0.005576	0.1338
<b>Dependent variable: GDP</b>	<b>Coefficients</b>	<b>Probability</b>
<b>C</b>	1.55E+09	0.3631
<b>GDP (-1)</b>	0.326422	0.1993
<b>GDP (-2)</b>	0.338999	0.1822
<b>GCR (-1)</b>	45.36488	0.0129
<b>GCR (-2)</b>	-45.89231	0.0123

*Source: Model estimations*

Table 4.2 firstly shows the VAR (2) model where GCR is the dependent variable. The results of the regression clearly indicate that the two lags of GDP are not significant determinants on the current GCR. The only significant determinants are the lags of GCR itself, which have probability values that are less than the critical value of 0.05.

From the second VAR (2) in table 4.2 where GDP is the dependent variable, the results show the significant impact both the GCR lags have on the current GDP as a dependent. Both GCR (-1) and GCR (-2) show probability values that are less than the critical value of 0.05 and thus can be considered significant determinants of current GDP values. This suggests that past values of GCR have an impact on GDP. The regression results in table 4.2 indicate that one can expect that there will be Granger causality from GCR to GDP.

Finally, the Granger causality test was performed by looking at the joint significance of the null hypothesis, where the null hypothesis is whether no Granger causality is present. The results in table 4.3 below illustrate the rejection of the null hypothesis as the F-statistic probability of 0.0074 is smaller than the critical value of 0.05; this indicates that GCR indeed causes GDP. This finding proves that GCR does have a causal impact on GDP in South Africa. Observing the results from the other case, GDP causing GCR, this study found that GDP does not cause GCR in South Africa. The reason for this could be due to the fact that gambling is not just a normal leisure activity and that the income fluctuations does not impact a gamblers decision to gamble as much as it could impact other leisure activities. The concluding Granger

results in this study indicate a one directional causal relationship where casino growth has caused economic growth in South Africa from 2002 to 2014.

**Table 4.4: Granger causality test**

<b>Null Hypothesis</b>	<b>F-Statistics</b>	<b>Probability</b>
<b>GCR does not Granger Cause GDP</b>	5.13581	0.0074
<b>GDP does not Granger Cause GCR</b>	1.33696	0.2669

*Source: Model estimations*

The results of this study point out that GCR contributes to GDP in South Africa and gives valuable insight into the casino industry in South Africa. Since the introduction of legalised casinos in 1996, the impact of casinos on the South African economy has really been unknown. The only research in this field was headed by the National Gambling board and was confined to conclusions to promote the positive economic impact of casinos. These conclusions furthermore lacked any empirical results to back up the claims made about the positive impact of casinos on the South African economy. This study sheds some light on the economic impact of casinos and provides unbiased results justified by purely observing the statistical information of casinos and its impact on the GDP. The Granger causality test confirms that casinos do have a positive impact on the South African economy on a provincial level.

The positive impact of casinos on the provincial economies in South Africa can partly be due to the nature of casinos being a LED tool used to promote regional growth. In theory, casinos tend to promote LED due to the ability of a casino to increase local job creation, local public finance and increase the number of foreign tourists visiting the local region. Casinos are most often combined with the local region's cultures to form the basis of promoting the region for foreign visitors.

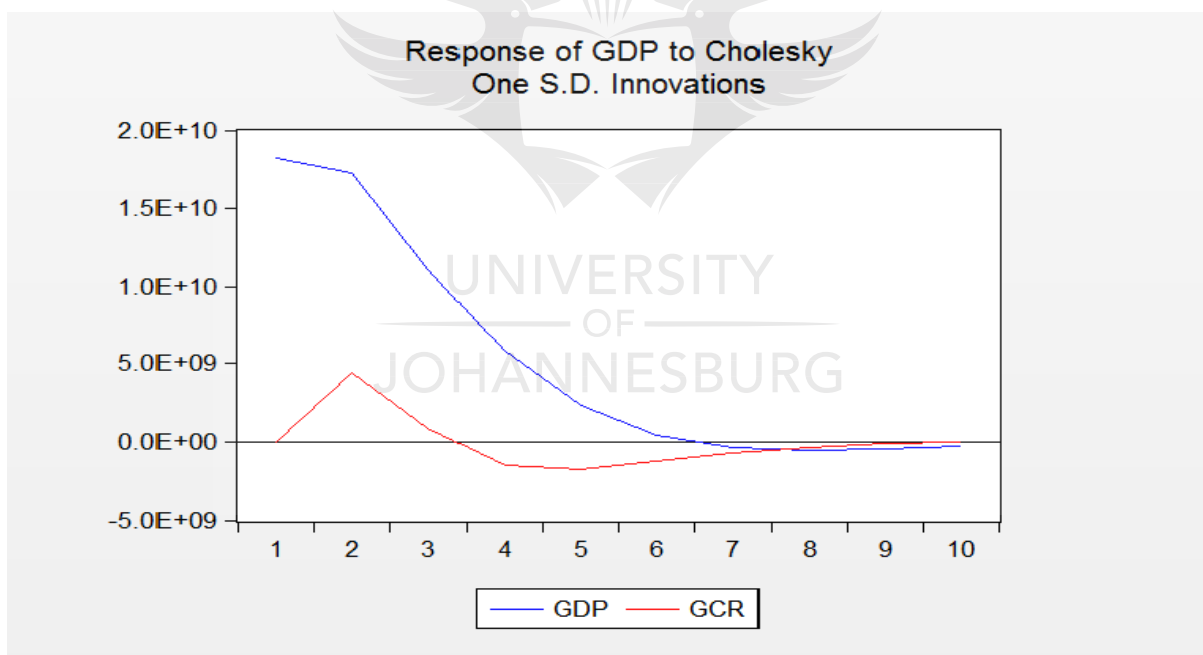
Having established that GCR contributes to GDP, adds significantly to the supportive arguments for casinos as an economic growth tool. The aim of this study was to provide more information on how casinos have had an impact on the South African economy and this was achieved to some degree by the Granger causality test. However, one of the constraints of the Granger causality test is the ability to give more information on causality other than just

confirming its existence. Information regarding the degree of causality is just as valuable and could imply whether the economic growth tool is worth pursuing for economic growth policy makers in South Africa. The following sections discuss the results of the impulse response and variance decomposition test, the statistical tests used to analyse the degree of causality in this study.

#### **4.4 ANALYSING THE DEGREE OF CAUSALITY FROM GCR TO GDP AND VARIOUS ECONOMIC BENEFITS OF CASINOS IN SA.**

Testing for the degree of causality gives valuable information regarding the Granger causality relationship that exists between casino growth and economic growth. The results of the impulse response and variance decomposition should provide a better understanding of the dynamics around the relationship between these two variables under study.

**Figure 4.1: Impulse response function**



*Source: Model estimations*

The results of the impulse response function reported in Figure 4.1 signal the degree of causality between GDP and GCR. The results of the Granger causality test discussed in the previous section indicate that there is a one-directional Granger causal relationship from GCR to GDP. This indicates that past values of GCR can predict future values of GDP with greater accuracy than just GDP past values. Yet, the impulse response function shows that the degree of causality from GCR to the GDP residual, is weak. This can be observed in Figure 4.1 where



the red line indicates the GDP deviation from the mean when it is shocked by GCR. The first two lags of GCR show that there will be some deviation from GDP from the mean, but this deviation is very small. This suggests that the causal relationship between casino growth and economic growth, directed from casino growth to economic growth is weak. There are many other variables that could have an impact on the economic growth in South Africa, with casino growth only forming a part of a very large and entangled growth model in South Africa. This could just as well justify the reason behind this weak causal impact of casinos on the South African economy.

Due to the large number of variables that influence economic growth, economic growth models have become complicated by nature and economic growth cannot be dedicated to only one variable. In most countries there are a large number of variables that have a significant impact on economic growth. In South Africa, this is no different as proved by Fedderke and Simkins (2012) who propose that variables that influences economic growth in South Africa has become great and many in recent times. Casino growth is only one of many variables to influence economic growth. This confirms the finding of the weak causal relationship between economic growth and casino growth and supports the fact that casinos have not been a central economic research point in the past. The causal relationship between casinos and the economy in South Africa has been proven to be rather weak but the fact remains that such a causality relationship does exist, confirming the theory behind the positive economic impact of casinos in South Africa.

**Table 4.5: Variance decomposition test**

<b>Variance decomposition of GDP: Period</b>	<b>GDP</b>	<b>GCR</b>
<b>1</b>	100.0000	0.000000
<b>2</b>	97.03754	2.962462
<b>3</b>	97.41583	2.584165
<b>4</b>	97.24885	2.751153
<b>5</b>	96.91079	3.089213
<b>6</b>	96.73354	3.266456
<b>7</b>	96.67582	3.324183
<b>8</b>	96.66461	3.335390
<b>9</b>	96.66432	3.335683
<b>10</b>	96.66466	3.335340

*Source: Model estimations*

The variance decomposition test shows similar results to that of the impulse response function. Table 4.4 represents the variance decomposition results and it is possible to observe the contribution of a shock in the GCR variable on GDP. This can be observed in either the short or long run. In the short run (2 years) a shock to GCR cause 2.96% of the fluctuations in GDP. In the long run (8 years) the contribution of a shock in GCR to explaining fluctuations in GDP increased to 3.34%. This proves that there is a weak causal relationship from casino growth to economic growth in South Africa. The similarity in the short and long run results also indicates that this weak causal relationship remains weak even when considering results further into the past. The variance decomposition test shows that while there is a Granger causal relationship from GCR to GDP, the degree of this relationship is rather weak. This highlights the fact that the factors influencing and causing GDP in South Africa are far beyond that of casino growth alone.

In summary, the Granger causal relationship from GCR to GDP, as found in this study, exists but is rather weak and it could lead policy makers to ignore the economic impact of casinos in South Africa. Before this is done one needs to consider the reason for legalising casinos in the first place. In 1996 casinos were legalised in South Africa as a means of achieving economic growth in underdeveloped areas. This was based on the success of Sun City in the underdeveloped North West province. The positive impact of casinos in South Africa's underdeveloped provinces is still present. This is due to the ability of casinos to attract foreign visitors, create jobs for the local economy and play a significant part in public revenue for the National government. These trends will be analysed in more detail in the following section.

#### **4.5 FURTHER TRENDS IN THE ECONOMIC BENEFITS OF CASINOS**

The next part of this Chapter will be dedicated to graphical representations regarding some of the economic benefits of casinos in South Africa. By analysing the trends of these benefits it would provide useful information regarding the economic impact of casinos in different South African provincial areas.

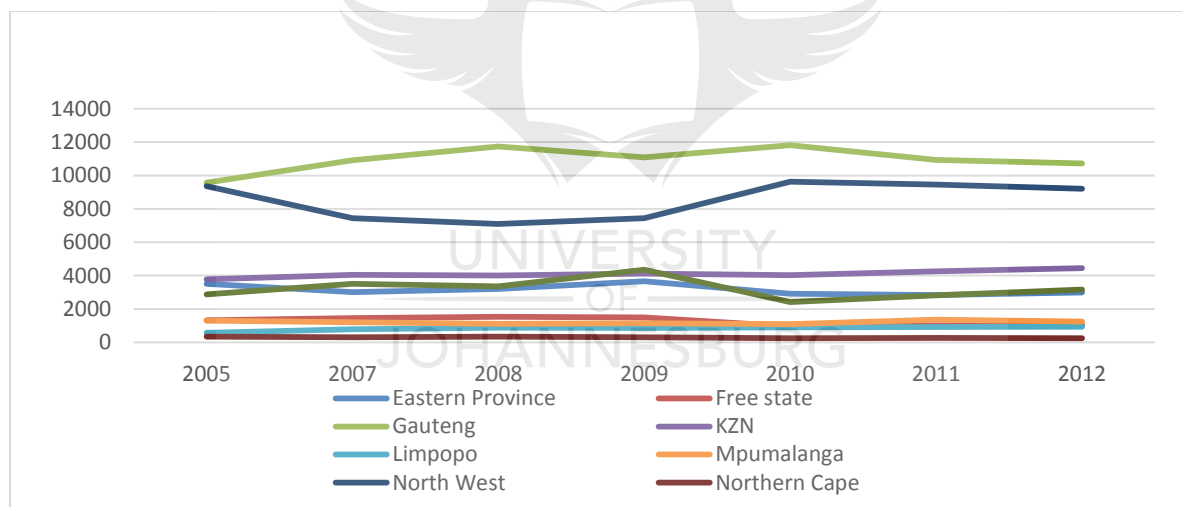
To explore the nature of GCR causing GDP in South Africa, one does not have to look further than the theoretical economic benefits that form the channels by which casino growth cause economic growth. These benefits include: casino visitations; casino tax revenue generated; casino job creation; the impact of secondary industries of casinos; and CSI contributes by

casinos. Most of these benefits have been fully discussed in Chapter 2. The next section of this Chapter will therefore analyse the trends and growth patterns of these economic benefits that result in casinos being worth pursuing as an economic growth tool. This analysis will also supply vital policy information regarding the development of casinos in South Africa.

#### **4.5.1 Casino employment in South Africa**

One of the well-known benefits of casinos to a local economy is job creation. The positive impact of casinos normally depends on how many jobs can be created for the local populations where the casino is operated. South Africa tends to use casinos as an economic growth tool and thus most of the casino employment in South Africa comes from the local community (PwC, 2014). The following graph shows the trend in casino employment of all nine provinces in South Africa from 2005 to 2012.

**Figure 4.2: Number of casino employees**

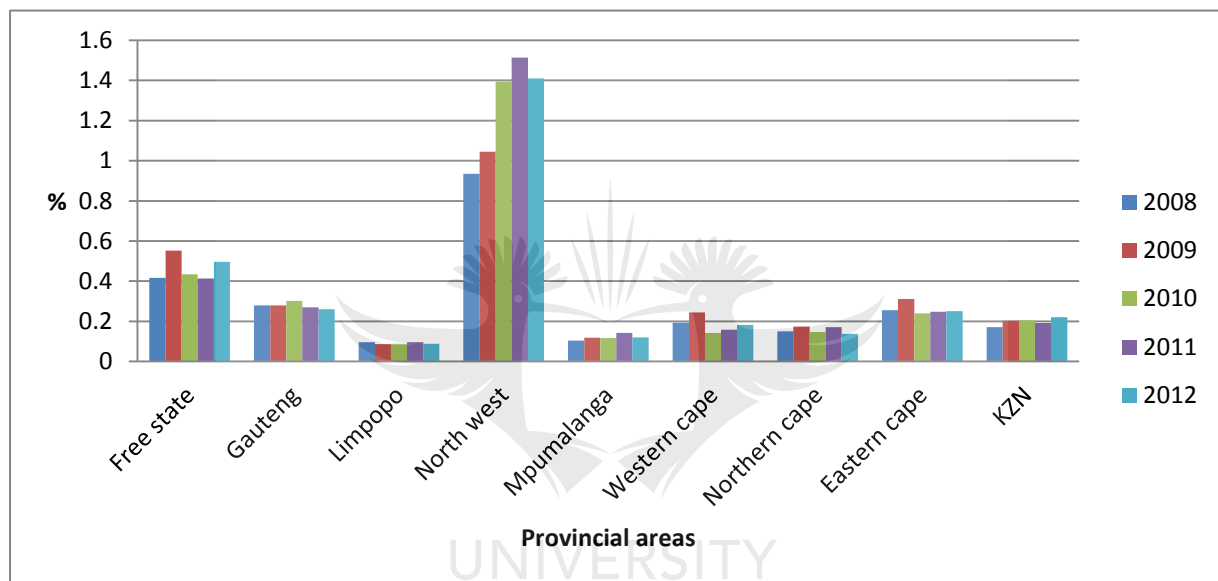


Source: CASA (year)

In Figure 4.2 it is evident that the provinces with the largest in casino employment are Gauteng and the North West. In the North West region casino employment has grown significantly over the last seven years, closing the gap between itself and Gauteng, the highest casino-employing province. The North West Province is one of the leading provincial areas in creating casino and semi-skilled jobs. As a province dominated by mining and agriculture, the North West province has used casinos to increase not only the number of jobs in the province but also added to the skill set within the province.

It's important to compare the casino employment relative to the total employment in each province in order to get a clearer picture of the impact of casinos on the job market in South Africa. By taking the casino employment divided by wholesale and retail employment in each province it shows the contribution of employment generated by casinos in both the wholesale and retail industries on a provincial level. Figure 4.3 compares the different contributions of casino employment to wholesale and retail employment in South Africa from 2008 to 2012 for all the provincial regions in South Africa.

**Figure 4.3: Ratio of casino employment to wholesale and retail employment**



Source: CASA (year)

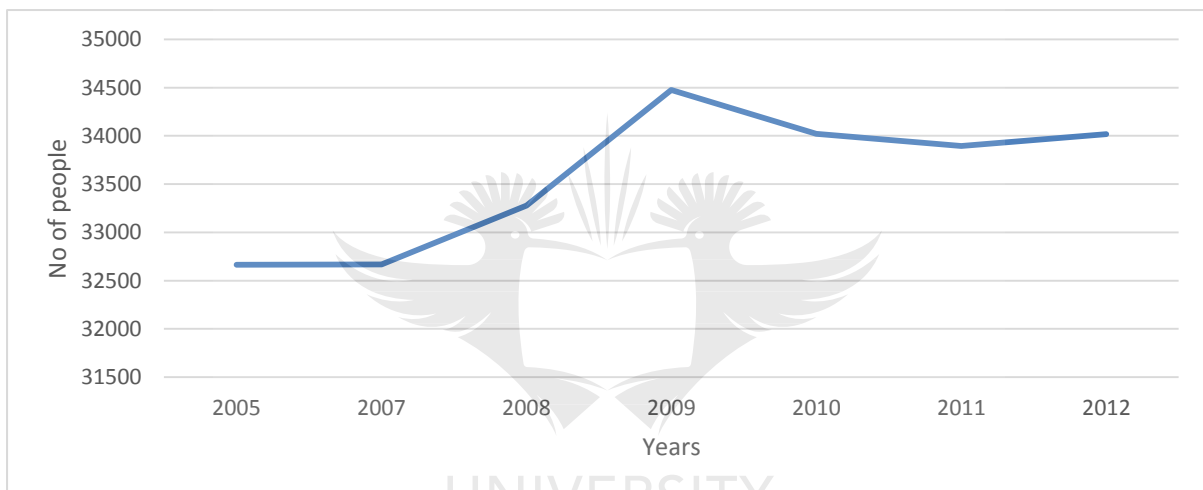
Although the impact of casinos on the wholesale and retail employment sector is relatively small. An interesting observation can be deduced though: the fact that casino employment plays a bigger role in the provinces which are generally not characterised as urbanised provinces. The North West, Free State and Eastern Cape are all less known for their big metropolitan areas, but in these provinces casino employment has the biggest impact on wholesale and retail employment. This indicates that casinos play a bigger role in the employment in rurally-defined provinces in South Africa.

Two of the more rural provinces, Eastern Cape and North West, have both been growing in terms of casino visitations, casino employment and GCR. This gives some valuable information for future policy makers to promote the growth of casinos even more so in the rurally-defined provinces. By taking advantage of being a stimulus for development, these provinces clearly have the opportunity to attract more foreign visitors to their provinces by

making use of casinos to create numerous jobs for the local communities. The LED policies, mainly job creation orientated in these rural provinces, would support any job creation. Combined with the already established tourism attractions, casinos can form a relationship to extract the most out of tourism in these rurally-based provinces. Ultimately this will contribute to the main economic objective for South Africa which is job creation.

In South Africa overall growth of casino employment shows an upward trend. Combining all the employment statistics of the nine South African provinces, Figure 4.3 illustrates the total casino employment from 2005 to 2012 in South Africa.

**Figure 4.4: South Africa casino employment (number of people)**



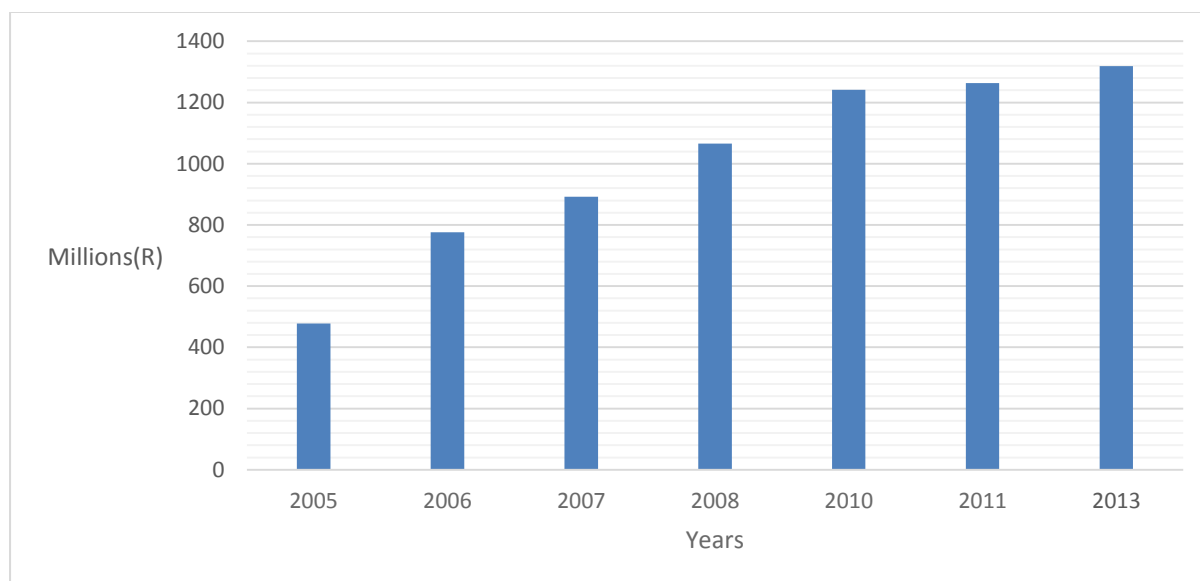
Source: CASA (year)

It can be seen from Figure 4.4 that there is an upward trend in total casino employment, reaching a high in 2009, but since the financial crisis stabilized. After 2010 it started to increase again and formed part of the job creating incentive in South Africa. This could be ascribed to South Africa's exposure after the 2010 Soccer World Cup as leisure destination to the rest of the world. This led to the increase in the development of casinos in the country, with the concomitant increase in employment.

#### **4.5.2 The government as one of the main benefactors of casinos**

The annual CASA survey of 2012 of South Africa estimates that the largest proportion of GCR money ends up in the South African government via taxes. This makes taxes an important component of the economy due to the increase in the spending ability of the government. The following graph summarises the casino tax revenue collected from South Africa for the years 2002, 2005 to 2008, 2010 to 2011 and 2013.

**Figure 4.5: Casino tax revenue generated in South Africa**

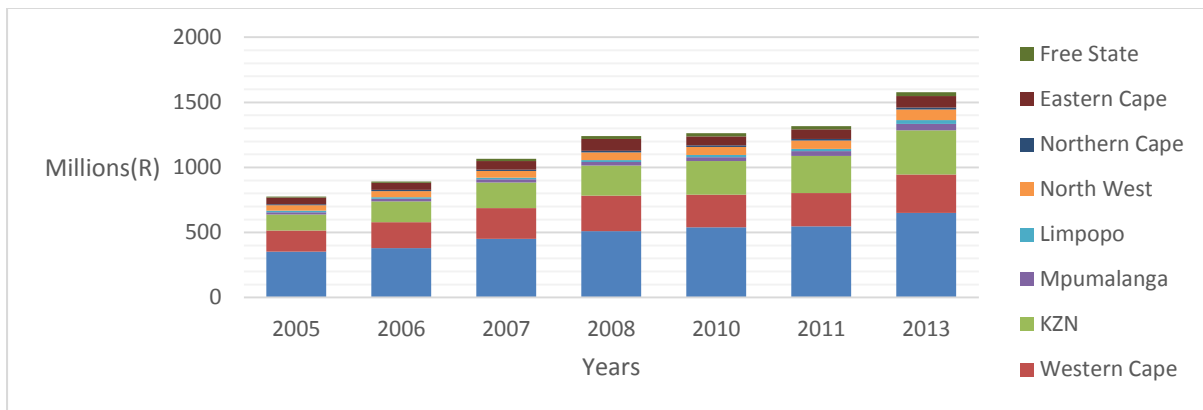


Source: CASA (year)

Figure 4.5 captures the increase in tax income generated from casinos since 2002. Kearney (2005) highlights the important role the government plays in determining whether casinos play a more positive or negative role on the economy. This is due to the control the government has over the location of casinos. It is particularly clear in South Africa where casinos have been built to support the development of underdeveloped areas. The government will then also tax casinos, the revenue generated can be used for other development or fiscal policy expansion opportunities. The graph clearly highlights an increasing trend in GCR received by the South African government, peaking in the most recent data of 2013. This indicates that the total amount of tax revenue is growing.

Figure 4.5 does not capture the entire picture of casino taxation in South Africa, as the tax revenue generated by casinos is not evenly distributed amongst provinces. The table below illustrates the contribution of each of the nine South African provinces to casino tax revenue generated.

**Figure 4.6: Provincial contribution to casino tax revenue**



Source: National Gaming Board (2014)

In Figure 4.6 the contribution of each of the South African provincial regions to casino tax revenue collected is captured. The main contributors are Gauteng, the Western Cape and KZN. An interesting observation is how some of the rural South African provinces' contribution to tax revenue has grown over the last couple of years. This could be due to the fast casino growth within the specific provinces. From the graph one can observe the growing nature of casino tax revenue in the Eastern Cape and North West, contributing significantly more than the other provinces. It is the growth in these provinces that shows there to be room for expansion of casinos in South Africa and especially their contribution to the public finances of South Africa.

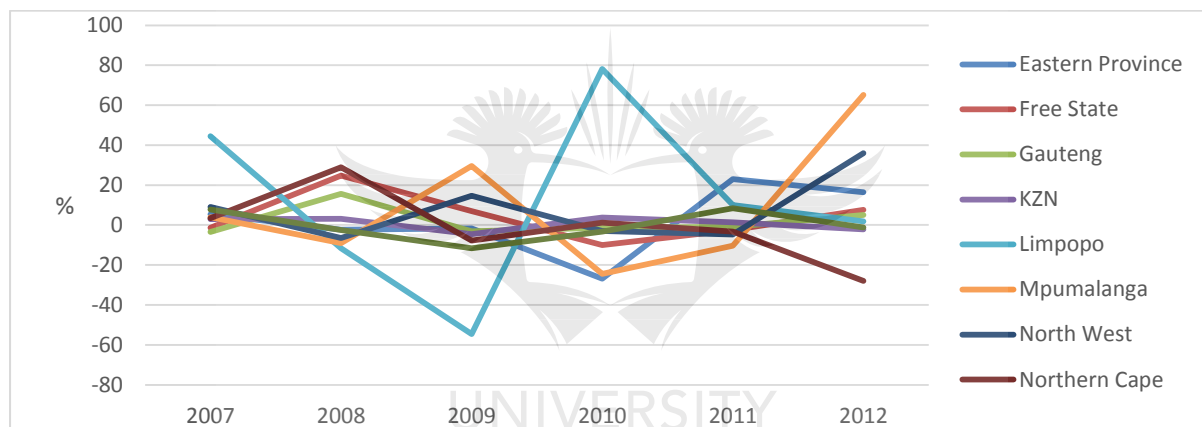
#### **4.5.3 The impact of casinos' visitations on the economy**

The growth and expansion ability of any new product is determined by the demand for the product. The success of casinos and through that the potency of casinos to produce the economic benefits of job creation and tax revenue as discussed previously, all depend on how much casinos are in demand.

Casinos rely on either foreign or domestic visitations for growth. It is thus important to analyse the trend of casinos' visitations to South Africa to observe the past and future successes of casinos. Figure 4.7 presents the number of casino visitors from 2006 to 2012 in each province in South Africa. Although there is no distinction between domestic and foreign visitors, the Figures still provide interesting trends in terms of the provinces that have increased their casino visitations over the last couple of years, especially after the financial crisis of 2008. The upward

movement of visitations to Gauteng, Eastern Cape and Mpumalanga from 2010 to 2012 indicates that the casino industry in these provinces has recovered significantly since the 2008 financial crisis. All the provinces demonstrate a relatively stable line in the number of casino visitations, supporting the fact that some of the casinos have reached a level of maturity in South Africa. But the growth and development of casinos do not only lie in the number of casinos, but rather in the redevelopment of existing casinos. It is in these existing casinos where the more rural provinces like Eastern Cape, North West and Mpumalanga have grown their casino attendances, shifting to a more family-orientated holiday resort that does not centre on casino and gaming activities alone.

**Figure 4.7: Growth rate of casino visitations per province**



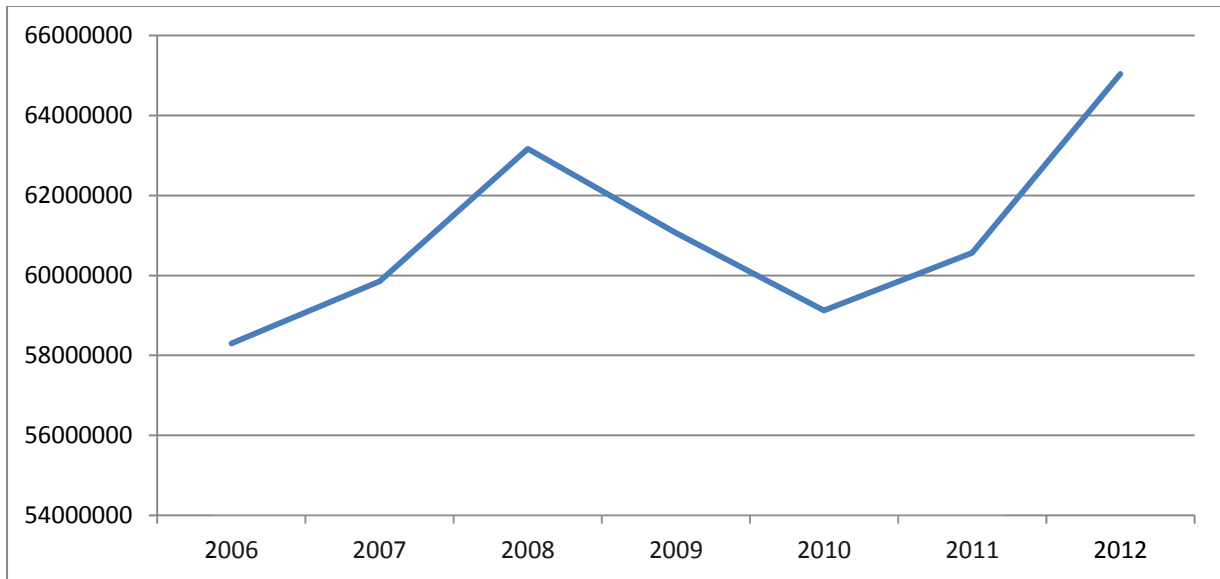
Source: CASA (year)

Interesting trends can be observed in the increase in the growth rate of visitations in the rural provinces like Eastern Cape and Mpumalanga, that both show the most surprising growth. These two provinces have expanded their casino attendances since 2011. This indicates that casino growth is moving into these more rurally-defined provinces and could combine with the tourist attractions currently present and expand tourism in the provinces.

By combining all the provinces to determine the casino visitations in South Africa on a national scale as in Figure 4.8 below, one finds that an interesting trend arises. Casino visitations started to drop after 2008, probably due the financial crisis but have then increased again since 2010. This aligns with an increase in tourism, especially by South Africa hosting the 2010 World Cup and becoming a new and popular tourist destination for people all around the world.



**Figure 4.8: Total casino visitations for South Africa**



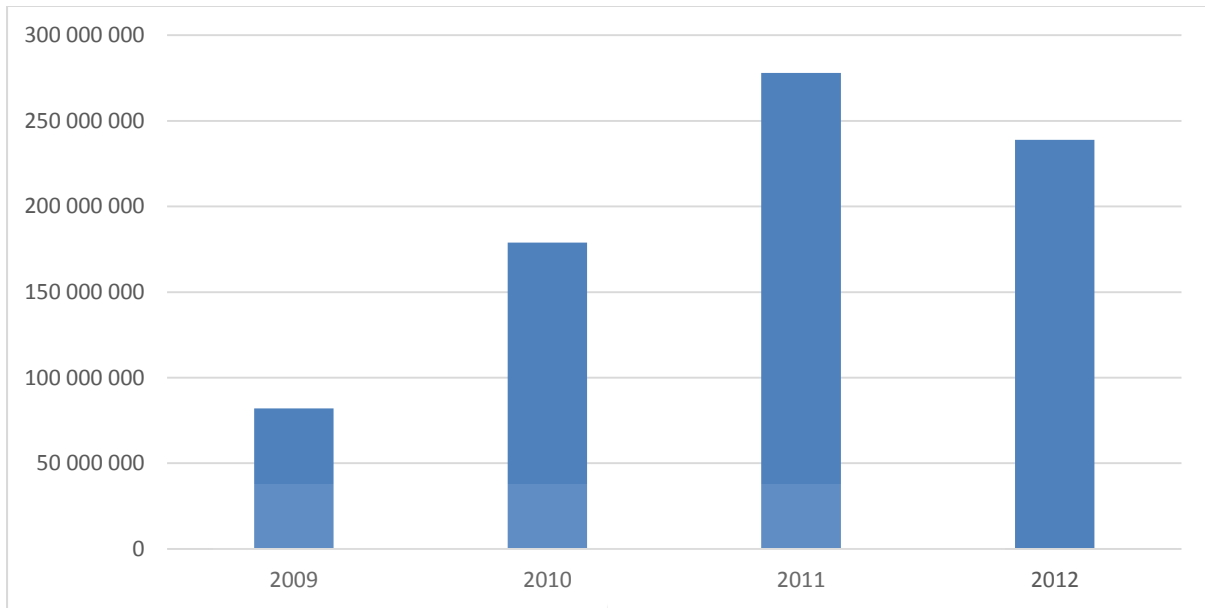
Source CASA (year)

#### **4.5.4 Secondary industry impact on the South African economy**

The casino industry all over the world and even in South Africa, has expanded from being just a casino where casino gaming takes centre stage. These days casino gaming is only one of the activities in the more family-diversified casino resorts. This is seemingly due to the expansion of the so-called entertainment areas in casinos. Entertainment areas in their own, indirect, way contribute to the economy via job creation and infrastructure development. The expansion and growth of these casinos' secondary industries have become increasingly important in the economic activity they generate in a community.

Figure 4.9, depicts how different secondary industries in the casino industry have grown from 2009 to 2012. The first, and one of the more important sectors, is the hotel industry, where the total hotel revenue in Figure 4.9 illustrates the increasing trends in growth of casino hotels. Since 2009 there has been a rapid growth in hotel revenue generated in South Africa. The low starting point in 2009 could well be attributed to the financial crisis of 2008. Since then, there has been an increase in hotel revenues which reached a high in 2011.

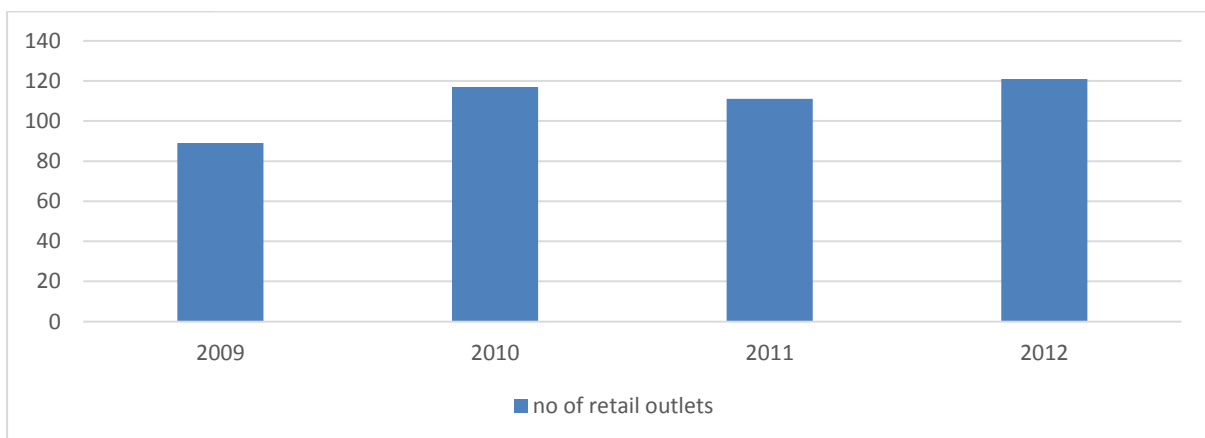
**Figure 4.9: Total annual hotel revenue in casinos**



Source: CASA (year)

Figure 4.10 captures the growth of the number of retail outlets that originated from casinos. These retail outlets represent shopping facilities that range from books, clothing, gifts and jewellery shops. The number of casino retail outlets in South Africa has been increasing over the years as in 2009 there were just over 80 retail outlets and in 2012, these increased to 120 outlets nationwide. The retail outlets are a good proxy for the growth of the non-casino activities and indicate an increasing trend in the secondary entertainment industries generated by casinos.

**Figure 4.10: Total number of retail outlets in casinos in South Africa**



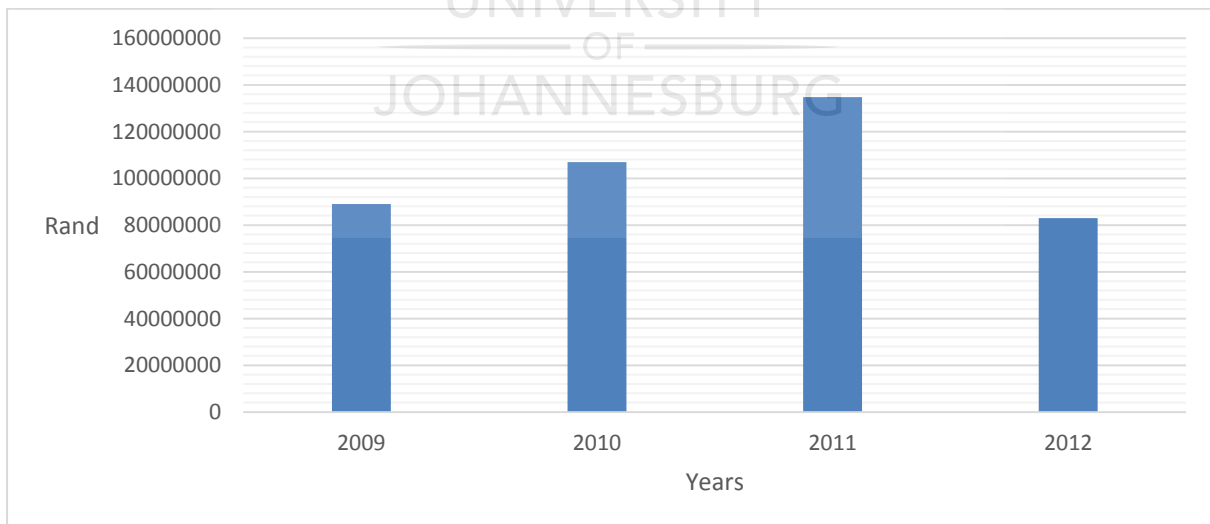
Source: CASA surveys

#### **4.5.5 CSI growth in South Africa**

One of the lesser known contributions of casinos is their social investment into local regions. CSI normally rests on four pillars to determine where to invest from a social development point of view. The four are: education, youth development, entrepreneurial enrichment and environmental enrichment. All these pillars have received various monetary injections by casinos in South Africa to promote a different element of the contribution made by casinos.

CSI has become increasingly important for casino cooperations like Sun International, which contributes to the social development of South Africa. Whether this is driven by the social damage wrought by casinos or obtaining the public's acceptance, the CSI made by casinos in South Africa is providing some aid to the social development in South Africa. In Figure 4.11 below the growth in CSI is evident; in 2011 the investments reached a high of over R13mil. In 2012 there was a significant decrease in CSI. The reason behind this decrease is unknown but could be due to the fact that in 2011 there was a big spending project and then in 2012 CSI returned to its normal trend. South Africa is a country with high poverty rates and therefore the main objective of CSI is mostly based on helping the poorer part of the population. Any growth in casinos' CSI will lead to more social development in South Africa.

**Figure 4.11: CSI of casinos in South Africa**



*Source: CASA surveys*

## **4.6 CONCLUSION**

The results of this Chapter support the research conducted by Walker and Jackson (1998) regarding the USA. The findings suggest that GCR does contribute to GDP in South Africa. This provides valuable information on the fact that casinos spur economic growth in South Africa. The impulse response function and variance decomposition test show that casino growth spur economic growth but there is a weak relationship between casino growth and economic growth. Yet, there still remains a casual relation between the two variables.

The results of the graphical representations show the various channels through which the Granger causal relationship from casinos' growth to economic growth could exist. The graphs encapsulate the growth of casino with regard to employment and GCR in South Africa especially in rurally-based provinces like Eastern Cape, Mpumalanga and North West. Here the growth of casinos has significantly increased and contributed to the economies of these provinces. The next Chapter will conclude the findings of this study and combine the theory on the economics of casinos. A conclusion will be reached regarding the way forward for this research and some policy implications to be considered will be proposed.

## **CHAPTER 5: CONCLUSION**

According to Meyer and Brown (1977) “A gambling industry represents an extreme case of an institutional field which must produce and disseminate myths legitimating its practices.” Since the date of this claim (1977) the challenges casino industries face, have not changed dramatically. Still today casinos have the need to prove their worth to a community to be even considered a beneficial instrument of economic growth. This is true even more so in developing countries where economic growth is an objective that needs to be achieved. One of the reasons for casinos having to prove their worth is the lack of substantial research on the economics of casinos. Research that goes beyond the argumentative state into proving, on an empirical basis, that there is a relationship between casinos and economic growth, has been scant.

The aim of this study was to provide empirical support for the arguments either for or against casinos as an economic growth tool in South Africa. This Chapter will now conclude the findings of the study of the economic impact of casinos in South Africa. The first section will combine and conclude the theoretical and empirical results found in the study. The second section will be dedicated to the policy implications of this study and what policy makers can look forward to from casinos. Thirdly, the potential for future research will be mentioned, since this field of study is relatively new to South Africa. Lastly, a final conclusion on the work done in this study and its worth to South African policy makers will conclude this minor dissertation.

### **5.1 GENERAL CONCLUSION**

In theory, casinos have been widely debated about having either positive or negative impacts on the community where they operate. The arguments for the positive impact of casinos have been supported by the likes of Walker and Jackson (1998), Eddington (1999) and Anderson (2005). Countering these positive economic impacts of casinos are the negative social and economic effects of casinos as researched by Grinols (2004).

The theory behind casinos has been widely analysed and comprehensively explained. However, lacking in this research are sound empirical tests to support either the supportive or opposing arguments regarding casinos. Walker and Jackson (2011) highlight the lack of substantial empirical research in the field of casinos and dedicated their study to testing the relationship between GCR and economic growth in the USA.

Casinos are one of the fastest growing entertainment industries in the world. The lack of knowledge as to what impact this growth has on an economy is a major constraint to implementing useful research on casinos. A better understanding of casinos and their economic and social impacts would not only assist in decision making regarding legalised gaming in a country but could also assist a country during a fiscal crisis (Walker and Jackson, 1998). Even in a developing country like South Africa, a better understanding of the economics of casinos could support economic growth policies currently applied in practice on an LED front.

The empirical analysis of this study was dedicated to uncovering the relationship between economic growth and casino growth over 13 years in South Africa. To explore this relationship, a modified Granger causality test as proposed by Walker and Jackson (1998) was used in the study. The results indicate that there is a Granger causal relationship from GCR to GDP, while no Granger causal relationship exists from GDP to GCR. This proves that casino growth does have an impact on the economic growth in South Africa. The results also prove, from a statistical point of view, that casinos have had a positive impact on the South African economy.

This study also analysed the degree of causality and found that the Granger causal relationship from GCR to economic growth is weak. This indicates that economic growth is determined by numerous other, more effective, variables and that casinos only have a small part to play in the determinant model of economic growth in South Africa.

Comparing the results of this mini dissertation to the findings of Walker and Jackson (1998), the results are fairly similar. In Both cases of the USA and South Africa Granger causality was found from casino revenue to economic growth. There fact that a developed country like the USA and a developing country like South Africa both show an impact of casinos on their economies highlights the positive impact of casino on an economy regardless of whether an economy is classified as developing or developed.

Economic growth remains at the centre of economic studies in developing countries like South Africa. These developing countries usually adopt an “any help is helpful” strategy when it comes to economic growth. South Africa is a good example of this: since 1994 the government introduced and revamped numerous industries whose importance was neglected during the apartheid era. One of those is the gaming industry where post-apartheid government officials realised the gains the gaming industry and especially casinos could bring to the economy as well as the overall well-being of the population (Tyawa, 2012). Theory suggest casinos can be regarded as an economic growth tool in local regions and the empirical conclusion in this minor

dissertation that GCR causes GDP provides vital supportive arguments for the positive impact of casinos on LED policies implemented in the nine South African provinces. It is important to note that growth is not sufficient for economic development alone. The impact of casinos can also be viewed from other various channels by which they could have an impact on economic development. One of those is the CSI made by casinos which contributes to the social development in South Africa. From this LED point of view, casinos are examined for their ability to be a facilitator of growth in local areas with the utilisation of local resources. In South Africa's casinos this is evident especially in the case of the North West where Sun City has contributed to the North West's economy and combined it with the natural African landscapes of the North West. Sun City became a leisure resort that has used the popular natural landscape of the province and combined it with the casino's world class facilities to attract tourist from all around the world.

The LED nature of casinos is also prominent in the expansion of secondary industries generated by casinos. The impact of the secondary industries on local economies can either be positive or negative as explained by Grinols (2004) who claims that casinos act as either a factory for growth in the local region or as a restaurant in which case other local enterprises might suffer from the growth of industries within the casinos. This study does not analyse the impact of the secondary industries specifically but it should be captured within the general economic growth of each one of the South African provinces. The results of this study prove that casinos have contributed to the economic growth in South Africa on a provincial level and therefore indicate that the secondary industries have had a positive impact on the local economies.

## **5.2 POLICY IMPLICATIONS**

Casino development has the potential to be one of these economic growth tools, with clear results encapsulated in this study highlighting the positive economic impact casinos have on the economy of South Africa. This is evident especially in the casino employment and tax revenue benefits that, according to this study, show clear growth. South African policy makers should, at the very least, consider casino expansion as an economic growth tool, since, even with its social drawbacks it still possesses some of the vital characteristics that could contribute to the development of the South African economy.

The expansion of casinos in South Africa does not seem to be tied to the increase in the number of casinos but rather to the redevelopment of existing casinos. No better example can be found than Sun City: once a monopoly in the South African casino market, this casino was expected to lose its excitement and through that, a drop in visitations seemed to be the future for this once glamorous casino stage. Management had other ideas though and, redeveloped it from a socially frowned-upon destination to one of the best family holiday resorts on the African continent. The Sun City transformation has demonstrated the potential for development in the South African casino industry.

### **5.3 POTENTIAL FOR FUTURE RESEARCH**

This study analysed the impact of casinos on the GDP for South Africa from 2002 to 2014. There is potential for future research to test the Granger causality relationship between casinos and economic growth since the legalisation in 1996, if such information could be obtained. This would allow future researchers to test each of the South African provinces individually for Granger causality. This will yield a significant number of observations to use the Granger casualty test for each province specifically.

Another potential research opportunity would be to go more into depth on the LED front of casinos, is to analyse the casinos individually. The National Gambling Board provides detailed statistics on every casino in South Africa and could help in such a study which would augment the information regarding casinos as a LED tool in South Africa. Such future research will support an examination of the LED nature of casinos, leading to more comprehensive LED research results.

Confirming the important role of the secondary industries in casinos and their positive growth in the South African casino industry over the last couple of years. It's important to mention that future research in this field can be more focused on analysing the impact of these secondary industries separately and fully analyse their ability to be a factory or restaurant for growth in local communities.



#### **5.4 FINALLY**

To conclude: casinos were legalised in South Africa in order to be an economic growth tool in areas where growth has long been overdue. The legalisation process conducted in 1996 was supported by the success of Sun City in the underdeveloped North West region. The success of Sun City was due to the monopolistic nature of casinos at that time and casinos in South Africa today may never again achieve the same results as Sun City did. The casino industry is still playing its part in the tourism sector and is contributing to economic growth, even if this impact has been statistically proven to be relatively small.

The central aim of this minor dissertation was to shed some light on the relationship between economic growth and casino growth, and that objective has been achieved. Finding Granger causality from casino growth to economic growth indicates that casinos do play a part in the development and growth of the South African economy.



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