THE INTERPRETATION OF MARKET RELATED INFORMATION AND DATA IN THE SOUTH AFRICAN RESIDENTIAL PROPERTY MARKET AFFECTS AT WHAT STAGE EACH INDIVIDUAL PARTY LIES IN THE REAL ESTATE MARKET

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ABSTRACT

In recent times the emergence of the property cycle and the effects that it has on the property market has caused the relevant parties involved in the market to start placing more emphasis on how these cycle works. The overall objective of this study is to try establish if the interpretation of market related data affects at what position these parties are relative to one another on the property curve. The study concentrates on the use of market indicators, indices and variables in trying to determine an individual's position on the property market curve. It also concentrates on how this market data is retrieved and what effect it has on how they interpret the data.

The methodology adopted for this study involves the collecting and interpretation of market related indices and indicators relevant to the property market over a ten year period from 1996 through to 2006. This data was then used to establish the key indicators used. A questionnaire was sent out to the relevant parties involved in the property market to ascertain the extent of what the main sources of market information are and how this data is collected and interpreted. This was limited to individuals in the Gauteng region. The data was examined and collected in the form of line graphs, histograms and pie charts.

The data was then examined and presented in four areas: the major sources of information used by parties for market related data, to try and establish where these parties are relative to one another on the property curve, the effect that the different types of sources of information has on each party and finally to try determine by how much these parties lag or lead one another on the curve.

Key Words: property cycle, market indicators, rational expectations, market data

DECLARATION

I declare that this research report is my own unaided work. It has been submitted for the Degree of Master of Science in Building in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other University.

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(Signature of Candidate)

_____ Day of _____ (year) _____

DEDICATION

I dedicate this thesis to my family and friends who support me in every endeavor and give me the strength and encouragement to accomplish my goals.

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Chapter 1: Introduction

1.1 Background and Rationale

Pugh and Dehesh (2001) state, that since the 1980's the occurrence of property cycles has emerged in the urban development of both developed and developing countries. Pugh and Dehesh (2001) propose that it is the progressive economic liberalisation in both international and national economies that has helped to increase the occurrence of property cycles. Modern day property cycles can be extraordinary in the fact that due to their large amplitudes and long durations they can have an effect on international economies (Pugh and Dehesh 2001).

According to Roulac et al. (1999) it is due to its pervasive and dynamic impact that cycles play a major determinant of success and failure in real estate returns as well as risk and investment value, as a result of the above as well as real estates movement into an asset class, investors are placing greater emphasis on the strategic and decision making implications of real estate cycle theory.

An important part of being able to predict property price reversals in the property market is the ability to forecast the cyclical behaviour of the market through the estimation of the length of the cycle and being able to reasonably predict the viable turning points (Partington and Stevenson 2001).

According to DiPasquale and Wheaton (1996), the four quadrant models takes the real estate market and divides it into two areas, the first being the property market where space use is determined and the second being the asset market where buildings are bought and sold. The property market and the asset market is linked by two junctions, first the demand for real estate assets is controlled by the rent levels determined in the property market, this is due to the fact that by investors acquiring an asset they are purchasing what could be an income stream, from this the demand for ownership in the asset market is affected by changes in rent occurring in the property market (DiPasquale and Wheaton,

1996). The second link between the asset market and the property market happens through the construction sector, when construction increases and the supply of assets grow, prices in the asset market are driven down and the rent in the property market decline (DiPasquale and Wheaton, 1996).

According to DiPasquale and Wheaton (1996), a 360 degree rotation around the four quadrant model reflects the following, starting with a new level of stock, the rents which are determined by the property market are then shown in the asset market through property prices, new construction is then generated by these asset prices which when reflected back in the property market yields new stock levels. From the above model we can see that real estate markets are comprised of essentially four different components these are as follows the user market comprising of occupiers and tenants, financial markets which are the providers of equity and debt finance, the development market which creates new stock and the urban land market which indicates the cost of land for development.

Roulac et al. (1999) state that the supply and demand forces in the real estate market is affected by human behaviour and economic activity; this in turn affects the financial performance of properties through rental changes, vacancy rates, operation and capital expenses and capitalization rates.

According to Lind (2000) rational expectations are expectations that are based on the best available theories and on all available information to the individual. Heinemann (2004) goes on further to explain also that one of the two rational expectations equilibria is one where the agents base their expectations from actual market price, accordingly from this agents are able to base their there decision on actual market data and therefore make a rational expectation of what the future price may be.

Wheaton (1999) explains that when agents act irrationally the occurrence of cyclical behaviours in the market become dependent on some important features of the property cycle namely asset durability, investment lags and supply and demand elasticity's.

Whilst when agents behave rationally it can be found that some institutional features of the property cycle such as long term leases and credit to finance developments also help to create cyclical movements in the market (Wheaton 1999).

According to Malpezzi and Wachter (2005) the efficient pricing of real estate is dependent on real estate price and rent growth expectations, the formulation of expectations or speculation about what the future rent trends will be is an indispensable part on the determining of what price the individual is willing to pay for a particular asset. The opposite of this being if price expectations are based on the extrapolation of past price increases it may lead to a speculative bubble. Malpezzi and Wachter (2005) state that people will make use of all the information available in order to make the most advantageous forecast on future events as stated by the rational expectations assumptions.

Heinemann (2004) states that present values of variables of many economic models are dependent in part on the formation of expectations of present and future values of other economic variables. The efficient pricing of real estate is dependent on real estate pricing and rent growth expectations (Malpezzi and Wachter, 2005). According to Brown and Taylor (2006) the financial expectations of individuals and households are influenced by business cycle.

Mohr (1998) states that in an age where information and data can be so readily accessible and so effortlessly manipulated in a fraction of the time required in the past, it is important to make note of each manipulation used in the analysis of the data and to take this into consideration when the information is to be made use of. According to Mohr (1998), Economic indicators have become an integral part of our daily lives whether it is used by business owners, economists or speculators as it allows them to make critical decisions based on their interpretation of what the data indicates for each specific field.

1.2 Problem Statement

The interpretation of market related data by parties in a real estate transaction reflects the position the parties take in the real estate market.

1.3 Research Objectives

1) Establish at what stage each party in the property market is at relative to one another on the market curve

2) Identify the Major sources of information for each of the party's.

3) Examine what effect the different types of sources of information might have on each party.

4) Determine the lag or lead each party has according to one another on the property market curve.

1.4 Research methodology

1) Undertake a literature review surrounding property cycles and how the interpretation of property market related data affects the property cycle.

2) Conduct interviews and questionnaires to identify what type of data is used for each respective party in the property market.

3) Provide an analysis of the research findings.

4) Draw conclusions and make recommendations.

1.5 Limitations

1) Time constraints – Time allocated or made available to conduct the study is limited due to work commitments

2) Access to professionals – The gaining access to various professionals in order to conduct the research interviews and questionnaires will be problematic.

3) Response rate – Due to the responders conducting their own businesses they will not be able to answer the questionnaires as timorously as possible.

4) Geographical Limitations – The study is focused on the property market specific to the Johannesburg area of South Africa.

1.6 Structure of Dissertation

Chapter 1 – Introduction

Chapter 2 – Literature review

Chapter 3 – Research Methodology

Chapter 4 – Data Interpretation and Analysis

Chapter 5 – Conclusions and Recommendations

Conclusion

In the last three decades property cycles have emerged as a major feature of the real estate market throughout developed and developing countries. The emergence of these cycles in the real estate market and the effect they have on investments and returns has

caused the relevant parties involved in the property market to start placing more emphasis on how these cycles work. One of the key elements into understanding cycles is to be able to forecast by estimating the length of the cycle, and where the turning points of the cycle are relative to the positions of the other parties. In order to do this the key market indicators relative to the real estate market must be distinguished. Once this is done by understanding how the individual uses the data to form expectations of how the market is going to work can an informed decision be made by the individual. However due to the nature of the data, the way the data is processed it is possible to get different answers therefore allowing the opportunity to make different decisions.

Chapter 2: Literature Review

2.1 Housing Supply

One of the fundamentals in understanding how a market works in economics is to understand the supply and demand of the product in that specific market, in this case the product is housing. A few of the key factors behind the supply and demand forces of the property market are discussed below.

Supply and demand forces in real estate markets are affected by human behaviour, this behaviour in turn affects the financial performance of properties through various mechanisms these being changes in rent, operating and capital expenses and capitalization rates (Roulac *et al* 1999). According to (DiPasquale 1999) housing supply is not only governed by the production decisions of the constructers of the units but also by the decisions made by the owners and agents of these units in terms of the conversion of existing stock to housing. This is because housing is considered a durable good.

Key parameters that help to determine rational investment decisions, which are changes in financial performance caused by the above external forces, are measured through the rate of return and risk analysis (Phyrr *et al*. 1999).

Coleman and Gentile (2001) state that there is a recent undertaking to perform a systematic analysis of the supply side responses to changes in commercial real estate market conditions. What was treated in an abstract manner, when any new property space was added into any existing market, should now be looked at rather in an empirical manner. One of the most common forms of empirical treatment in property is what is known as the stock adjustment model which describes new construction on a supply demand system rather than describing that new building activity is due to the lagged response to over extended markets for space (Coleman and Gentile 2001).

DiPasquale (1999) mentions that the government can have a profound impact on the housing market due to government policy. This is due to the rental assistance by the government in the form of subsidies or mortgage interest reductions assisting in the increase for housing services. In effect the supply response causes any long run impact on prices.

According to Coleman and Gentile (2001 citing Capozza and Li 1994) the employment of their, options pricing model to investigate the timing of a real estate investment decision, shows that the intensity of investing in property and the timing of this investment are all inter related. However Leung and Feng (2005), state that contrary to existing literature evidence in the equity and property markets shows that the trading volume of an asset and its corresponding price do not correlate in the case of agents acting rationally in the perfect rational expectation model.

The above discussion touched upon how human behaviour is one of the key determinants of movements in a market.

2.2 Efficient and Perfect Capital Markets

On order to try understand how human behaviour can affect business decisions in a market it is important to understand the different types of markets as well as how the information relayed in these markets determines the decisions made by individuals involved in the specific markets.

2.2.1 Efficient Markets

Malpezzi and Wachter (2005) define an efficient capital market as when a market completely and without error reflects all the relevant information when determining prices, an efficient capital market is a market that economic profits do not exist. There are three common definitions of what market efficiency is each is defined based on the information set used in price formations (Malpezzi and Wachter citing Malkiel 1996).

1. Weak Form Efficiency – This states that future price movement cannot be predicted based on an information set consisting on all past price movements
2. Semi-strong Efficiency – This states that all publicly available information should be reflected in prices, this not only includes past price information but also all public information as well as any information that might affect real estate prices.
3. Strong Form Efficiency – This states that even material, non public information should be included in the prices of real estate.

As most economists now make use of the weak form of market efficiency as their definition of the market, this means that future prices are not predicted using past price information and consequently historic prices are irrelevant in forecasting future prices. This concept relays us to the concept of Random Walk (Malpezzi and Wachter 2005).

2.2.2 Perfect Capital Markets

Minford (2002 citing Copeland and Weston 1988) states, that efficient markets differ from perfect capital markets. The perfect capital market has the following features:

1. Markets are informationally efficient, all information is received without delays and with no cost to all agents
2. Markets are frictionless, they have no transaction costs, no constraining regulations, taxes and assets are perfectly divisible and marketable
3. There is perfect competition
4. All agents and individuals are rational expected utility maximizers.

Malpezzi and Wachter (2005) go on to discuss that real estate investor's price real estate on past prices. From the discussion it can be seen that the theory of random walk does not hold for real estate as it is possible to predict pricing on past trends. Therefore it can be seen that a lot depends on how real estate investors form expectations of future real estate prices. If real estate price expectations are formed based on past price changes then no random walk will form. Extensive literature also shows evidence that backward looking

expectations in real estate pricing often violate the random walk and rational expectations hypotheses (Malpezzi and Wachter citing Ott *et al*. 2000).

Minford and Peel (2002 citing Grossman and Stieglitz 1976,1980) state that market prices cannot fully and instantaneously reflect all available information, as if this were the case agents would not have any incentive to collect and process the information. However Hellwig (1982) disagrees with this view, this is because if the time span between successive market transactions is short, the market can fully approximate the informational efficiency of the market.

2.3 Adaptive and Rational Expectations

Adaptive and rational expectations form the basis of behavioural economics. Behavioural economics is the study of how human interaction in business markets affects the markets itself. From this we can see that how an individual in any respective market acts and makes decisions is dependant on how information and data from the market is relayed to the individual and how they make use of the information.

2.3.1 Explanation of Adaptive and Rational Expectations

According to Hui and Lui (2002), there are essentially two governing theories to help explain expectations; these are adaptive expectations and rational expectations. Adaptive expectations are when people make forecasts of future prices whilst making use of past price performances. Minford (2002) defines the rational expectations hypothesis (REH) as the assumption that people's subjective probability distributions about future outcomes are the same as the actual probability distributions conditional on the information available to them. Lind (2000) states that rational expectations are expectations which are based on the best available theories and on all available information, this implies that people should come to about the same expectations about the future if they act rationally.

Heinemann (2004) also explains that one of the two rational expectations equilibria is that where agents learn from actual market price. In this case agents can base their there decision on actual market data and therefore make a rational expectation of what the future price may be.

Minford (2002) goes on to reiterate that any description of or explanation of rational expectations is based on a typical individual and as such it must be used with reference to the behaviour of the aggregate individual. The rational expectation hypothesis according to Minford (2002) is at the centre of economic behaviour, from this view it can be seen that behaviour reacts to expected future behaviour which in turn depends on current behaviour. Due to the above the capacity now exists for current behaviour to be affected by changes in the environment, this is due to individuals reacting to the perceived changes in the environment and how this may affect the future, expectations are therefore completely integrated into behaviour (Minford 2002).

Minford (2002) states that rational expectations expands on the basic affirmations of econometrics, in that the individual makes efficient use of the information available to him in forming expectations of future outcomes due to the fact that individuals in aggregate act in a regular manner as if following an individual systematic decision process. A typical individual's perception of what the probability distribution of future outcomes according to what the available information is coinciding with the actual probability distribution dependant on that information is what is meant by the term efficient use or utilization (Minford 2002).

One of the arguments about rational expectations is that it is in the interest of the agent to form his own rational expectations (Heinemann 2004). It is found to be true that it is individually rational to form rational expectations if all other agent do the same, however this does not mean that individual expectations is the most advantageous if irrational expectations are formed by other agents. According to (Hendershott and Macgregor 2005) Australian and US investors have overvalued property at rental cyclical peaks whilst undervalued property at cyclical troughs, showing that investors were behaving

irrationally. Therefore it can be said that rational expectations of an agent are only individually rational if it is assured that all other agents behave in the same way (Heinemann 2004).

2.3.2 Speculation and its role in Expectations

Malpezzi and Wachter (2005) explain that speculation forms an intergral part of the forming of expectations. Speculation as a term sometimes refers to short term investors rather than a long term investor, it is used to identify investors who purchase an area or plot of land and hold it in anticipation of a profitable development opportunity in the not to distant future (Malpezzi and Wachter 2005). Speculation also means arbitrage, in other words a market with many investors, buyers and sellers is considered a liquid market if prices are readily available and good information is available on the current prices.

According to Malpezzi and Wachter (2005), speculation can also be used to describe when investor's expectations are formed in an inaccurate way which is referred to as adaptive expectations; this refers also to when as prices rise speculators will enter the market and demand increases and as prices fall these investors leave the market.

Heinemann (2004) shows that as with many economic models, present values of variables depend in part on the expectations of the present and future values of other economic variables. Therefore it is necessary to make an assumption of how an agent forms their rational expectations. Hui and Lui (2002) suggest that market fluctuations in property are caused by irrational expectations which cause the price to deviate from market fundamentals.

According to Minford (2002) economy wide information such as money and general price levels is perceived with an information lag, because of this individuals are forced to estimate whether the price changes currently perceived at the market level are relative price changes or merely reflect general price movements. This is generally known as a surprise supply function and was an essential component used by Sargent and Wallace in

their small scale micro models which illustrated the potential implications for policy making of rational expectations. The surprise supply function however is hard to sustain when information about prices is as up to date as it is in the modern economy.

2.3.3 Expectations Links to Business Cycles

The link between the expectations of an individual and the business cycle is important. Due to the fact that housing is considered a durable good, the investment in the property market is affected by the individual households needs. One of the determining factors behind a household's investment into the property market is largely dependant on the how market related data concerning the property market is interpreted by the individual.

Brown and Taylor (2006) explain that an individual's financial expectations are largely influenced by both life cycles and business cycles. Accordingly in economic models of individual and household decision making one of the key factors that play a major role are financial expectations. Brown and Taylor (2006) go on to state that the scarcity of data on individuals' expectations is one of the main reasons for there being a lack of empirical research regarding the determinants of these expectations.

The empirical analysis of these expectations at the individual and household level can provide key information that is vital as these financial expectations influence the consumption, saving and debt accumulation of individuals and households (Brown and Taylor 2006).

2.4 Property Business Cycles

The nature of the property market as with all other markets is that it is cyclical in nature. The following section discusses the fundamentals of the property cycle from the different types of cycles, the different properties of a cycle as well as the salient features of the property cycle. By understanding how the property cycle works and its fundamentals, it

will allow us to see how individuals involved in the property cycle make use of the key features of the cycle in order to facilitate how decisions are determined.

2.4.1 Background to the Property Cycle

Literature in economics and real estate shows that the following are all cyclical, economic factors, cash flow variables such as rents vacancies and capitalization rates as well as rates of return on real estates (Phyrr *et al*. 1999) The use of models at both the national and regional levels helps us to understand the relationship between economic and real estate cycle variables, it is limited in how effective it is at forecasting and decision making at the property portfolio levels. The use of cycling model increases significantly as ones analysis moves from the macro level to the micro level (Phyrr *et al*. 1999).

Coleman and Gentile (2001) argue that due to there being little empirical work conducted on the nature and dynamics of the commercial development cycle, this has an affect on the broader building supply cycle, and these are important factors in both the theory and practice of real estate. Mohr (1996) states that it is important to note that economic growth does not occur smoothly there are periods of increased growth or expansions which are always followed by periods of decline or recession. A definition of a business cycle is a pattern of expansion and contraction in economic activity relative to its long term trend (Mohr 1996). This business cycle consists of four elements a trough, an upswing or expansion, a peak then followed by a downswing or recession.

One of the few concise definitions of the real estate property cycle is offered by The Royal Institute of Chartered Surveyors in its 1994 publication on Understanding the Property cycle,

> *Property cycles are recurrent but irregular fluctuations in the rate of all property total return, which are also apparent in many other indicators of property activity, but with varying leads and lags against the all-property cycle*

Partington and Stevenson (2001) state that the need for investment decisions to take advantage of cyclical behaviour in markets by researching models of property prices has taken on an increased amount of importance. The real estate cycle however is not essentially regular in length speed and severity, it is more likely to have a long extended up cycle followed by a sudden or rapidly decreasing down turn. This leads to a significant oversupply and a negative growth in demand. If property price series have a similarity to some degree then price reversals will reflect some of the asymmetrical characteristics of the cyclical behaviour (Partington and Stevenson 2001).

According to Coleman and Gentile (2001) researchers have a very limited grasp on an understanding on even the most basic empirical characteristics of the development process most notably on the micro economic model even though there seems to be a wide range of theoretical models available to them. This lack of knowledge of what can be called the stylized facts has a general effect on the ability to put a model to the real estate market dynamics in terms of predicting supply and demand as well as an understanding of the macro economic relationship between general business cycles and the aggregate building activity. The above lack of knowledge seems to be directly influenced by the lack of any relevant data of projects at the individual level where decisions to develop and build are ultimately made.

Mcgough and Tsolacos (1995) state that the modelling of property cycles is also an under researched area in the already existing real property market literature, this is in part attributable to the complicated development dynamics and character of the real property market. There is however further scope of study as well as different methodologies in investigating the dynamics of the property cycle. One of these methodologies is suggested by the relevant research in the area of business cycle modelling, business cycle research search for patterns in the co-movements of macroeconomic time series and aggregate output changes without the restrictions of economic theory, these patterns of the business cycles are referred to as what is known as the stylized facts (Mcgough and Tsolacos 1995).

Mcgough and Tsolacos (1995) make reference to the following statistical properties of the variables considered which make reference to the establishment of the stylized facts:

- amplitude or volatility of fluctuation of the variable
- persistence of the variable, in terms of the tendency of its changes to persist over time before reverting to the long term trend
- procyclicality of the variable, that is whether the variable tends to conform with the different phases of the reference cycle
- countercyclicality of the variable, regarding the tendency of the variable to move inversely to the reference cycle

Coleman and Gentile (2001 citing Somerville 1999) mention that the market concentration of property can be very useful in the explanation of the different levels and durations of construction activity through out the course of the business cycle this is due to the high organization of housing supply in different geographical areas within a specific metropolitan area

2.4.2 Types of Property Cycles

In their analysis of trends and the cyclical behaviour of house prices in the Asian markets (Chen *et al*. 2004) show that house price cycles are considered to be a by product of the short run deviations from the long run upward trends which reflect the lag responses of any supply changes in effective demand. Pugh and Dehesh (2001) go on to explain that property cycles can be broadly separated into two distinct types these are endogenous and exogenous. A more specific view of this shown by (Chen *et al*. 2004) is that the long production period between the initial conception of a building project and its completion, is an endogenous casual factor. This is a delayed supply response which can cause prices to exceed the actual level that can be justified by an increase in effective demand.
Pugh and Dehesh (2001) offer an explanation of the different types of property cycles they are:

- The exogenous type cycle this is normally attributed to the effect that external transmission mechanisms have on the cycle; these normally link the macro

economy to the property market and are distinguished as the changes in interest rates, incomes and exchange rates.

- The endogenous type cycle which occurs due to the long lead times between the commission of a project and the completion of it, often this leads to a situation where the information relevant at the start of the project is no longer valid or appropriate at the time of sale and occupation.

This overshooting of the price initially caused by the long production period between the initial conception of a building project and its completion is one of the factors that prompt an increase in construction stock of new developments beyond that actual level that should be reflected by the increase in effective demand; this subsequently is what causes the activity to decrease until the excess stock approximates the demand (Chen *et al*. 2004).

Another factor in addition to the endogenous production lag as explained by Chen *et al*. (2004) is that cycles generated by changes in monetary policy affect the stimulation and reduction of the housing market activity; monetary cycles tend to correspond with any increase in effective demand in the housing market. Due to the nature of housing finance any variable short term interest rates affect household cash flow position significantly, therefore as interest rates fall competition between the banks to attain market share increases thereby increasing the housing market finance (Chen *et al*. 2004).

2.4.3 Properties of the Property Cycle

According to Pugh and Dehesh (2001 citing Hoyt 1933) the following features were found to be true to property cycles, during the upswing net rental would increase due to the excess demand, this leads to an increase in selling prices which in turn increases rates of renovation and construction, increased supply exceeds demand during the upswing. Pugh and Dehesh (2001) go on to state that a strong interdependence between the property cycle and the finance capital markets has been shown during booms in

construction this causes there to be a so called manic period in construction. Often there are full rates of construction at the cycles peaks later followed by foreclosures, crashes and long periods of attrition in adjustments subsequent to the recession with abrupt changes in lending policies from financial institutions.

One of the most recent areas of research is in the field of amplitude and duration of real estate cycles (Coleman and Gentile 2001). This can be seen in the fact that the key to the aggregate jump in construction activity and what will be the eventual over supply of real estate is the rapid increase of rentals which in turn results in a massive increase of investment capital resulting in an very over extended large development boom (Coleman and Gentile 2001 citing Kaiser 1997).

Chen *et al*. (2004 citing Burns *and Mitchell 1946)* make use of their definition of a business cycle as *"a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises"*. The basic description of this is expansions in various economic activities occurring simultaneously followed by their individual recessions, contractions and recoveries which are all interwoven or merged into the expansion phase of the next (Chen *et al*. 2004).

2.4.4 Phases and Salient features of the Property Cycle

There are four distinct phases of the real estate cycle which have been identified by Phyrr *et al*. (1999) these are in order development, overbuilding, adjustment and acquisition. Phyrr *et al*. (1999) state that the following are economic characteristics of the real estate cycle according to Prichet (1984):

- As the economy expands and grows the rising and peak phases of the cycle are longer in duration than that of the declining and bottom phases of the cycle.
- The long term trend line in a growing economy is upward sloping for both demand and supply, at the peak of every new cycle the additions to supply and

demand reach new peaks compared to the previous cycle. This is also true for the opposite in the declining economy.

- The change in supply compared to the change in demand is a lot more volatile, this is mainly due to develop enthusiasm which causes supply to rise above demand during the peaks in the cycle and develop pessimism which causes supply to fall below demand during the trough cycle period.
- Due to the lengthy process of planning and financing a project the demand cycle normally leads the supply cycle making it difficult for development to begin as soon as the market shows a need. The same is true for stopping supply when demand starts to decline.
- One of the key indicators that show what phase a cycle is in is the occupancy rate. This is mainly due to the fact that the occupancy rates almost tracks the cycle in terms of it being low during the trough period and gradually increasing with the increasing phase reaching a high point at the peak of the cycle and then slowly starting to decrease again.

According to Mohr (1996) the following table (Table 1) indicates the salient features of the different phases in a business cycle, by applying data to the following it is possible to ascertain what position the market and agents/parties are currently in the property cycle:

Table 1 Salient Features of the Business Cycle

First Phase of the Upswing	**Second Phase of the upswing**	**First Phase of downswing**	**Second Phase of the downswing**
• Production and sales increase • Greater utilization of production capacity • Profits rise • Sluggish fixed investment • Exports increase • Imports remain low • Surplus or smaller	• Production and sales increase sharply • Full utilization of production capacity • Profits rise sharply • Fixed and inventory investment increase sharply • Employment	• Production and sales increase at a slower rate • Lower utilization of production capacity • Profits tend weaker • Fixed investment remains strong • Exports weaker • Imports high	• Production and sales decrease further • Lower utilization of production capacity • Profits weaker • Employment sluggish and may even decline • Fixed investment

deficit on current account • Interest rates tend lower • Demand for individual bank credit increases • Corporate sector liquid • Real exchange rate stable • Inflation rate tends lower • Number of insolvencies and liquidations remain high • Overall business climate more positive	increases • Exports weaken • Imports increase sharply • Deficit on current account • Demand for bank credit increases sharply • Inflation rate tends higher • Exchange rate weakens • Number of insolvencies and liquidations drops • Great optimism in economy and business sector	• Larger deficit on current account • Demand for bank credit, especially in corporate market, remain strong • Exchange rate weakens • Inflation rate accelerates or remains high • Interest rates rise further or remain high • Number of insolvencies and liquidations fairly low	weakens • Exports improve • Imports lower • Surplus or smaller deficit on current account • Reduced demand for bank credit • Real exchange rate improves • Slowdown in inflation rate • Number of insolvencies and liquidations increases sharply • Widespread pessimism especially in business sector

2.5 Economic indicators, indices and variables

Economic indicators, indices and variables are vital in all markets. This is because they represent the key factors that may determine how a market may move or they may even indicate the actual movement of the market. By determining which of these indicators individuals use and how they interpret them against the cyclical movements of the property market it is possible to determine the turning points of a specific cycle and where these individuals lie in the market according to these points.

De la Paz (2003) states that market indicators are key factors in trying to explain the relationship between residential demand and housing prices. Accordingly Mohr (1996) states that economic indicators only indicate something if they are compared to another set of figures or data. How the economy performs is judged by different people using different criteria, this criteria is normally selected depending on what the primary interest is of the person making the selection (Mohr 1996).

Wilson and Okunev (1999) refer to the understanding of cyclical activity as an important component of understanding the property market. This can be seen with the traditional appraisal models that did not explicitly take cyclical fluctuations into account and produced unrealistic value estimates by over valuing and under valuing properties relative to their true market conditions. Wilson and Okunev (1999) go on to say that human behaviour is not perfectly cyclical and this is not perfectly represented by one or two cyclical components but rather a combination of many.

Many of the economic indicators that are currently used in media publications are not really economic indicators but rather financial indicators, some however are considered true economic indicators these are CPI (Consumer Price Index), inflation rate, various interest rates of which are important in this study (Mohr 1996). According to Brown and Taylor (2006) the financial environment where individuals and households make decisions is influenced by changes in macroeconomic policy such as changes in interest rates.

Minford (2002) states that in a market, private agents have the same access to information as the government and therefore any decisions made by the private agents should reflect social as well as private costs and benefits. A business cycle indicator should represent an important economic variable or process according to (Mohr 1996), it should also have a consistent relationship with the business cycles movements, it cannot be dominated by irregular and non cyclical movements and finally it must be reported frequently.

Mohr (1996) explains that by comparing the turning points of the cyclical components of individual time series with the reference turning points it is possible to identify certain composite business cycle indicators.

There are three types of composite indicators that can be produced doing this they are as follows:

- Leading Indicators – These are when the specific turning points of an individual time series tends to always precede the reference turning point.
- Coincident indicators – These are when the specific turning points of an individual time series tends to coincide with the reference turning point.
- Lagging Indicators - These are when the specific turning points of an individual time series tends to occur after the reference turning point.

Venter (2004) explains that the above three composite business cycle indicators represent three samples of economic time series that are grouped together according to whether or not they lead, coincide or lag the movements in the main business cycle. The reason that composite indicators are used is due to the fact that the reliability of individual time series as business cycle indicators is not consistent. This is mainly due to each business cycle being unique thereby causing individual time series to vary during different business cycles. Venter (2004) goes on to state that by combining these individual time series into composite indicators allows the indicators to become more consistent and reliable in terms of reflecting movements in the main business cycle.

According to Venter and Pretorius (2004), the above composite indicators are created by integrating various economic time series in to a single indicator time series that is tracks the movements of the business cycle. It should be noted that a small sample of the total available time series that indicate various aspects of economic activity are used to derive these composite indicators.

The composite lagging business cycle in South Africa makes use of 16 individual time series. Of these 16 the main three that have an effect on the property business cycle are as follows. The first is the value of non-residential buildings completed at constant prices. The second is the ratio of households' use of instalment sale credit to their disposable income and finally the predominant prime overdraft rate of the banks (Venter and Pretorius 2004).

The leading composite business indicator in South Africa makes use of some key time series that are important not only to the general business cycle but also the property cycle. The time series indicating the total number of residential building plans passed for flats, townhouses and houses larger than 80m² is used as a measuring tool in both business cycles as well as an opinion survey of business confidence in the manufacturing, construction and trade sectors (Venter and Pretorius 2004).

Venter (2004) states that the lagging composite business indicator reflects the change in the business cycle after it has occurred as indicated by its name, this allows us to confirm the changes that were first indicated by the leading composite business indicator.

Wilson and Okunev (2001) state that one of the biggest problems in property is that different forecasting techniques produce different results even when applied to the same data sets. A simple explanation for this is that different techniques extract different information from the data sets of the series under consideration.

The implication of the composite indicator is that it reflects the long term trend of a business cycle. This is important due to the fact that the long term trend shows stability as opposed to the short term trend that fluctuates frequently. This allows the individual parties in the property market to make long term decisions based on a more accurate assessment of the related information and data gathered from the market.

Conclusion

This chapter has sought to investigate the available literature pertaining to the various components that help to shape the interpretation of market related data for the South African Property market. One of the key elements that help to shape the supply and demand forces in the real estate market is that it is ultimately governed by human behaviour. One of the most important theories in what has now become known as behavioural economics is the Rational Expectations Hypothesis. An individual's perception of a market is dependant on how that individual receives and interprets the

market related data collected. In today's economy the current markets, with the aid of modern computers and knowledge of how markets work, generate an incredible amount of data. How the individual interprets this data is vital. It is important to understand the components behind the property market in terms of the different types of cycles within the property cycle, what the salient features of these cycles are and what the different phases are in the cycle. In order to establish the details of these cycles market indicators and market data must be analysed in order to get details of the actual market cycle. This interpretation of data is what can affect at what position the relevant parties' are relevant to one another on the property cycle.

Chapter 3: Research Methodology and Data Interpretation

3.1 Research Methodology

According to Malangu (1987) any research that is undertaken must take the form of a formal, systematic and intensive process of scientific analysis. From this research a formalized record of the procedures involved should be detailed and this should be derived from a more methodical structure of investigation.

The type of research methodology should be dictated by the nature of the problem data (Leedy 1993). Malangu (1987) makes use of the following definition for data as the reliable gathering of data by means of objective study. The method of data collection and method of extracting the required information from the data which will help identify the required truth within the data is based on the correct choice of research methodology. Clark *et al.* (2000) explain that in the majority of research cases it would be an impossible task to assess all the elements of a particular set simply for reasons of practicality.

Leedy (1993) explains that there are two main types of data, this being primary data and secondary data. Primary data is data that has been researched by the researcher and this gives the researcher a greater understanding of the data and it origins. Secondary data is the same as primary data however the researcher has not researched the data himself and therefore the process of how the data was acquired is not known in detail and is essentially primary data re-explained. According to (Clark *et al.* 2000) secondary data is defined as any further analysis of an existing data set which presents interpretations, conclusions or additional knowledge relating to the initial report.

The analysis of data can be further defined as either qualitative or quantitative. Clark *et al.* (2000) state that qualitative research is explained, as the method of decribing explanations using non numerical data. Quantitative analysis of data differs from qualitative as it frequently uses a set formula which is applied to a set or sets of data that

the researcher has acquired (Bryman, 1992).For there to be a realistic solution derived from quantitative research certain parameters must be established so as to ascertain the required information, this is done by selecting what is the required and relevant knowledge from the data (Bryman, 1992).

Often in most cases quantitative and qualitative methods are used together in the same research, usually in the form of using qualitative methods to explain the quantitative data (Clark *et al.* 2000). The methods used for qualitative analysis of data are, the descriptive survey and historical survey. The methods used for quantitative analysis of data are the analytical survey and the experimental study (Leedy 1983).

The method that is going to be used in the Qualitative research of this report is the questionnaire. A questionnaire is completed by a respondent without outside influence by the researcher, it is a quick and practical method used to convert information given by people directly into data, which can then be categorised and analyzed by the researcher (Mahlangu, 1987).The questionnaire should only be used where the information required is sufficiently structured so as to allow it to be explained through a printed format (Mahlangu, 1987).The questionnaire is totally impersonal, as neither the researcher nor the respondent see the source from which the data originates (Leedy, 1993).

The method that is going to be used for the Quantitative research of this report is the analytical survey. The analytical survey is very different from qualitative research methods. The analytical survey method uses statistics as a base to determine the research objectives set out by the researcher (Leedy, 1993). Terre Blanche and Durheim (1999) state that the use of quantitative indices to represent a vast array of objects, events and processes being either tangible or non tangible have become such an intergral part of everyday life.

This measurement has allowed researchers to reflect abstract variables into quantitative variables this translation of data variables facilitates research in two ways. Firstly these numbers allow objects to be classified and arranged, and secondly these numbers can be

manipulated by mathematical operations reflecting data that would otherwise be impossible (Terre Blanche and Durheim 1999).

3.2 Data Interpretation

3.2.1 Introduction

This chapter presents the data obtained from the assessment of the relevant market indicators, indices and variables that are used currently in the property market for Johannesburg, South Africa over a ten year period (1996-2006). The relevant data will be presented and findings presented. The findings will be presented in the form of line graphs and histograms.

3.2.2 Geographical area selection

The Johannesburg property market was selected due to the fact that it is one of the most condensed area's when it comes to property in South Africa. An investigation into the levels of construction projects currently under way in the area shows that by far Johannesburg and its surrounding suburbs leads South Africa in terms of residential development. This may also be due to the fact that a large portion of the working population currently resides in Johannesburg.

3.2.3 Assessment of Data

Due to the nature of this investigation both qualitative and quantitative methods have been used, the first part of the research was the identification of indicators, indices and variables that are used in the property market. These indicators, indices and variables are what allow us to gauge movement in the market. These indicators are formed from a range of different data sets and financial instruments and are normally a combination of two or more variables.

3.2.4 Sources of Data

This collection of the relevant indicators is what forms the quantitative analysis of the above research. The information gathered were sourced from three major bodies that collect the data for public use, these being the South African Reserve Bank, Statistics South Africa and Absa Banks research division. All information was acquired from the respective internet websites of the above institutions and is from published documents which have been converted to be viewed electronically. All documents and tables are available in the respective appendices and the respective internet web addresses where the documents can be found are included. This forms the first part of the intended research.

3.2.5 Market Indicators

The following list is of the most important and used indicators, indices and variables used by the individuals and companies when assessing the property market. A short explanation of what they comprise of and reflect is given. The decision to use these is due to the fact that these indicators are currently being used by the Reserve Bank, ABSA Economic Research and Statistics South Africa:

Table 2 Market Indicators

Market Indicator	Explanation/Interpretation
Consumer Price Index (CPI)	This is an index of the prices of a representative basket of consumer goods and services.
CPIX	This is the Consumer price index excluding interest rates on mortgages.
Nominal growth in average house price	This is the year on year percentage change in prices in housing using the current market prices.
Real growth in house prices	This is the year on year percentage change prices of housing using the current market price deflated by a price index to obtain constant price or real data.
Real disposable income	This reflects the year on year percentage change of current disposable income deflated by a price index to obtain real disposable income.

Household debt to disposable income	This is the ratio of household debt to disposable income. This figure is given in the form a percentage value.
Affordability of housing	This is a combination of the repayment to remuneration ratio against the house price to remuneration ratio. If the repayment to remuneration value is less than the house price to remuneration value then houses are unaffordable. The opposite is true for this as well.
Capitalization rate	A capitalization rate is the ratio of current cash flow to value or the inverse of price earnings (or rent) ratio. Thus, capitalization rates tell us how assets are priced.
Housing production	This is a chart explaining the amount of building plans passed by the city council in a given period as well as the amount of projects completed in a given period.
Price difference of new and old housing Or Nominal House Prices	This shows the average actual house price using current figures.
Real house prices	This shows the average actual house price using the current market price deflated by a price index to obtain constant price or real data.
Household debt	This shows the percentage increase in the amount of debt a household has as a percentage of their disposable income.
Inflation	This is the year on year percentage increase of the Consumer Price Index.
Interest rates	The interest or prime overdraft rate is probably the most widely used market indicator. This figure is set and monitored by the South African Reserve Bank.
House price to remuneration ratio	This is a ratio showing the relationship between what the real house prices are to remuneration. This is one of the ratios used to evaluate affordability of housing.
Repayment to remuneration ratio	This is a ratio showing what the amount a household uses as repay
Mortgage rates	This is the same as the interest or prime overdraft rate and is probably the most widely used market indicator. This figure is set and monitored by the South African Reserve Bank.
Vacancy rates	This can be expressed also as occupancy rates and it values the amount of vacant or occupied floor space in a given area or type of property.

The data time period examined for the above variables and indicators is from January 1996 through to present being September 2006, where possible in some cases data is only available from the year 2000. The data in most cases of the above are collected monthly and this was averaged to give a year on year figure. The base year for all of the above where necessary is the year 2000.

3.2.6 Quantitative assessment of data

The analysis of the above data was done in the following way. As only a number of the above data came in monthly reports the decision was made to convert all of the above data into yearly data. This was done by averaging the monthly figures according to the months in a year. The final data was then collected and each respective data selection was used to find the above market indicators.

Each of the above market indicators is represented by an individual graph which shows the market indicator plotted against the time period 1996 through to 2006. This graphical representation gives a good indication of how the respective market indicator has progressed over time and this indicates the specific market indicators movement in its market cycle.

The comparison of the above market indicators against the South African Reserve Banks standard market indicators it will be possible to establish which market indicators are lagging market indicators, coincidental market indicators or leading market indicators. By the comparison of the turning points of the cyclical components of individual time series with the reference turning points it is possible to identify certain business cycle indicators.

3.2.7 Findings

The following is what was found when the data was analyzed.

3.2.7a Consumer Price Index

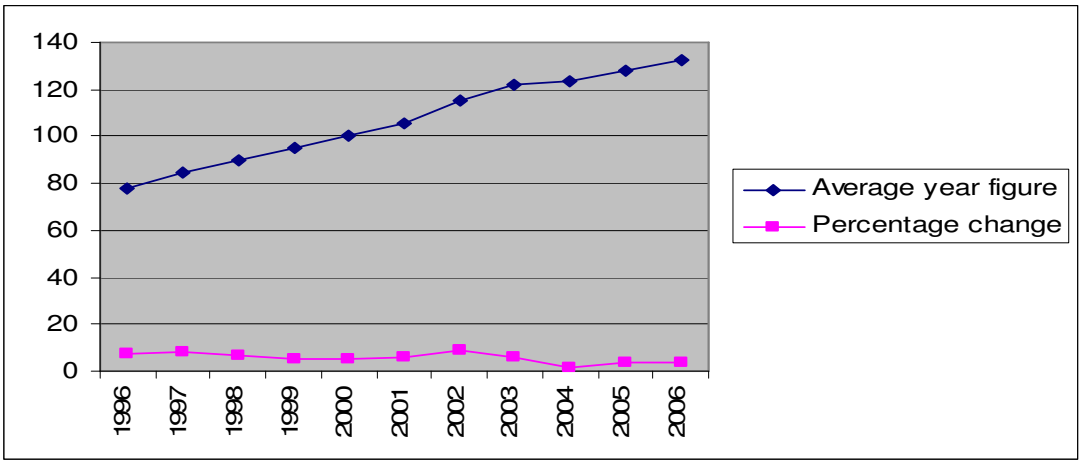

Figure 3.2.7a Consumer Price Index (Source: Statistics South Africa)

From the graph we can see that the consumer price index (CPI) has increased steadily between 1996 and 2006. However the CPI grew quite rapidly between 1996 and 2002 with an average growth for this period being 6.9 percent. This however seems to have slowed down between 2002 and 2006 with an average growth of 3.6 percent.

3.2.7b Consumer Price Index less Mortgages

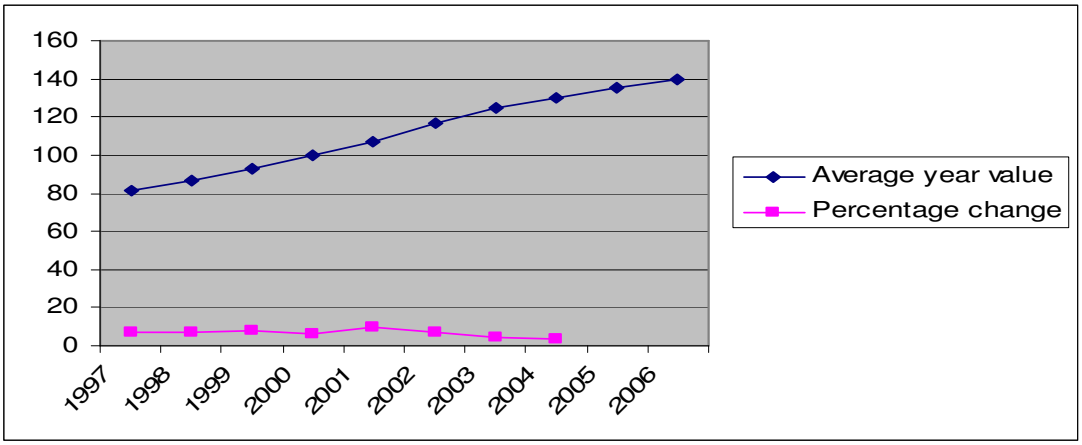

Figure 3.2.7b Consumer Price Index less Mortgages (Source: Statistics South Africa)

From the graph we can see that the consumer price index less mortgages (CPIX) has followed the same pattern as the CPI which was a steady increase steadily between 1996 and 2006. However the CPIX grew quite rapidly between 1996 and 2002 with an average growth for this period being 7.5 percent. This however seems to have slowed down between 2002 and 2006 with an average growth of 5 percent.

3.2.7c ABSA House Price Index

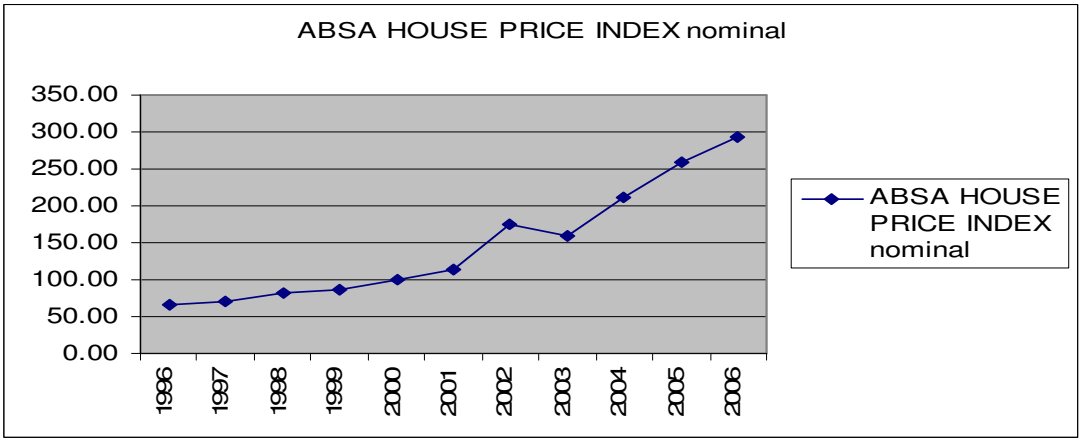

Figure 3.2.7c ABSA House Price Index (Source: ABSA monthly data)

The ABSA house price is an index that ABSA have been keeping track of since the mid 1960's. The index is calculated by dividing the average nominal house price for that year by the average nominal house price for the base year, in this case the year 2000, and multiplying the answer by 100. This allows us to see quite clearly what the yearly increase in house prices is. From the graph we can see that between the year 1996 and 2001 there was a very steady increase in the index by an average of 86.41. This seems consistent with the economy at this stage as there was very little construction happening. There is a rapid increase in the house price index in 2002 due to the increased volume of construction from 2001. This dropped slightly mid 2002 but has increased rapidly till 2006 with an average increase of 219. The latest data seems to suggest that this is starting to taper of going into 2007 probably due to the massive oversupply of housing at present. A strong levelling off of prices should happen by late 2007.

3.2.7d Nominal and Real Growth in Average house Price

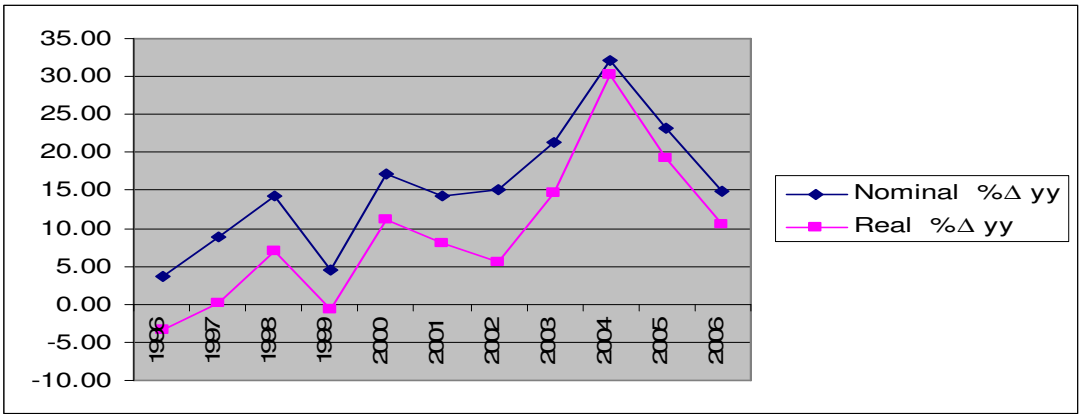

Figure 3.2.7d Nominal and Real Growth in Average house Price (Source: Absa Monthly data)

Due to the fact that prices need to adjust to eliminate price changes, the original data which is known as current or nominal prices have to be deflated by a price index to get the constant or real price.

The above graph reflects the percentage growth of nominal and real house prices for the period, 1996 to 2006. As can be seen the growth between 1996 and 1998 was steady until 1999 with a growth of 8.97 for nominal and 1.3 for real house prices. A sudden decrease in both nominal and real occurred in 1999 and between 2000 and 2004 showed a rapid average increase of 19.97 for nominal house prices and 13.93 for real house prices. A rapid decrease of both nominal and real house prices has occurred between 2004 and 2006 with an average decrease of 19.11 for nominal and 14.87 for real house prices. This is consistent due to the massive oversupply of housing production for the previous years and due to this the extreme high prices are not viable for purchases any more.

3.2.7e Real Disposable income

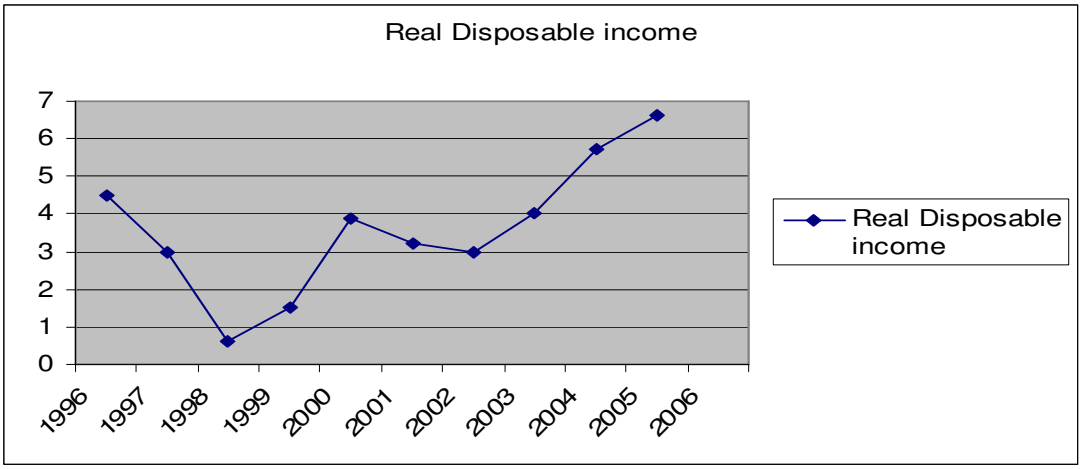

Figure 3.2.7e Real Disposable income (Source: South African Reserve Bank Quarterly Bulletin September 2006)

The above graph reflects the real disposable income for households for the period 1996 to 2006. The years 1996 to mid 1998 show a gradual decrease of disposable income with it starting to increase by the year 1999. The of 2000 saw a massive increase of 3.9 percent and a rapid but steady increase of 4.5 for the period 2001 to 2002.This increase of disposable income can be related to the affordability of housing and could reflect the increase of housing purchases for that period leading to the excessive house prices due to rapid demand.

3.2.7f Household debt to disposable income

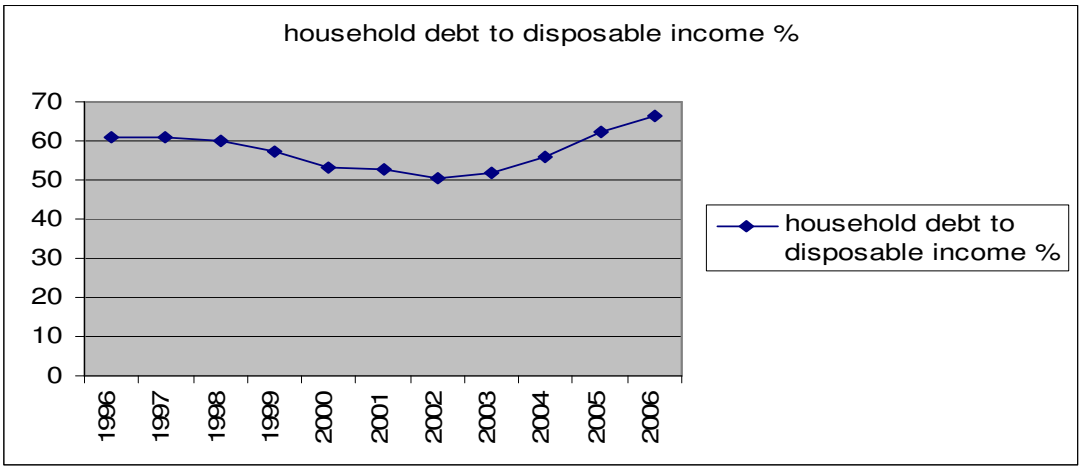

Figure 3.2.7f Household debt to disposable income (Source: South African Reserve Bank Quarterly Bulletin September 2006)

This graph reflects the household debt to disposable income for the period 1996 to 2006.The years 1996 to 2002 show a gradual decrease of household debt to disposable income. The period 2002 shows a rapid increase of household debt. This is linked to the market as banks are willing to offer more credit advances to individuals in the form of mortgages on houses and lease purchases when household income increases with the market. A 66.4 percent ratio of debt to disposable income is very high and defaulting of payments is expected to increase by late 2007**.**

3.2.7g Affordability of housing

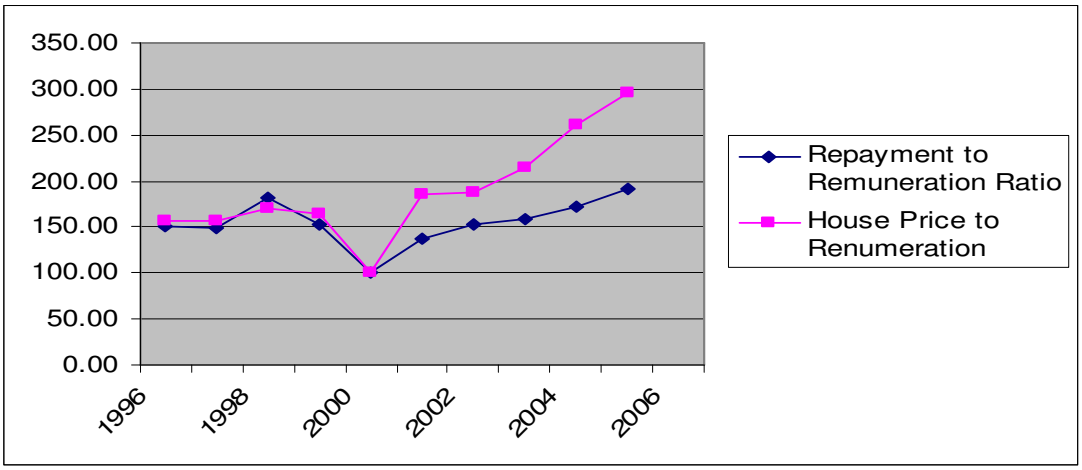

Figure 3.2.7g Affordability of housing (Source: South African Reserve Bank Quarterly Bulletin September 2006 and ABSA Monthly Data)

This graph combines two ratios, these being the Repayment to Remuneration ration and the House Price to Remuneration. By showing these two ratios on the same graph a clear indication of the Affordability of housing can be seen. From the period 1996 through to even mid 2000 these two ratios basically track each other, this could be due to the slowing down of the economy in this period. However after the year 2000 there is a rapid increase in both ratios. However the rapid increase in house prices compared to the increase of remuneration has started to make it unaffordable as the repayments on bonds for these properties cannot be covered on current earnings.

3.2.7h Capitalization Rate

A capitalization rate is the ratio of current cash flow to value or the inverse of price earnings (or rent) ratio. Thus, capitalization rates tell us how assets are priced.

3.2.7i Repayment to Remuneration

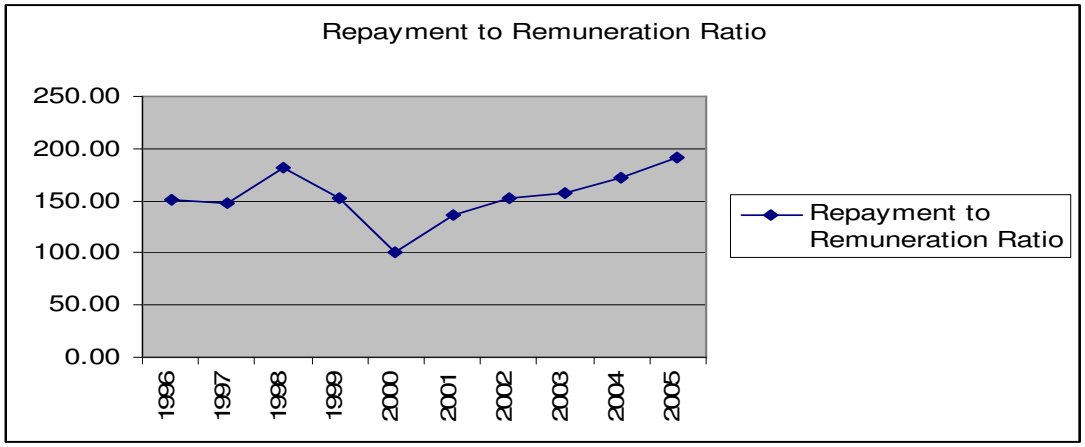

Figure 3.2.7i Repayment to Remuneration (Source: South African Reserve Bank Quarterly Bulletin September 2006 and ABSA Monthly Data)

The repayment to remuneration ratio indicates what the average monthly repayment is for the average house as a ratio to the average amount an individual earns per a year. According to the graph the repayment of mortgages compared to remuneration started to decrease from the year 1998 up until its lowest point in the year 2000. After the year 2000 there is a rapid increase in this ratio which indicates that due to increase in house prices the monthly payments of mortgages has increased whilst remuneration may have increased slightly but not at the some rate.

3.2.7j Housing Production

Please refer to Table 3.2.7j in Appendix 6 for housing production.

3.2.7k Price difference of new and old housing or Nominal house prices

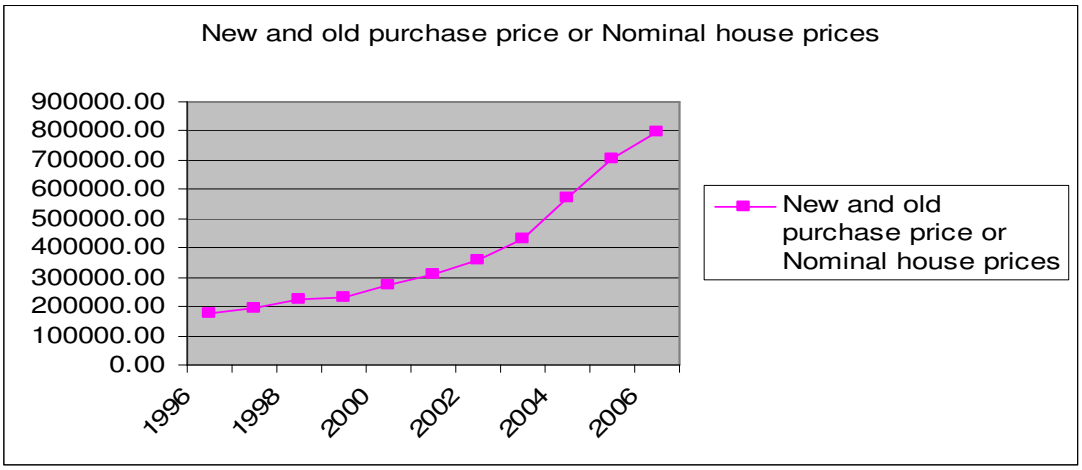

Figure 3.2.7k Price difference of new and old housing or Nominal house prices (Source: ABSA Monthly Data)

This graph reflects the gradual increase of new house prices for the period 1996 to 2006. This graph show the indicative S-Curve showing the smooth increase of new house prices which can be seen to be tapering of towards the end.

3.2.7l Real house prices

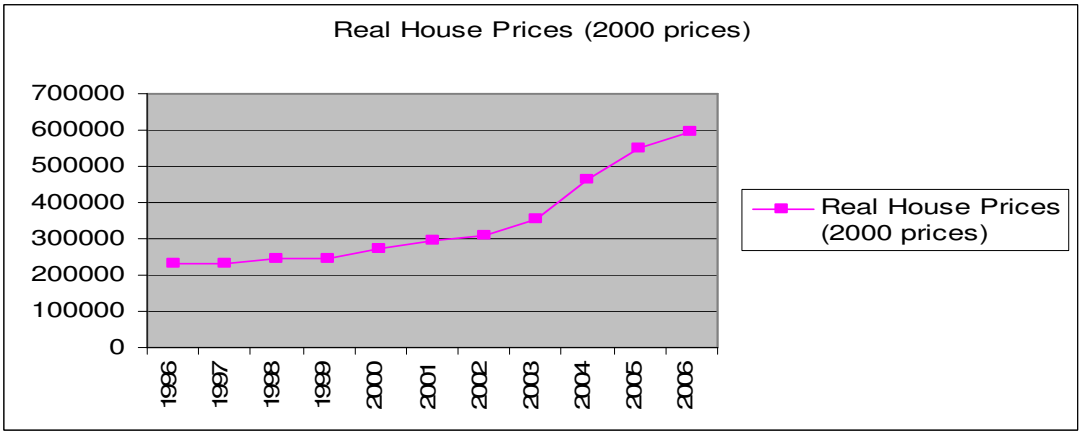

Figure 3.2.7l Real house prices (Source: ABSA Monthly Data)

This graph reflects real house prices adjusted to the base year which in this case is the year 2000. It follows the same steady increase of house prices with a slightly quicker increase from 2003. Real house prices seem to be tapering off in 2006**.**

3.2.7m Household debt

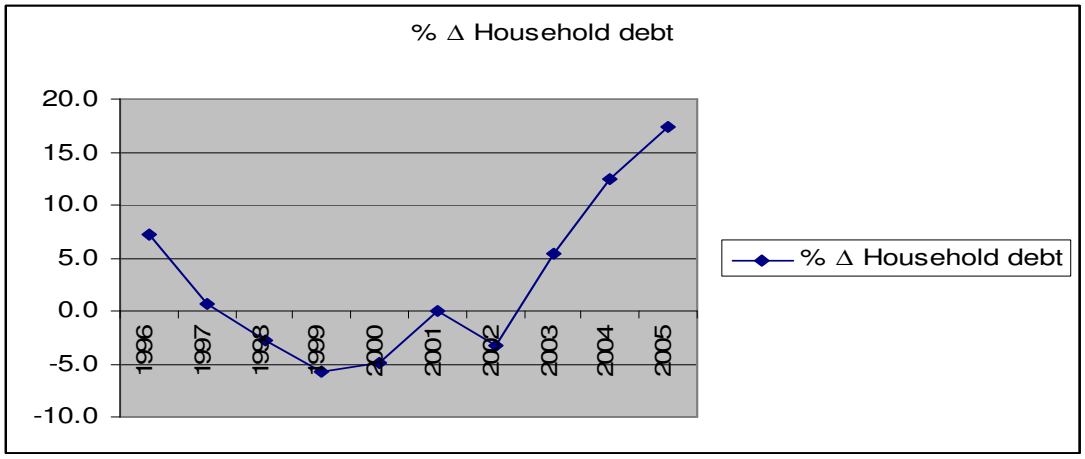

Figure 3.2.7m Household debt (Source: South African Reserve Bank Quarterly Bulletin September 2006)

This graph represents the percentage change in household debt for the period 1996 to 2006. The graph indicates that from 1996 to 1999 household debt dropped considerably from 7.3 percent to -5.7 percent. This consistent with the market conditions for this period as household were spending less and using less credit due to high interest rates and tough market conditions to name a few. For the period from 1999 to 2006 the level of household debt has increased very rapidly. One of the main reasons for this is the tremendous amount of credit households are making use of in terms of mortgages and higher purchase leases.

3.2.7n Interest Rates/Prime Overdraft rate

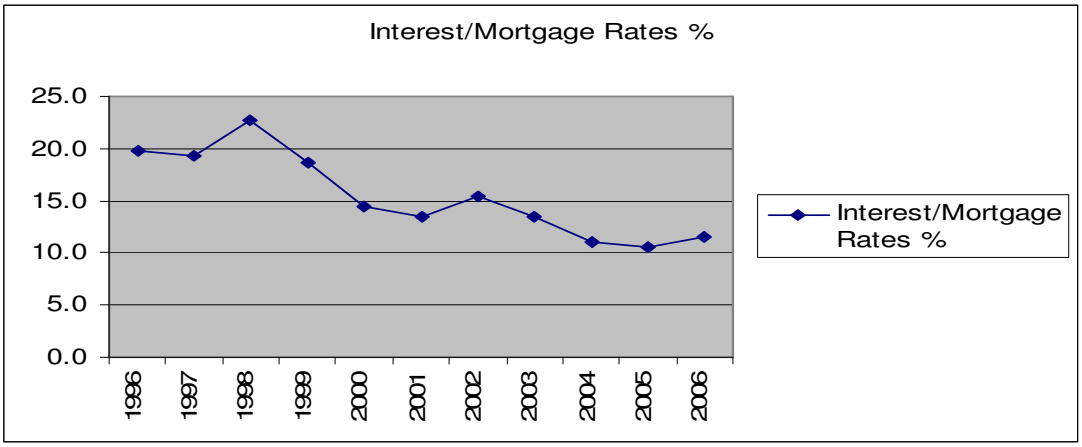

Figure 3.2.7n Interest Rates/Prime Overdraft rate (Source: South African Reserve Bank Quarterly Bulletin September 2006)

This graph reflects the average interest rate for the period 1996 to 2006 and it is the exact same graph as mortgage rates. Since 1998 there has been a steady decrease in the prime overdraft rate. The interest or prime overdraft rate is probably the most widely used market indicator. One of the reasons for this is due to the fact that the average person bases mortgage and lease purchase payments on the expected interest rate and the amount it changes has a direct effect on the individual in terms of costs.

3.2.7o Debt servicing to disposable income

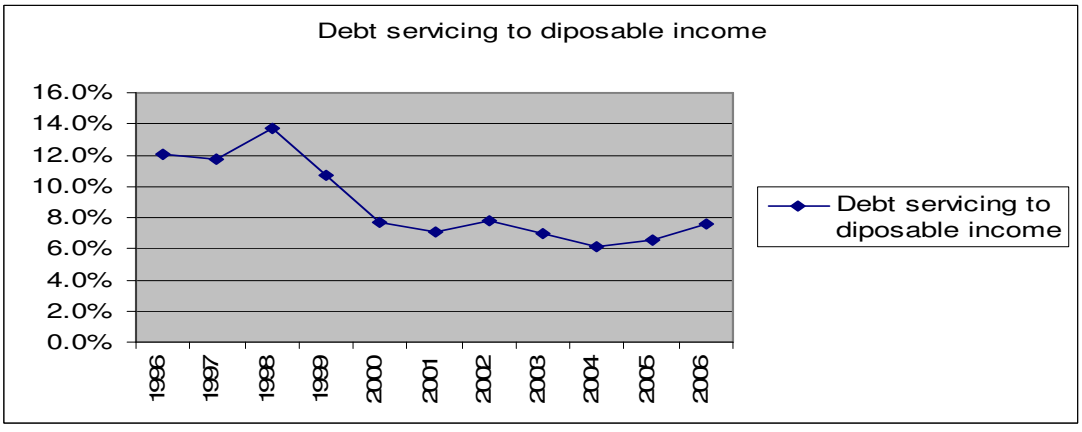

Figure 3.2.7o Debt servicing to Disposable income (Source: South African Reserve Bank Quarterly Bulletin September 2006)

The debt servicing to disposable income was calculated by multiplying the household debt to disposable income by the average interest rate for that year. This method is used by ABSA as the South African Reserve Bank does not explain the methodology behind their figure although the figure used by ABSA closely follows the SARB. The graphs shows that debt servicing to disposable has decreased from 1998 through to 2004 and started to slightly increase from 2004 till present. It should be noted how ever that although there is a decrease the actual ratio has decreased as the interest rate decreased, with a decrease in the interest rate however credit increases therefore the cost to service this credit should also increase.

3.2.7p House price to remuneration ratio

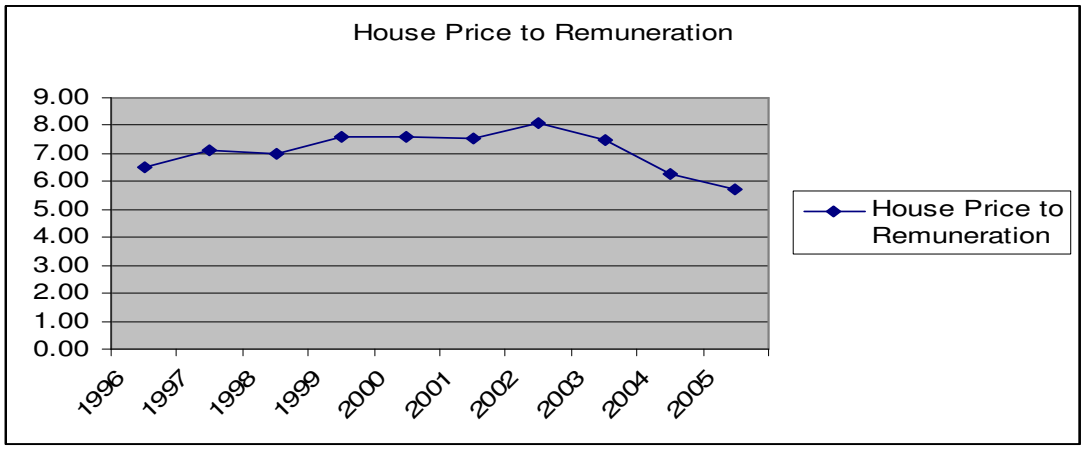

Figure 3.2.7p House price to remuneration ratio (Source: South African Reserve Bank Quarterly Bulletin September 2006 and ABSA Monthly Data)

This graph reflects the house price to remuneration ration for the period 1996 to 2006. It was calculated by taking the gross national income per a capita and dividing it by the real house prices using the year 2000 prices and multiplying it by 100. As can be seen the graph gradually increases from 1996 through to 2002 and then starts to decrease rapidly.

The graph reflects the purchasing power according to remuneration and as the graph increases it means house prices are affordable whilst when the graph decreases this indicates that prices of houses are becoming too expensive for the average person to purchase. The rapid increase of house prices can be seen above in the Graph for real house prices.

3.2.7q Interest / Mortgage rates

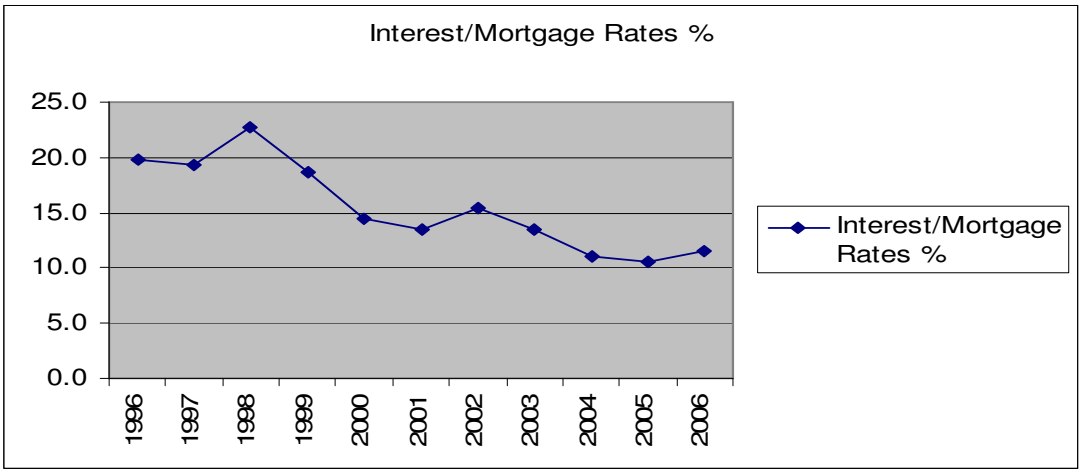

Figure 3.2.7q Interest / Mortgage rates (Source: South African Reserve Bank Quarterly Bulletin September 2006)

This graph reflects the average interest rate for mortgages for the period 1996 to 2006. Since 1998 there has been a steady decrease in the mortgage rate or prime overdraft rate. There is a very distinct correlation between the mortgage interest rate and the actual behaviour of individuals in terms of purchasing property including constructing new property. As the interest rates decrease it becomes more affordable to take out loans in order to finance purchases and projects.

3.2.7r Vacancy rates

This is dependant on many factors those being seasonal, zonal, property type and function, cost to name a few.

3.2.8 Qualitative Assessment of Data

The qualitative assessment of data was done by sending out a questionnaire comprising of twelve questions. The questionnaire was set up to answer the research objectives laid out in chapter 1. In total one hundred and fifty questionnaires were sent out with only 12 responding back in time. Although this is not ideal it is felt that this figure is sufficient for the above study.

Chapter 4: Data Analysis

4.1 Introduction

This chapter presents the data obtained for the assessment of the interpretation of market related indicators, indices and variables for the South African Residential Property Market. The data collected will be presented in the form of pie charts and histograms.

4.2 Selection of Respondents

In order to collect the relevant data it was decided to break the research respondents into basically 5 categories these being the following Government, Construction, Property Development / Management, Banks and Insurance houses as well as Purchasers.
The questionnaire was sent out to companies who take part in each of the above categories as it was found that these are the basic categories that companies who are involved in the property market fall under. It was felt that it should be sent out to these companies as they would be able to give the most accurate assessment of the Primary research objectives. They are as follows:

1) Establish at what stage each party in the property market is at relative to one another on the market curve

2) Identify the Major sources of information for each of the party's.

3) Examine what effect the different types of sources of information might have on each party.

4) Determine the lag or lead each party has according to one another on the property market curve.

The questionnaire was sent to a random selection of companies from the South African Property Owners Association (SAPOA) register as well as a number of random construction companies, banks, Insurance houses, private individuals and Government Bodies and Property Market related companies. This list was further narrowed down by sending the questionnaires to the localized Johannesburg division of the company if necessary.

4.3 Responses to Questionnaire

Please note that the same questionnaire was sent to all respective respondents and did not differ in any way.

4.3.1 Responses to Question 1

The response to the above question showing breakdown of the type of companies that responded to the questionnaire showed the following results. It should be noted that the companies that responded may comprise of a combination of the listed business types/fields.

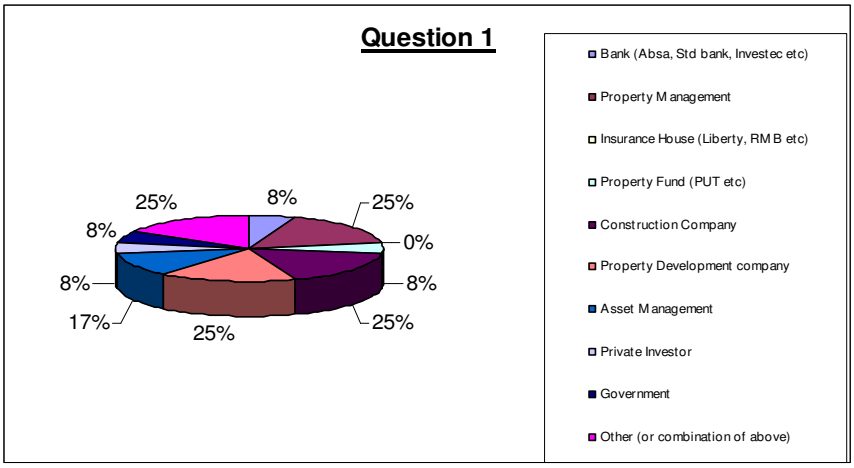

Figure 4.3.1 Breakdown of type of companies who responded to questionnaire

Banks that responded accounted for 8% with a large portion of the respondents being 25% coming from Property Management companies. This percentage of respondents of 25% was also the same for Construction companies, Property development companies and/or other types of companies or a combination of the above listed areas of business. The remainder of the respondents comprised of Property Funds or Property Unit Trusts, Private Investors and Government all making up 8% each of total respondents. Asset Management Companies made up 17% of the respondents with no Insurance house companies responding.

4.3.2 Responses to Question 2

The question indicated what percentage of the basic five groups that the Property Market can be broken down to responded to the questionnaire.

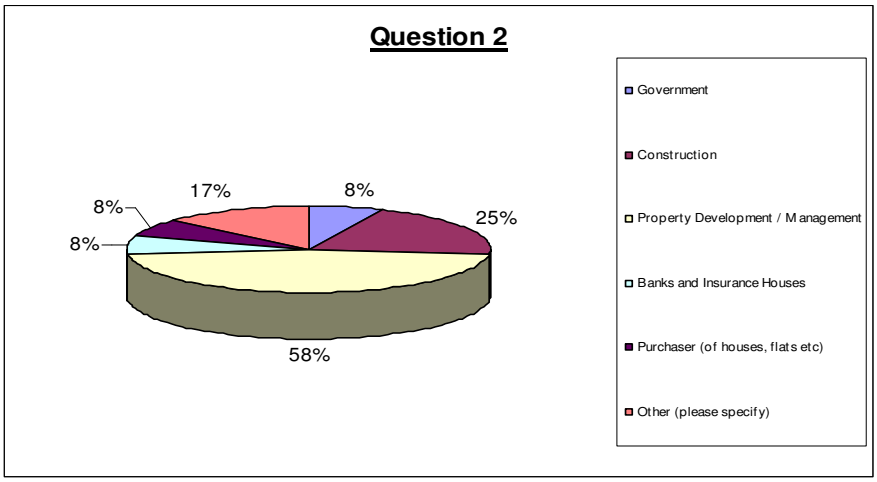

Figure 4.3.2 Breakdown of the general groups associated with the Property Market

The breakdown of the general groups in the Property Market that responded to the questionnaire is the following. The majority of respondents fall under the Property Development/Management with 58%. This is followed by 25% of the respondents being involved in Construction companies. 17% of the respondents felt that they did not fall under any of the categories with the following groups each making up 8% of the respondents, these being the Banks, Government and Purchasers.

4.3.3 Responses to Question 3

The following is a summary of what market indicators, indices and variables are most commonly used by the respondents to the questionnaire. The list of indicators, indices and variables was taken from the South African Reserve bank, ABSA Bank research division and Statistics South Africa as the most commonly indicators looked at.

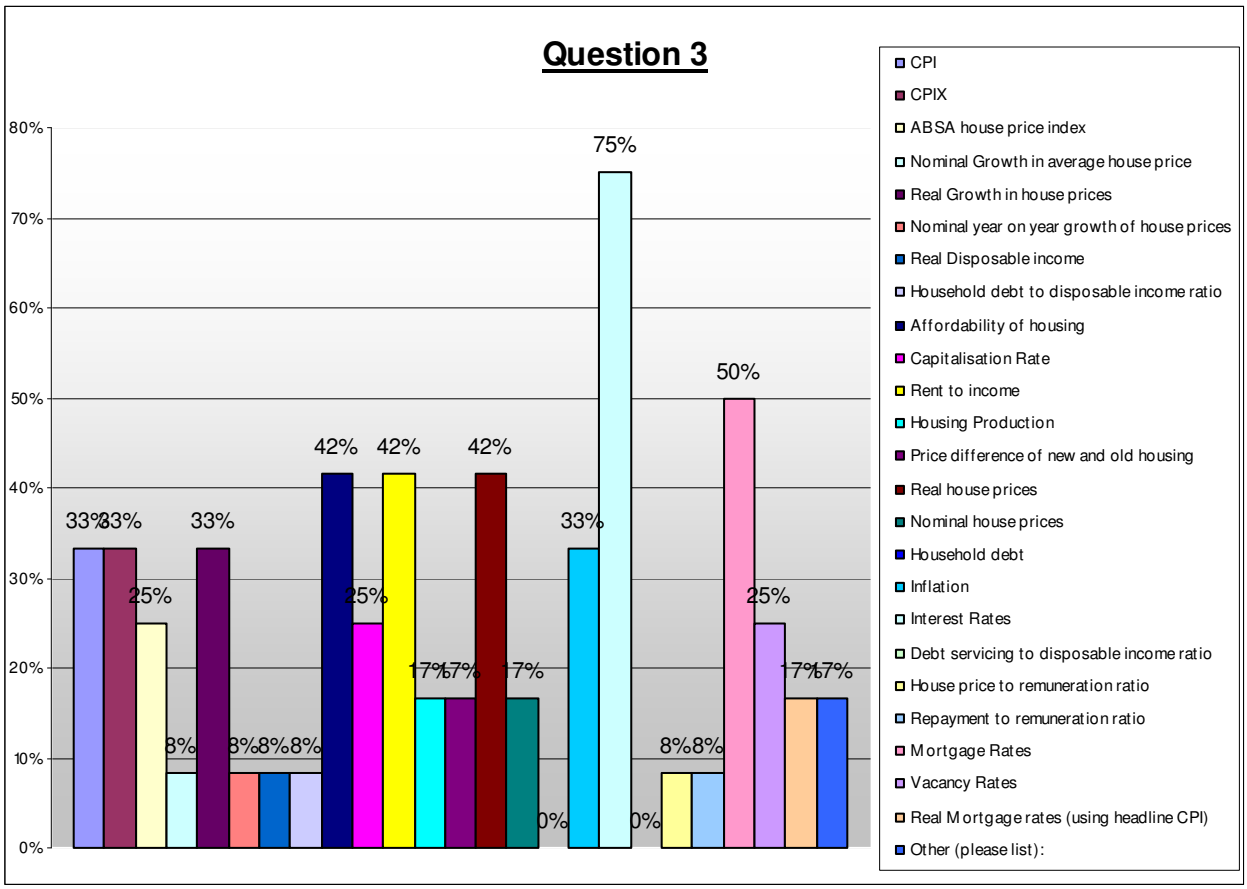

Figure 4.3.3 Market Indicators, indices and variables most commonly used in the Property Market.

The most widely used indicator that the respondents make use of is the Interest rate, 75% of the respondents use this as an indicator when making decisions surrounding property. The next most common indicator used is the prime mortgage rate, 50% of the respondents used this as a key indicator. Real House Prices as well as Affordability of

Housing were the next most commonly used indicators with both being used by 42% of the respondents.

Going down the list the next most used indicators by the respondents are the CPI, CPIX, Real Growth in House Prices and the general Inflation Rate, 33% percent of the respondents made use of these. Although two of the next most widely used indicators and variables are used mainly for commercial and Industrial Property 25% of the respondents make use of Capitalization Rates and Vacancy Rates. The ABSA House Price Index is also used by 25% of the respondents.

A further 17% of the respondents made use of the following in making decisions surrounding property these are Housing Production, Price Difference between old and new houses, Nominal House Prices and Real Mortgage Rates. The same figure of 17% also stated that they used other indicators in terms of making decisions such as Qualitative Data on Nodal Trends and JBAR. Only 8% made use of the following indicators Nominal Growth in House Prices and Nominal year on year growth of houses, Real Disposable Income, Household Debt to Disposable Income, House Price to Remuneration Ratio and finally Repayment to Remuneration Ratio.

The two indicators that were not looked at by any of the respondents are Household Debt and Debt Servicing to Disposable Income.

4.3.4 Responses to Question 4

This question broke down what media sources of information are most commonly used by respondents. The list comprised of the most general media sources and did not go into specific detail.

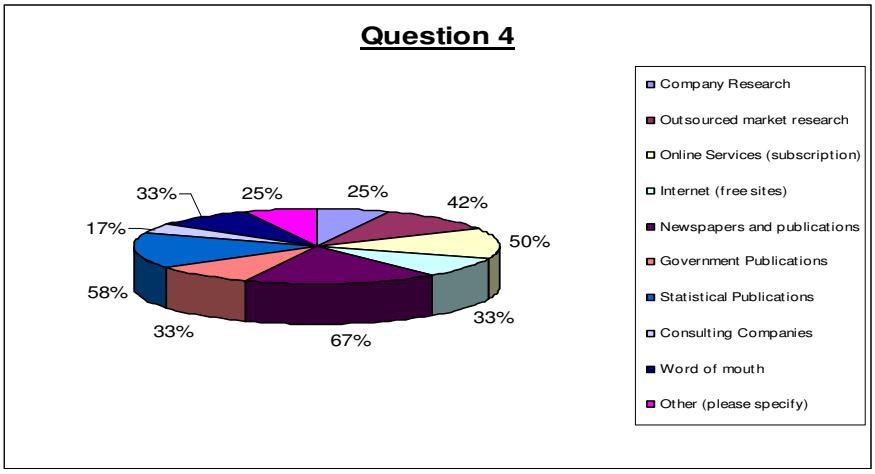

Figure 4.3.4 Sources of Information

The sources of information used by companies varied quite a bit. Newspapers and Publications are used the most to attain information with 67%. The next major source of information is through Statistical Publications with 58% making use of this. 50% of respondents made use of online subscription services whilst 33% made use of free online websites for information. Outsourced market data and information was used by 42% of companies. The use of word of mouth plays apparently a vital role in the flow of information as 33% of the respondents stated they receive information through this means. Government Publications also serve as sources of Information for 33% of companies. Other sources of information were used by 25% of companies and only 25% of companies made use or had their own company research available. Finally 17% of companies made use of consulting firms for sources of information.

4.3.5 Responses to Question 5

The role of speculation in the property industry has a major effect on prices and how people generally react to movements. Therefore it was felt that it was important to find out on what basis decisions were being made on. The simplest way to find out what this is to see whether or not people are making use of historical figures or not.

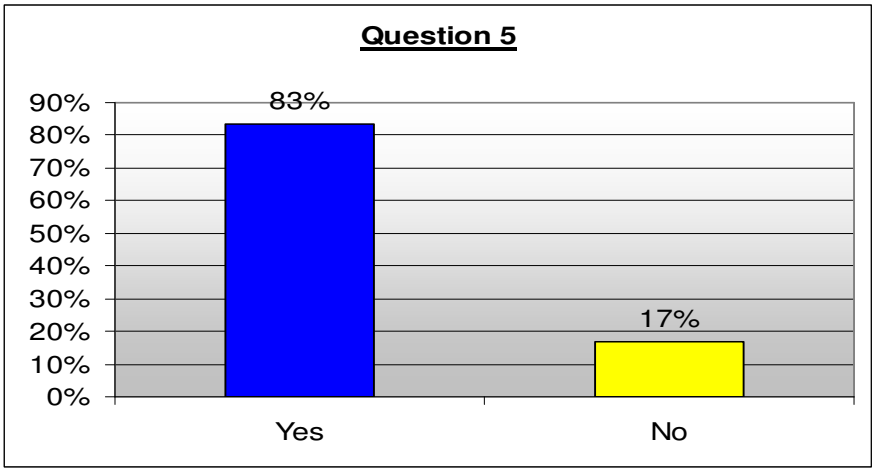

Figure 4.3.5 Use of Historical Prices

The use of historical prices and figures to base decisions on shows that adaptive expectations are being used by the individual in their decision process with a firm 83% of respondents making use of historical prices and figures. It can be speculated that the remaining 17% who don't make use of historical figures make use of rational expectations in their decision process.

4.3.6 Responses to Question 6

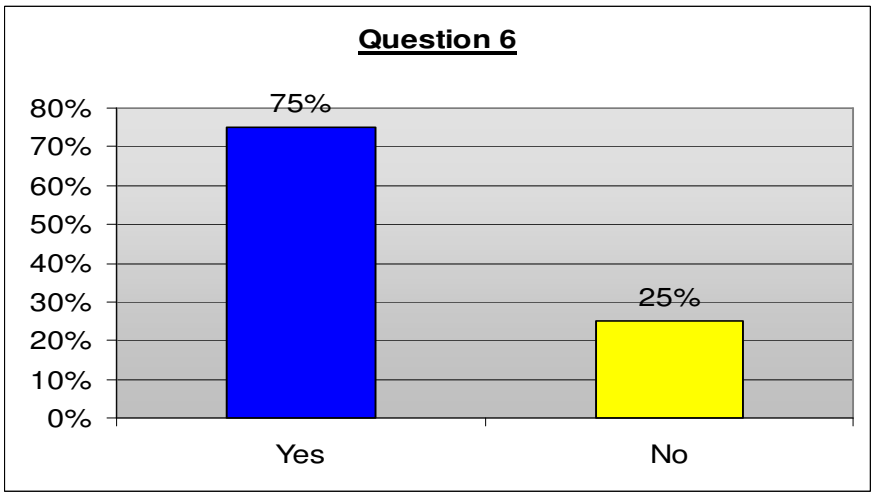

Figure 4.3.6 Access to Information

Respondents were asked whether they think they have equal opportunity in terms of access to information compared to other parties in the property market. It was found that 75% of the respondents felt they do have equal opportunity in terms of access to information with the remaining 25% expressing that they do not have equal opportunity to information.

4.3.7 Responses to Question 7

The question was asked how often information is updated within the companies. This is important as different indices are updated at different intervals and they are not updated simultaneously.

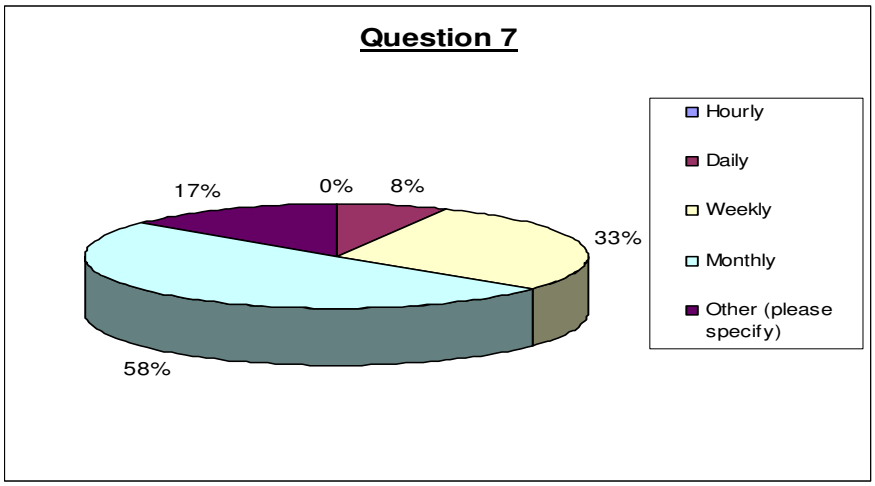

Figure 4.3.7 Intervals of information updates

Due to the amount of time and effort required to collect and collate data it was expected that no companies update the data on hourly basis. It was found however that 8% of companies update the required data on a daily basis. In terms of updating data on a weekly occurrence 33% of companies do this on a regular basis. By far the greatest percentage, 58% of companies only update their data on a monthly basis. It was also found that 17 % percent of companies update their data over longer periods. These were given as quarterly and yearly by respondents who answered other.

4.3.8 Responses to Question 8

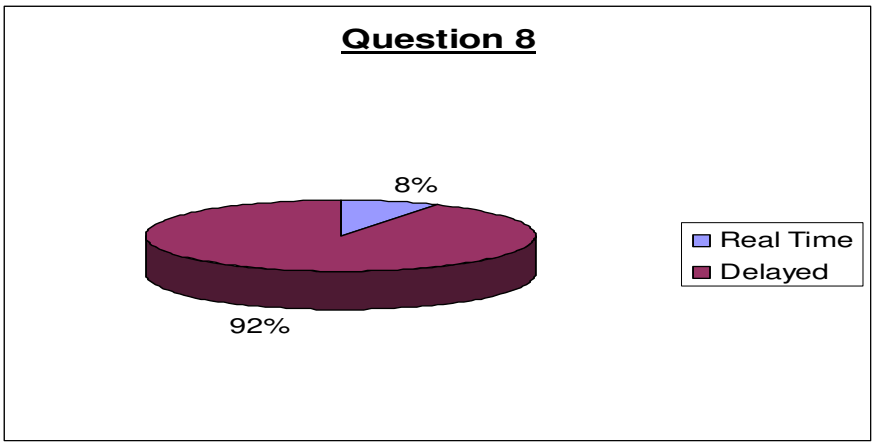

Figure 4.3.8 Relay of Information

Respondents were asked if they felt that the information received was received in real time as in with no delays or if it had been delayed. The majority of respondents being 92% felt that information was delayed and only 8% felt that the information received was adequate to be termed real time information with no delays.

4.3.9 Responses to Question 9

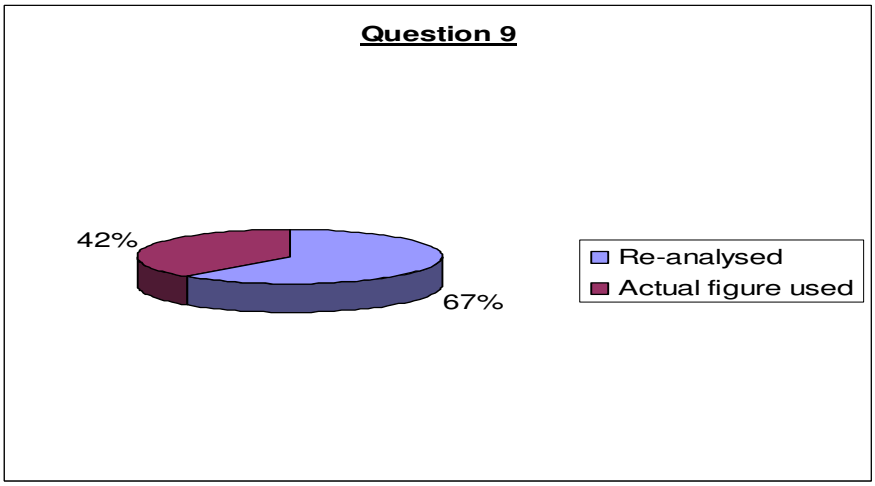

Figure 4.3.9 Treatment of data

How data is treated affects what information it is going to relay. This due to the fact that the raw data can be manipulated to show specific results and is not a 100 percent true reflection of what the data should indicate. From the responses 67 % percent of companies and or individuals re-analyse the data received from other sources whilst 42% percent of the respondents make use of the original data. It should be noted that the data received by companies is most likely already filtered through models which help to reflect specific figures required by companies.

4.3.10a Responses to Question 10

In order to try and establish at what point in the property market cycle companies and or individuals perceive themselves to be, a list of salient features prevalent in all business cycles was listed. These features were broken up in to the four main phases of a cycle. These being the 1st phase of the upswing, 2nd phase of the upswing, 1st phase of the downswing and finally the 2nd phase of the downswing. Respondents were asked to tick which phase of the cycle they currently believe themselves to be in, if in between phases they were asked to tick both phases that they believe they are between.

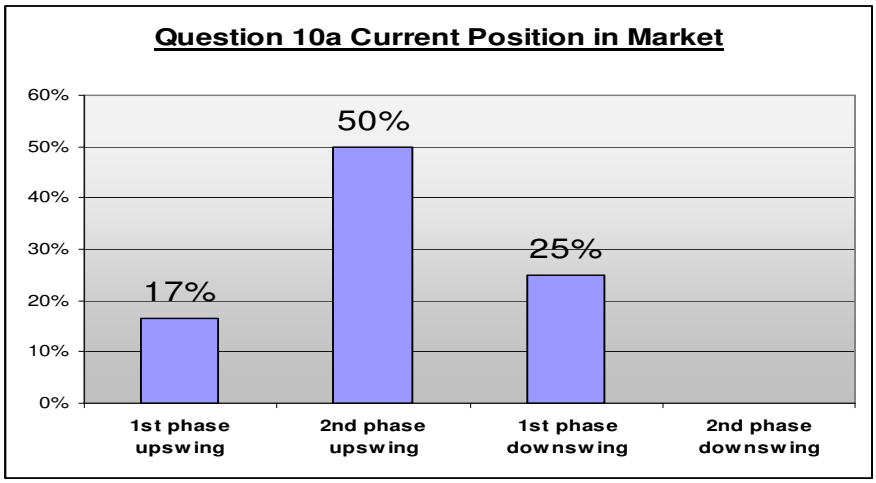

Figure 4.3.10a Current position in Market

The results showed that 50% of all respondents perceive themselves to currently be in the second phase of the upswing according to what salient features they currently believe to

be prevalent in the market. Of the remainder of the respondents 17% believe themselves to currently be in the 1st phase of the upswing and 25% believe themselves to be in the 1st phase of the downswing according to what salient features they currently believe to be prevalent in the market. It also indicated that 0% of the respondents felt they were in the 2nd phase of the downswing with the remaining 8% of the respondents indecisive of what position they are currently in.

4.3.10b Responses to Question 10

The same format used for part (a) of this question is used for the part (b). However respondents were asked to indicate at what stage in the business cycle they perceived themselves to enter into the market.

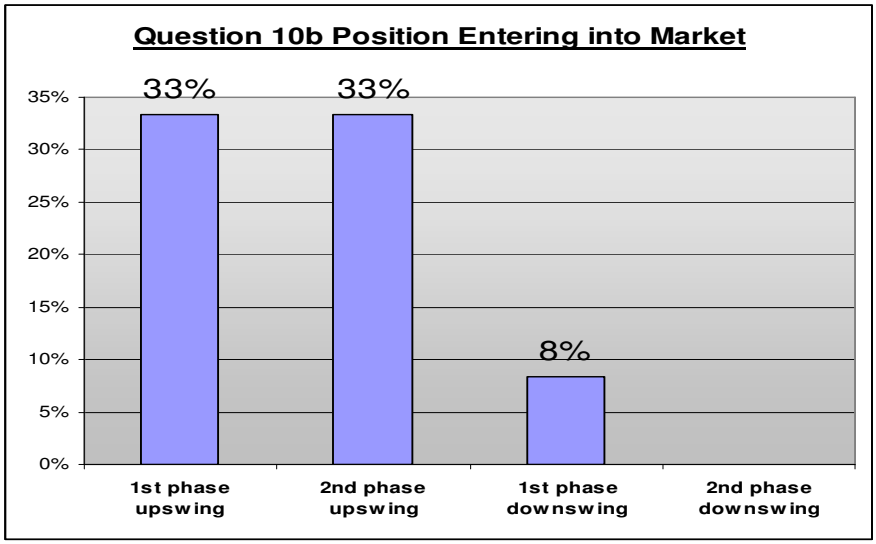

Figure 4.3.10b Position entering into the market

The results showed that 33% of all respondents perceive themselves to currently be in the 1st phase of the upswing and the second phase of the upswing according to what salient features they currently believe to be prevalent in the market. Of the remainder of the respondents 8% believe themselves to be in the 1st phase of the downswing according to what salient features they currently believe to be prevalent in the market. Once again 0% of the respondents believe themselves to be in the 2nd phase of the downswing.

4.3.11 Responses to Question 11

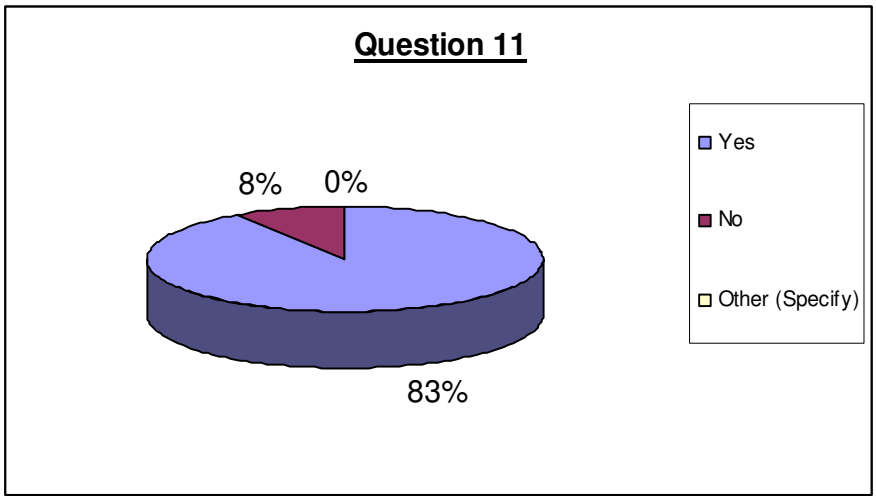

Figure 4.3.11 Past experience used to make decisions

The respondents were asked if the past experience from previous cycles helped in the making of any decisions. Even though cycles differ in length and amplitude they follow the same pattern and it is the awareness of these patterns that help to form educated decisions surrounding specific events. A large portion of respondents, 83% of them say that past experience aids them in making decisions whilst only 8% say that they do not base decisions on past experiences.

4.3.12 Responses to Question 12

Question 12 was an opinion based question and asked the respondents if they felt enough research was currently being done in the field of Property cycles. A high percentage of respondents, 75% responded to this question. Listed below are some of the responses to the question.

- For our market, yes, but it would have more relevance by being more detailed, i.e. It would be very useful if the cycle drilled down more into macro/micro and nodal causes for downturns in areas, that the cycle was area specific and maybe a bit

more specific about pinpointing the causes. There may be 16 phases in the cycle as opposed to 4, and critical decisions and scenario planning could be more effective if the more detailed information was available.

- I have answered these questions from a private perspective as an owner in the residential property market. When dealing with listed property very different valuation methodologies may be used.
- Municipality records needs to be updated and telephone numbers of property owners should be made available.
- Information is generally limited, delayed and more readily available to financial institutions and facility management entities.
- No there is always room for more research. Perhaps linking property to earlier signs and other structural elements.
- No. More specific information would be of use to many different organisations, but each has particular requirements for this information. Too many people try to use information to time a market, as opposed to identifying a long-term and sustainable need, and offering a solid product to satisfy this.

4.3.13 Responses to Question 13

Question 13 was an opinion based question to the respondents asking if there was any further information they would like to add to the above titled research. There were 2 respondents who responded to this. The one comment stated that Question 10 was difficult to answer in terms of how it was structured. The other response did not have any value to add to the research.

Conclusion

This chapter has presented the data obtained for the assessment of the interpretation of market related information and data in the South African residential property market and what effect this has on what position each individual lies in the real estate market. The

data was obtained through a questionnaire. These questionnaires were sent out to the various parties involved in the real estate market.

The findings have brought to light many factors influencing the process of how data is interpreted in regard to the South African Residential property market. Most notably, the findings identified which market indicators are mainly used to base market related decisions in the real estate market. It also highlighted what the primary sources of information that companies and individuals make use of and what position theses companies and individuals perceive themselves to be in the market.

Chapter 5: Conclusions and Recommendations

5.1 Review of Research

This study is concerned with how the interpretation of market related data in the South African residential property market affects at what stage each individual party lies in the real estate market. In specific terms the study identified and established at what stage each party is relative to one another on the market curve as well what the major sources of information used by these individual parties currently is. The study also identified what effect the different types of sources of information have on each party.

In order to effectively undertake the research four objectives were established (Chapter 1). The research methodology provided a guide for the data collection and analysis as well as the interpretation of the data which was then linked to the objectives. The data pertaining to the sources of information was done in two stages. First a number of market related indices, indicators and individual time series were established that are currently the most common available to the individual. These were presented in the data collection in Chapter 3 using tables and line graphs to show the time series. Once these were established a questionnaire was sent out to a number of companies who are involved in the property market these falling under the following categories: banks, insurers, construction companies, property developers/managers, purchasers and government. The collected data and its analysis were then presented in Chapter 4 through the use of pie charts, tables and histograms.

The findings of the research will be presented in terms of the research objectives and more specifically how the research objectives were met.

5.2 Research Findings

5.2.1 *Research findings on the establishment of what stage each party in the property Market is at relative to one another on the market curve*

The first objective of this study was to establish at what stage each party is at in the property market relative to other parties. To make the assessment of at what stage each party is on the curve it was felt that all parties had to be able to respond therefore a questionnaire was thought to be the best option.

It was established that the property cycle can be simplified into four major phases these being the 1st upward phase, 2nd upward phase and the 1st downward phase and 2nd downward phase. Although within each phase there are many individual phases, it was felt important to simplify this as much as possible and to use these four major phases. By asking the respondents to look at the salient features that indicate the different phases in relation to the main cycle it was possible to establish in which phase each of the respondents were in relation to one another.

Results from the analysis of the data show that one third of the respondents felt that they entered the property market in the 1st upward phase of the cycle and another third thought they entered the market in the 2nd upward phase of the cycle. Results also showed that half of the respondents perceive themselves to currently be in the 2nd upward phase of the cycle. This positive interpretation of the salient features by the respondents is indicative of the very high level of optimism currently present in the market at this time. Although a quarter of the respondents did indicate that they are currently in the 1st phase of the downswing which could indicate that market sentiment is starting to change to a more pessimistic view of how the economy is behaving when comparing the salient features of the different phases.

5.2.2 *Research findings on the identification of the major sources of information used by each of parties*

The second objective of this study was to identify what the major sources of information that are used by the different parties. It was found that the most common indicators used are easily accessible and are the most regularly updated.

The results showed that the parties or individuals involved in the market used a wide variety of different types and forms of media to access information. The most popular types of media used were the internet, statistical publications and newspaper publications amongst the options given. The results indicate that more companies and individuals are making use of the extensive sources of market related data. One reason for this maybe to be able to make the most informed up to date decision. This can also be seen by the fact that the most popular sources of information selected were the ones that are updated the most frequently and most readily available.

The results also showed that the most common market indicators used by the relevant parties were indicators that have a direct relationship with the individual parties' household income. These indicators are also readily available and can be found updated daily. This is important as it can be seen that in terms of decisions and recommendations surrounding property the relevant parties make use of indicators that they can directly relate to in terms of income and expenditure.

5.2.3 *Research findings on what effect the different types of information sources have on one another.*

The third objective of this study was to ascertain what effect the different types of sources of information might have on each party.

The way information and data is collected and interpreted by the relevant parties has an effect, on how each of the parties makes use of the information in relation to one another. The results show that even though the data might have come from reliable sources, the majority of the parties re-analyzed the data. This indicates that even though these individual parties might be receiving the same initial data, the final figure calculated after re-analyzing used to base decisions on will be different to one another.

The results also showed that information was highly accessible. This is mainly due to the advent of modern technology that has allowed access to information to become easier as

well as the collection of data to become more efficient. The results also showed that even with this easier accessibility to information and collection of data, the majority of the relevant parties do not update their data as often as possible. This is mainly due to the intensive process of collecting and analyzing the data. These leads to decisions being based on old data and therefore does not reflect the correct position of the parties as their decisions will always lag behind the actual market. It should also be noted that although the individual markets show movement, in property it is the long term trend that is reflects the true market movement. The results also showed that even with modern technology allowing access to information and data, the data made available is still delayed. However the relayed data might only be delayed by a number of minutes as opposed to days and weeks.

The results also showed that due to the fact that the relevant parties make use of historical data in business decisions the rational expectations model does not here and what is known as adaptive expectations is to be used in the explanation of how individual parties react and base their decisions.

5.2.4 *Research findings on determining the lag or lead that each individual party has according to one another on the property market curve*

The fourth objective was to try and establish what the lag or lead between each party on the curve is relative to one another. To try and establish the lag or lead of each individual party it was initially to be done using the market indices chosen from the questionnaire. This was however found to be outside the scope of this study. What is required in order to find out the specific lag and lead of an individual party on the curve is to generate a separate composite market indicator specific for the property market. It was found how ever that in order to perform this correctly an in depth analysis of the relevant parties and the market has to be performed. This however was out of the scope of this study.

5.2.4 *Summary*

From the results of this study it can be concluded that three of the four objectives set out in chapter one have been addressed and achieved.

5.3 Benefits of the findings

This study aimed at investigating how the interpretation of market related information and data in the South African Property market reflects at what stage each individual party lies in the real estate market.

As stated in the research findings (Chapter 4) most of the parties involved in the property market make use of the same indicators and same types of sources of information, these however have been re-analyzed and interpreted differently between each individual party. Given that the results of this study, promote the theory that the interpretation of market related data affects at what stage each individual party lies in the real estate market, the significance of this study lends itself to future research in respect of what effect the interpretation of data has on the individuals involved in the real estate market.

Given that this research identifies the key sources of information and the most commonly used market indicators it is suggested that further research is undertaken examining in further detail what effects the interpretation of this data has on individuals involved in the property market. The research should focus on the five basic types of companies and or parties' involved in the property market, as each type of company interprets the data and information collected in terms of their needs. Further research should also focus on establishing how far an individual party lags or leads the property market. This would be beneficial in helping to make decisions based on the market data.

This study is considered a preliminary study into how the interpretation of market related data in the South African property market affects at what stage each individual party lies in the real estate market. It is hoped that this study will encourage further research into

the effects that the interpretation of data has on property market. Furthermore it is envisaged that the results from this study will encourage the development and research that will make the understanding of how the interpretation of market related data affects the relevant parties' in the property market.

5.4 Recommendations

Supporting the results and conclusions of this study, the following recommendations are presented as an effective method of understanding how the interpretation of data affects the position of parties in the property cycle.

- The relevant parties involved in the property market must be made more aware of how their interpretation of data can affect where they lie in relation to the market and to the other relevant parties. This can be done by educating and sending the personnel responsible for data analysis on courses.

- The relevant parties involved in the property market should also be made aware of more market related indicators as this can facilitate making better business and investment decisions. Not all market related indicators are suited to the relevant parties' needs.

- The relevant parties involved in the property market should be made more aware of the benefits of making use of different sources of media for information. This will allow them to be able to get the latest information and data and to base all decisions accordingly allowing them to make the most informed decision.

- The use of composite market indicators specific to the property market should be implemented with a standard selection of indicators to be used so that it incorporates all the necessary movements. Due to the nature of property markets, the long term trend is a more effective tool at monitoring market movements and

as shown, composite indicators track the long term trend better than individual indicators on their own.

5.5 Evaluation of the research approach undertaken

An evaluation of the research approach undertaken in this study is as follows:

The research methods adopted in this study were guided primarily by the demands for presenting the most accurate method for obtaining data in order to analyse what affect the interpretation of market related data has on the position of the relevant parties' to one another in the property market. The study made use an assessment of what the most common market indicators used by the relevant parties in the property market are ,as well as a questionnaires which was sent out to the relevant parties involved in the property market. The relevant parties were specific to the Gauteng region and the list was obtained from the South African Property Owners Association. Other parties not taken from the list were all professionals and were involved in the property market.

Although the initial analysis of market indicators and use of questionnaires obtained the relevant data it is proposed that this should be done in conjunction with a more statistical analysis of market indicators and the relevant data as well as applying the information into specific economic models as this would give a more detailed analysis of the above.

5.6 Problems experienced undertaking the study

The following problems were experienced while undertaking the study.

- The limited time available to conduct the research on a topic of this magnitude proved to be problematic. This meant that the topic was not analysed as is much detail as possible.

- Gaining access to professionals was limited as most professionals did not have the time to partake in the study or were not interested in it at all. This meant the retrieving of the required data from the questionnaires was not always possible.

5.7 Possibilities for further research

This study promotes further research in the area of how the interpretation of market related data affects the position of individual parties the South African property market. It is considered essential to conduct further research on the dynamics of market related data and how the interpretation of this data can directly affect and manipulate business and investment decisions of the individual parties. The findings of the study would highlight the specific market indicators that have a direct correlation between how the data is analyzed and what affect this interpretation of data has on the relevant parties involved in the property market. Identifying these indicators and the effects may help to improve the understanding of how the interaction between the individual and the data can affect at what stage the individual is in the property cycle relative to other individuals.

This study lends itself to be continued through an investigation into how the interpretation of data affects individual parties' and how this affects their position on the property market curve.

This study is considered a preliminary study into the interpretation of market related data specific to the South African Property Market. By making use of the market indicators, market data and market information, it could prove an effective tool in establishing the current position of individuals and parties on the property market curve in relation to other parties' as well as the actual market. This in turn can lead to better market analysis and a more accurate method to determine investment and financing decisions.

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Appendix 1

Questionnaire sent through to relevant parties in property market

Questionnaire for Masters

Title: The Interpretation of Market related information and data in the South African Residential Property Market affects at what stage each individual party lies in the Real Estate Market

Name (optional): _____

Question1

What type of company do you own or work for?

Bank (Absa, Std bank, Investec etc)	
Property Management	
Insurance House (Liberty, RMB etc)	
Property Fund (PUT etc)	
Construction Company	
Property Development company	
Asset Management	
Private Investor	
Government	
Other (or combination of above)	

Question 2

The Property market can be divided up in 5 very broad groups, where do you or your company fit in?

Government	
Construction	
Property Development / Management	
Banks and Insurance Houses	
Purchaser (of houses, flats etc)	
Other (please specify)	

Question 3

Listed below are the most common financial indicators, indices and variables that are used in helping to making business decisions, and to help determine market sentiment. Please tick which ones you make use of when making a decision?

CPI		Price difference of new and old housing	
CPIX		Real house prices	
ABSA house price index		Nominal house prices	
Nominal Growth in average house price		Household debt	
Real Growth in house prices		Inflation	
Nominal year on year growth of house prices		Interest Rates	
Real Disposable income		Debt servicing to disposable income ratio	
Household debt to disposable income ratio		House price to remuneration ratio	
Affordability of housing		Repayment to remuneration ratio	
Capitalisation Rate		Mortgage Rates	
Rent to income		Vacancy Rates	
Housing Production		Real Mortgage rates (using headline CPI)	
Other *(please list):*			

Question 4

What are your sources for information and data?

Company Research	
Outsourced market research	
Online Services (subscription)	
Internet (free sites)	
Newspapers and publications	
Government Publications	
Statistical Publications	
Consulting Companies	
Word of mouth	
Other (please specify)	

Question 5

Do you make of use historical prices and/or figures from the above or any other financial instruments to help make decisions?

Yes	
No	

Question 6

In terms of access to information, do you feel that you have equal opportunity to information as other parties in the market?

Yes	
No	
Other (please specify)	

Question 7

How often would you say the specific data you or your company use is updated?

Hourly	
Daily	
Weekly	
Monthly	
Other (please specify)	

Question 8

Would you consider the data received to be a true real time indication of the markets or do you think the information is delayed?

Real Time	
Delayed	

Question 9

When any information or data is received is this data re-analysed or is the figure presented used as it is?

Re-analysed	
Actual figure used	

Question 10

The table below lists some of the salient features of a typical property cycle. Please tick at what stage best describes where you or your company feel you have entered into the property cycle and where you currently believe you are placed in the cycle? *(If you feel you are in between two phases please tick both)*

1st Phase of Upswing	**2nd Phase of Upswing**	**1st Phase of downswing**	**2nd Phase of downswing**
Production and Sales increase	Production and sales increase sharply	Production and sales start to slow down	Production and sales decrease further
Production capacity increases	Production Capacity is fully utilised	Lower utilization of production capacity	Utilization of production capacity decreases further
Profits Rise	Profits rise sharply	Profits tend weaker	Profits weaker
Slow Fixed investment	Fixed investment increases sharply	Employment sluggish	Employment on decline
Interest Rates decrease	Employment increases	Fixed investment stabilizes	Fixed investment weakens
Demand for bank credit increases	Credit demand increases sharply	Demand for credit remains strong	Credit demand weakens
Companies start to enter the market	Interest rates stabilize	Interest rates start to increase	Interest rates increase further
Business climate is positive	Business climate extremely optimistic	Optimistic business climate starts to taper	Widespread pessimism throughout the market

Position entering		Position entering		Position entering		Position entering	
Current Position		Current Position		Current Position		Current Position	

Question 11

Even though cycles differ in length and amplitude, they essentially follow the same pattern. Do you feel decisions are based on past experience in terms of what to expect?

Yes	
No	
Other (Specify)	

Question 12

Do you feel that enough research is being done in the field of Property Cycles that you are aware of?

_____
_____
_____
_____
_____

Question 13

Is there anything that you would like to add in assisting the research?

_____
_____
_____
_____
_____

I would like to thank you for taking out the time to answer this research questionnaire.

Appendix 2

South African Reserve Bank Key Information Quarterly Report 2006

National accounts

Ratios of selected data

At current prices

Period	Final consumption expenditure by households to GDP[1] (6280J)	Final consumption expenditure by general government to GDP[1] (6281J)	Gross fixed capital formation to GDP[1] (6282J)	Public sector expenditure[3] to GDP[1] (6283J)	Industrial and commercial inventories to GDP[4] (6284J)	Compensation of employees to GDP[2] (6295J)	Gross saving to GDP[1] (6286J)	Saving to disposable income of households (6287J)	Household debt to disposable income of households[5] (6525J)
1991	61.6	19.8	17.2	25.7	16.7	57.1	18.6	2.7	55.0
1992	62.9	20.2	15.7	25.5	16.0	57.5	16.3	5.3	52.2
1993	61.8	20.1	14.7	24.4	14.5	56.6	16.4	4.5	53.2
1994	61.8	20.0	15.2	23.8	14.9	55.9	16.9	2.8	55.5
1995	62.6	18.3	15.9	22.6	16.0	55.8	16.5	1.8	58.3
1996	62.5	19.1	16.3	23.6	16.4	55.4	16.1	1.8	61.1
1997	63.3	19.2	16.5	24.0	15.9	55.3	15.1	1.7	61.0
1998	63.3	18.8	17.1	24.8	14.7	56.3	15.2	1.5	60.2
1999	63.2	18.4	15.5	23.1	14.3	56.0	15.9	1.3	57.1
2000	63.0	18.1	15.1	22.3	15.0	53.9	15.8	1.2	53.3
2001	62.7	18.3	15.1	22.2	15.0	52.1	15.4	0.9	52.6
2002	61.8	18.4	15.0	22.3	15.5	49.9	16.7	0.7	50.3
2003	62.5	19.3	15.8	23.9	15.7	51.1	15.6	1.2	51.8
2004	62.8	19.7	16.2	24.2	15.4	51.3	14.2	0.4	55.9
2005	63.5	20.2	17.2	25.0	15.2	51.4	14.0	0.2	62.4

KB811

Seasonally adjusted annualised rates

	(6280L)	(6281L)	(6282L)	(6283L)	(6284L)	(6295L)	(6286L)	(6287L)	(6525L)
2001: 03	63.4	18.5	15.2	22.3	15.1	52.3	14.6	0.8	52.6
04	62.5	18.2	14.8	22.7	14.9	51.1	15.7	1.1	52.6
2002: 01	61.8	18.4	14.6	21.9	15.4	50.6	16.4	0.7	51.6
02	61.7	18.4	14.8	22.3	15.5	50.5	15.8	0.7	51.0
03	62.2	18.6	15.2	22.6	15.8	50.0	16.9	0.6	49.6
04	61.5	18.4	15.4	22.5	15.5	48.8	17.6	0.8	49.1
2003: 01	61.8	19.0	15.7	23.7	15.6	50.0	16.7	1.2	51.3
02	62.7	19.3	15.9	23.9	15.8	51.3	14.1	0.8	51.8
03	62.7	19.4	15.8	23.8	15.8	51.0	16.4	1.3	52.6
04	62.8	19.6	15.8	24.1	15.6	51.8	15.3	1.6	51.3
2004: 01	63.1	19.7	16.0	24.1	15.4	51.2	14.8	0.8	53.9
02	63.1	19.9	16.3	24.5	15.4	51.8	13.8	0.4	55.0
03	62.0	19.5	16.3	23.9	15.4	50.6	14.8	0.3	56.8
04	62.9	19.9	16.4	24.4	15.2	51.6	13.5	0.3	57.8
2005: 01	63.3	19.8	16.7	24.4	15.5	51.0	14.0	0.2	59.5
02	64.6	20.3	17.3	25.2	15.4	52.4	14.2	0.2	61.0
03	63.3	20.2	17.3	25.1	15.2	50.9	14.4	0.1	63.5
04	63.0	20.4	17.3	25.4	14.7	51.1	13.5	0.1	65.6
2006: 01	63.6	20.3	17.9	25.2	15.0	50.2	13.0	-0.1	68.6
02	64.2	21.0	18.4	26.1	15.0	51.4	13.7	-0.2	69.7

KB812

1. Gross domestic product at market prices.
2. Gross domestic product at factor cost.
3. Final consumption expenditure by general government plus gross capital formation by public authorities and public corporations.
4. Gross domestic product excluding agriculture at market prices.
5. See footnote 1 of Table KB630.

National accounts
Selected data

Period	Current			At constant 2000 prices								
	Rand			Rand			Percentage change			Rand		
	Gross domestic product per capita (6270J)	Gross national income per capita (6271J)	Disposable income per capita of households[1] (6272J)	Gross domestic product per capita (6270Y)	Gross national income per capita (6271Y)	Disposable income per capita of households[1] (6272Y)	Gross domestic product per capita (6270Z)	Gross national income per capita (6271Z)	Disposable income per capita of households[1] (6272Z)	Average capital output ratio (6273Y)	Average output labour ratio[2] (6274Y)	Average capital labour ratio[2] (6275Y)
1968	486	468	326	20 274	19 393	11 505	1.4	2.3	5.9	1.8	...	...
1969	533	513	342	20 659	19 759	11 515	1.9	1.9	0.1	1.8	...	...
1970	569	548	370	21 167	19 937	11 805	2.5	0.9	2.5	1.8	53 216	97 590
1971	614	593	428	21 534	20 440	12 644	1.7	2.5	7.1	1.9	54 992	103 060
1972	676	653	468	21 365	20 730	13 013	-0.8	1.4	2.9	2.0	55 443	109 090
1973	816	790	502	21 811	22 068	12 982	2.1	6.5	-0.2	2.0	57 191	115 602
1974	981	947	588	22 613	23 254	13 380	3.7	5.4	3.1	2.0	59 459	121 597
1975	1 079	1 034	666	22 481	22 545	13 833	-0.6	-3.0	3.4	2.1	59 852	127 875
1976	1 191	1 141	716	22 467	22 065	13 108	-0.1	-2.1	-5.2	2.2	61 015	135 142
1977	1 292	1 235	830	21 917	21 773	13 527	-2.4	-1.3	3.2	2.3	60 419	140 972
1978	1 450	1 388	868	22 036	22 006	12 887	0.5	1.1	-4.7	2.4	60 254	142 585
1979	1 693	1 623	1 021	22 349	22 524	13 440	1.4	2.4	4.3	2.4	60 519	142 953
1980	2 205	2 114	1 260	23 294	23 951	14 265	4.2	6.3	6.1	2.3	63 278	146 885
1981	2 494	2 386	1 405	23 972	23 795	13 573	2.9	-0.7	-4.9	2.3	63 163	146 671
1982	2 766	2 652	1 597	23 335	22 820	13 499	-2.7	-4.1	-0.5	2.5	60 739	148 877
1983	3 094	2 971	1 814	22 387	21 937	13 595	-4.1	-3.9	0.7	2.6	57 356	149 068
1984	3 545	3 404	2 151	23 006	22 773	14 249	2.8	3.8	4.8	2.5	58 306	148 429
1985	4 002	3 822	2 390	22 232	22 105	13 773	-3.4	-2.9	-3.3	2.6	56 140	147 163
1986	4 584	4 377	2 693	21 754	21 779	13 053	-2.2	-1.5	-5.2	2.7	54 886	145 884
1987	5 245	5 054	3 197	21 740	21 987	13 474	-0.1	1.0	3.2	2.6	54 495	143 568
1988	6 164	5 952	3 808	22 183	22 379	13 778	2.0	1.8	2.3	2.6	55 280	141 293
1989	7 247	6 992	4 423	22 241	22 158	13 788	0.3	-1.0	0.1	2.5	55 361	140 053
1990	8 172	7 861	5 119	21 710	21 428	13 561	-2.4	-3.3	-1.6	2.6	53 700	139 098
1991	9 167	8 923	5 809	21 045	20 820	13 340	-3.1	-2.8	-1.6	2.7	51 929	137 652
1992	10 066	9 839	6 690	20 170	19 962	12 867	-4.2	-4.1	-3.5	2.7	49 679	135 544
1993	11 286	11 055	7 306	19 996	19 856	12 732	-0.9	-0.5	-1.0	2.7	49 286	133 101
1994	12 504	12 281	7 953	20 214	20 440	12 722	1.1	2.9	-0.1	2.6	49 662	130 885
1995	13 920	13 655	8 868	20 412	20 449	13 058	1.0	0.0	2.6	2.6	50 044	129 288
1996	15 368	15 035	9 777	20 848	20 937	13 367	2.1	2.4	2.4	2.5	51 044	128 147
1997	16 699	16 338	10 763	20 955	20 939	13 487	0.5	0.0	0.9	2.5	51 251	127 311
1998	17 703	17 286	11 385	20 625	20 450	13 282	-1.6	-2.3	-1.5	2.5	50 493	126 704
1999	19 001	18 544	12 170	20 675	20 269	13 209	0.2	-0.9	-0.6	2.5	50 721	125 752
2000	21 104	20 600	13 450	21 104	20 600	13 450	2.1	1.6	1.8	2.4	51 864	124 236
2001	22 899	22 177	14 492	21 269	20 712	13 618	0.8	0.5	1.2	2.4	52 264	123 024
2002	25 780	25 131	16 039	21 667	21 407	13 785	1.9	3.4	1.2	2.3	53 233	121 918
2003	27 294	26 537	17 270	21 964	21 764	14 106	1.4	1.7	2.3	2.3	53 894	121 423
2004	29 684	29 082	18 717	22 622	22 628	14 694	3.0	4.0	4.2	2.2	55 400	121 553
2005	32 166	31 511	20 471	23 403	23 445	15 447	3.5	3.6	5.1	2.1	57 265	122 516

KB810

1. See footnote 1 of Table KB630.
2. Derived from mid-year estimates of the economically active population.

National accounts

Percentage changes in selected data at constant 2000 prices[1]

Period	Gross domestic product (6006Z)	Gross value added excluding agriculture[2] (6626Z)	Gross national income (6016Z)	Gross domestic expenditure (6012Z)	Final consumption expenditure by households (6007Z)	Final consumption expenditure by general government (6008Z)	Gross fixed capital formation (6009Z)	Exports of goods and services (6013Z)	Imports of goods and services (6014Z)	Disposable income of households[3] (6246Z)
1988	4.2	3.8	3.9	6.3	5.3	1.7	12.6	8.2	21.9	4.4
1989	2.4	1.8	1.1	1.2	2.7	4.0	6.5	2.2	0.3	2.2
1990	-0.3	-0.4	-1.2	-2.0	2.9	2.3	-2.3	-0.4	-5.8	0.4
1991	-1.0	-1.4	-0.8	-0.6	-0.5	2.3	-7.4	-1.5	2.1	0.4
1992	-2.1	-0.8	-2.1	-1.9	-1.4	1.9	-5.3	5.5	5.3	-1.5
1993	1.2	0.5	1.6	1.6	1.9	1.2	-0.6	10.4	7.0	1.0
1994	3.2	2.7	5.1	5.3	4.0	0.8	8.2	2.5	16.1	2.0
1995	3.1	4.2	2.2	4.3	5.9	-6.0	10.7	10.9	16.8	4.8
1996	4.3	3.5	4.6	4.1	4.5	3.8	9.0	7.2	8.7	4.5
1997	2.6	2.7	2.1	2.6	3.3	2.1	5.7	5.3	5.4	3.0
1998	0.5	0.9	-0.3	-0.1	1.7	-2.2	4.8	3.2	2.0	0.6
1999	2.4	2.6	1.2	-0.3	1.7	0.4	-7.6	1.3	-8.4	1.5
2000	4.2	4.4	3.7	3.3	4.1	2.9	4.3	8.3	5.3	3.9
2001	2.7	3.1	2.5	2.4	3.5	3.1	3.5	1.8	0.2	3.2
2002	3.7	3.7	5.2	4.9	3.2	4.6	3.7	0.5	5.1	3.0
2003	3.0	3.2	3.3	5.2	3.5	6.5	8.3	0.3	8.8	4.0
2004	4.5	4.6	5.5	7.5	6.5	6.9	9.7	2.5	14.1	5.7
2005	4.9	4.9	5.0	5.9	6.9	5.6	9.2	6.7	10.1	6.6

KB808

Seasonally adjusted annualised rates

	(6006S)	(6626S)	(6016S)	(6012S)	(6007S)	(6008S)	(6009S)	(6013S)	(6014S)	(6246S)
2001: 03	1.1	1.1	0.8	6.2	3.3	3.8	1.1	-29.6	-18.5	3.5
04	3.1	3.2	8.6	4.1	4.1	3.7	0.2	7.1	11.7	5.3
2002: 01	4.2	4.2	8.6	7.3	2.9	4.4	0.5	4.4	17.4	1.3
02	5.4	5.4	1.1	2.9	3.2	5.3	5.6	14.6	5.1	3.3
03	4.7	4.2	9.5	8.8	2.8	6.0	10.0	-15.9	-3.6	2.5
04	3.3	3.7	1.4	-0.1	2.1	5.9	16.6	24.6	10.9	3.1
2003: 01	2.5	2.5	3.8	7.0	3.1	6.1	6.3	-13.9	0.9	4.3
02	2.1	2.3	-5.2	6.6	3.5	6.3	4.9	-0.4	18.4	2.0
03	2.3	3.0	14.0	3.5	5.6	6.3	5.2	15.7	20.8	7.5
04	2.6	2.8	2.8	8.7	5.9	13.5	8.0	-8.2	14.3	7.5
2004: 01	5.0	5.1	8.6	9.7	6.7	5.4	12.9	-15.4	1.2	3.2
02	6.5	6.3	3.6	9.5	7.2	6.0	11.5	21.9	33.2	5.3
03	6.6	6.6	6.7	4.7	7.4	0.1	9.4	10.5	3.2	7.4
04	4.3	4.4	-0.8	3.8	7.7	12.6	10.8	25.0	20.8	7.6
2005: 01	4.6	4.7	7.3	7.0	6.5	0.8	10.8	-18.4	-9.1	6.0
02	5.3	5.0	8.4	5.8	6.7	5.9	5.4	23.5	23.2	6.5
03	4.1	4.0	4.8	7.3	6.1	5.5	8.3	10.5	21.6	6.0
04	3.2	3.3	2.6	3.8	6.8	14.7	8.6	-4.1	-1.2	6.7
2006: 01	4.0	4.6	6.2	14.5	7.1	-2.3	10.7	-19.3	17.5	6.1
02	4.9	5.8	11.0	7.4	8.0	16.1	11.3	23.2	28.6	7.6

KB809

1. Compared with preceding period. Quarterly changes reflect annual rates based on seasonally adjusted data.
2. At basic prices.
3. See footnote 1 of Table KB630.

Appendix 3

Composite Business Cycle Table South African Reserve Bank Quarterly Report 2006

Composite business cycle indicators

Percentage change[1]

	South Africa			Trading-partner countries					
				Leading indicator			Coincident indicator		
	Leading indicator (7090B)	Coincident indicator (7091B)	Lagging indicator (7092B)	USA (7093B)	Other countries (7094B)	Total (7095B)	USA (7096B)	Other countries (7097B)	Total (7098B)
1998	-7.9	-7.5	8.9	3.5	1.0	2.0	4.0	0.9	2.2
1999	7.0	-2.9	-8.8	3.7	4.6	4.2	3.3	2.0	2.6
2000	8.7	3.0	-6.6	1.9	5.4	3.9	3.4	6.6	5.3
2001	-1.2	4.8	1.6	-1.9	-3.3	-2.7	-0.6	1.6	0.7
2002	10.4	8.4	2.5	5.0	-1.2	1.4	-0.6	-0.9	-0.8
2003	-6.5	2.7	5.1	5.1	2.2	3.5	0.4	0.6	0.5
2004	10.8	17.3	-2.8	7.7	8.1	7.9	2.7	3.2	3.0
2005	1.4	13.5	0.9	2.0	4.0	3.2	2.2	2.3	2.3
2003: Aug	-7.3	1.1	4.4	5.6	2.9	4.1	0.4	0.2	0.3
Sep	-5.8	0.5	2.6	6.4	3.5	4.7	0.8	0.2	0.4
Oct	-4.8	0.1	2.5	7.1	5.0	5.9	0.9	1.1	1.0
Nov	-3.7	0.4	-0.2	7.0	5.6	6.2	1.3	1.4	1.3
Dec	0.4	2.3	-1.3	7.5	5.8	6.5	1.7	1.9	1.8
2004: Jan	4.5	5.7	-2.3	8.2	6.1	7.0	1.6	2.3	2.0
Feb	9.3	7.0	-2.6	8.9	6.8	7.7	2.1	2.2	2.2
Mar	11.2	10.5	-3.7	10.0	8.2	9.0	2.5	3.2	3.0
Apr	13.4	11.4	-5.1	9.7	9.9	9.8	2.8	3.6	3.3
May	14.6	16.8	-6.5	8.9	10.5	9.8	2.9	4.1	3.6
Jun	13.4	18.4	-3.7	8.4	10.4	9.5	2.6	4.0	3.4
Jul	12.0	20.0	-3.5	7.9	9.2	8.6	2.7	3.4	3.1
Aug	11.9	22.3	-2.0	7.4	8.3	7.9	2.9	3.4	3.2
Sep	11.3	23.6	-1.6	6.7	7.8	7.3	2.6	3.6	3.2
Oct	10.7	23.9	-1.6	5.7	7.1	6.5	2.9	2.9	2.9
Nov	11.3	24.5	-0.3	5.7	6.5	6.2	2.8	2.8	2.8
Dec	6.7	23.0	0.1	5.5	6.7	6.1	3.9	2.3	3.0
2005: Jan	2.5	17.8	1.4	4.5	6.5	5.6	3.1	2.4	2.7
Feb	-0.8	13.8	2.2	4.3	6.4	5.5	3.0	2.0	2.4
Mar	-0.1	12.3	1.8	2.4	4.5	3.6	2.7	1.6	2.0
Apr	1.3	15.7	1.0	2.3	2.5	2.4	2.7	1.9	2.2
May	1.5	13.4	1.1	1.9	1.4	1.6	2.6	1.8	2.1
Jun	1.4	14.0	1.3	1.9	1.7	1.8	2.5	2.2	2.3
Jul	2.0	11.5	0.6	1.4	2.8	2.2	2.4	2.4	2.4
Aug	2.4	11.8	0.8	1.4	3.7	2.7	1.4	2.7	2.2
Sep	1.5	12.0	0.0	0.4	4.1	2.5	1.9	2.5	2.3
Oct	1.3	12.0	0.3	1.3	4.3	3.0	1.8	2.4	2.1
Nov	0.6	13.8	0.7	1.6	5.0	3.5	2.0	2.7	2.4
Dec	3.3	14.6	-0.3	1.2	5.8	3.8	1.1	3.2	2.3
2006: Jan	5.5	15.3	-0.2	1.7	5.8	4.0	1.9	3.1	2.6
Feb	7.2	16.7	0.3	0.9	6.4	4.0	1.9	4.0	3.2
Mar	5.5	19.3	1.7	2.0	6.5	4.5	2.0	4.1	3.2
Apr	4.8	16.5	1.4	1.8	8.3	5.5	2.1	4.0	3.2
May	5.7	17.1	2.7	1.1	9.3	5.7	1.9	4.2	3.3
Jun	3.3	-	-	0.8	8.0	4.8	2.2	3.7	3.1
Jul	-	-	-	0.9	7.2	4.4	2.2	-	-

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1. Percentage change over twelve months.

Appendix 4

South African Business Cycle Phases South African Quarterly Report September 2006

Business cycle phases of South Africa since 1945

Upward phase			Duration in months	Downward phase			Duration in months
Post war	-	July 1946	7	August 1946	-	April 1947	9
May 1947	-	November 1948	19	December 1948	-	February 1950	15
March 1950	-	December 1951	22	January 1952	-	March 1953	15
April 1953	-	April 1955	25	May 1955	-	September 1956	17
October 1956	-	January 1958	16	February 1958	-	March 1959	14
April 1959	-	April 1960	13	May 1960	-	August 1961	16
September 1961	-	April 1965	44	May 1965	-	December 1965	8
January 1966	-	May 1967	17	June 1967	-	December 1967	7
January 1968	-	December 1970	36	January 1971	-	August 1972	20
September 1972	-	August 1974	24	September 1974	-	December 1977	40
January 1978	-	August 1981	44	September 1981	-	March 1983	19
April 1983	-	June 1984	15	July 1984	-	March 1986	21
April 1986	-	February 1989	35	March 1989	-	May 1993	51
June 1993	-	November 1996	42	December 1996	-	August 1999	33
September 1999	-						

Appendix 4

ABSA bank research table

MONTHLY HOUSE PRICES

DATE	Middle class houses - Total RSA: New & Old - All sizes - Purchase Price - Smoothed (Unit: Smoothed Rand)	House Price Index: 2000=100	Nominal y/y % change	Nominal m/m % change	Code	CSS;VPI00000	CPI for the metropolitan areas: All items (Unit: Index : 2000=100; Source: P0141.1: Table 1)	Calc Real house prices (2000 prices)	Calc Real y/y % change	Calc Real m/m % change
					Description					
31-Jan-1996	175938.96	64.7	4.6	0.5	31-Jan-1996	75.0	234 585	-2.1	-0.7	
29-Feb-1996	176764.63	65.0	4.3	0.5	29-Feb-1996	75.1	235 372	-2.1	0.3	
31-Mar-1996	177487.41	65.3	3.9	0.4	31-Mar-1996	75.7	234 462	-2.1	-0.4	
30-Apr-1996	178104.25	65.5	3.6	0.3	30-Apr-1996	76.2	233 733	-1.8	-0.3	
31-May-1996	178501.95	65.6	3.4	0.2	31-May-1996	76.7	232 727	-2.2	-0.4	
30-Jun-1996	178624.74	65.7	3.2	0.1	30-Jun-1996	77.4	230 781	-3.4	-0.8	
31-Jul-1996	178771.30	65.7	3.2	0.1	31-Jul-1996	78.0	229 194	-3.7	-0.7	
31-Aug-1996	179064.85	65.8	3.4	0.2	31-Aug-1996	78.4	228 399	-3.8	-0.3	
30-Sep-1996	179519.41	66.0	3.6	0.3	30-Sep-1996	79.2	226 666	-4.4	-0.8	
31-Oct-1996	180107.47	66.2	3.8	0.3	31-Oct-1996	79.9	225 416	-4.8	-0.6	
30-Nov-1996	180719.45	66.5	3.8	0.3	30-Nov-1996	80.2	225 336	-4.9	0.0	
31-Dec-1996	181412.14	66.7	3.7	0.4	31-Dec-1996	81.0	223 966	-5.2	-0.6	
31-Jan-1997	182194.97	67.0	3.6	0.4	31-Jan-1997	82.0	222 189	-5.3	-0.8	
28-Feb-1997	183154.38	67.3	3.6	0.5	28-Feb-1997	82.5	222 005	-5.7	-0.1	
31-Mar-1997	184394.38	67.8	3.9	0.7	31-Mar-1997	83.0	222 162	-5.2	0.1	
30-Apr-1997	186130.56	68.4	4.5	0.9	30-Apr-1997	83.7	222 378	-4.9	0.1	
31-May-1997	188460.20	69.3	5.6	1.3	31-May-1997	84.0	224 357	-3.6	0.9	
30-Jun-1997	191285.13	70.3	7.1	1.5	30-Jun-1997	84.2	227 179	-1.6	1.3	
31-Jul-1997	194414.13	71.5	8.8	1.6	31-Jul-1997	85.1	228 454	-0.3	0.6	
31-Aug-1997	197859.93	72.8	10.5	1.8	31-Aug-1997	85.2	232 230	1.7	1.7	
30-Sep-1997	201467.57	74.1	12.2	1.8	30-Sep-1997	85.6	235 359	3.8	1.3	
31-Oct-1997	205067.13	75.4	13.9	1.8	31-Oct-1997	86.0	238 450	5.8	1.3	
30-Nov-1997	208525.15	76.7	15.4	1.7	30-Nov-1997	85.7	243 320	8.0	2.0	
31-Dec-1997	211546.69	77.8	16.6	1.4	31-Dec-1997	86.0	245 985	9.8	1.1	
31-Jan-1998	213807.57	78.6	17.4	1.1	31-Jan-1998	86.7	246 606	11.0	0.3	
28-Feb-1998	215375.75	79.2	17.6	0.7	28-Feb-1998	86.9	247 843	11.6	0.5	

31-Mar-1998	216604.70	79.6	17.5	0.6	31-Mar-1998	87.5	247548	11.4	-0.1
30-Apr-1998	217947.20	80.1	17.1	0.6	30-Apr-1998	87.9	247949	11.5	0.2
31-May-1998	219706.05	80.8	16.6	0.8	31-May-1998	88.3	248818	10.9	0.4
30-Jun-1998	221979.95	81.6	16.0	1.0	30-Jun-1998	88.6	250542	10.3	0.7
31-Jul-1998	224506.07	82.6	15.5	1.1	31-Jul-1998	90.7	247526	8.3	-1.2
31-Aug-1998	226708.50	83.4	14.6	1.0	31-Aug-1998	91.7	247228	6.5	-0.1
30-Sep-1998	227956.02	83.8	13.1	0.6	30-Sep-1998	93.3	244326	3.8	-1.2
31-Oct-1998	227957.34	83.8	11.2	0.0	31-Oct-1998	93.7	243284	2.0	-0.4
30-Nov-1998	226828.91	83.4	8.8	-0.5	30-Nov-1998	93.7	242080	-0.5	-0.5
31-Dec-1998	225356.30	82.9	6.5	-0.6	31-Dec-1998	93.7	240508	-2.2	-0.6
31-Jan-1999	224495.19	82.5	5.0	-0.4	31-Jan-1999	94.4	237813	-3.6	-1.1
28-Feb-1999	224836.59	82.7	4.4	0.2	28-Feb-1999	94.4	238174	-3.9	0.2
31-Mar-1999	226140.02	83.2	4.4	0.6	31-Mar-1999	94.4	239555	-3.2	0.6
30-Apr-1999	227956.83	83.8	4.6	0.8	30-Apr-1999	94.6	240969	-2.8	0.6
31-May-1999	229886.04	84.5	4.6	0.8	31-May-1999	94.5	243266	-2.2	1.0
30-Jun-1999	231457.72	85.1	4.3	0.7	30-Jun-1999	95.0	243640	-2.8	0.2
31-Jul-1999	232405.94	85.5	3.5	0.4	31-Jul-1999	95.1	244381	-1.3	0.3
31-Aug-1999	233070.57	85.7	2.8	0.3	31-Aug-1999	94.7	246115	-0.5	0.7
30-Sep-1999	234184.15	86.1	2.7	0.5	30-Sep-1999	95.1	246250	0.8	0.1
31-Oct-1999	236461.04	86.9	3.7	1.0	31-Oct-1999	95.3	248123	2.0	0.8
30-Nov-1999	240255.91	88.3	5.9	1.6	30-Nov-1999	95.5	251577	3.9	1.4
31-Dec-1999	245322.22	90.2	8.9	2.1	31-Dec-1999	95.8	256077	6.5	1.8
31-Jan-2000	251033.63	92.3	11.8	2.3	31-Jan-2000	96.9	259065	8.9	1.2
29-Feb-2000	256568.51	94.3	14.1	2.2	29-Feb-2000	96.6	265599	11.5	2.5
31-Mar-2000	261357.60	96.1	15.6	1.9	31-Mar-2000	97.6	267784	11.8	0.8
30-Apr-2000	264991.31	97.4	16.2	1.4	30-Apr-2000	98.9	267939	11.2	0.1
31-May-2000	267630.54	98.4	16.4	1.0	31-May-2000	99.3	269517	10.8	0.6
30-Jun-2000	269911.34	99.2	16.6	0.9	30-Jun-2000	99.9	270182	10.9	0.2
31-Jul-2000	272704.15	100.3	17.3	1.0	31-Jul-2000	100.8	270540	10.7	0.1
31-Aug-2000	276216.49	101.6	18.5	1.3	31-Aug-2000	101.2	272941	10.9	0.9
30-Sep-2000	280251.63	103.1	19.7	1.5	30-Sep-2000	101.7	275567	11.9	1.0
31-Oct-2000	284244.30	104.5	20.2	1.4	31-Oct-2000	102.0	278671	12.3	1.1
30-Nov-2000	287752.88	105.8	19.8	1.2	30-Nov-2000	102.2	281559	11.9	1.0
31-Dec-2000	290761.93	106.9	18.5	1.0	31-Dec-2000	102.5	283670	10.8	0.7
31-Jan-2001	293256.25	107.8	16.8	0.9	31-Jan-2001	103.8	282520	9.1	-0.4

28-Feb-2001	295515.37	108.7	15.2	0.8	28-Feb-2001	104.1	283 876	6.9	0.5
31-Mar-2001	297971.70	109.6	14.0	0.8	31-Mar-2001	104.8	284 324	6.2	0.2
30-Apr-2001	300830.71	110.6	13.5	1.0	30-Apr-2001	105.3	285 689	6.6	0.5
31-May-2001	304044.93	111.8	13.6	1.1	31-May-2001	105.7	287 649	6.7	0.7
30-Jun-2001	307604.14	113.1	14.0	1.2	30-Jun-2001	106.2	289 646	7.2	0.7
31-Jul-2001	311465.63	114.5	14.2	1.3	31-Jul-2001	106.1	293 559	8.5	1.4
31-Aug-2001	315416.67	116.0	14.2	1.3	31-Aug-2001	105.9	297 844	9.1	1.5
30-Sep-2001	319484.65	117.5	14.0	1.3	30-Sep-2001	106.2	300 833	9.2	1.0
31-Oct-2001	323398.93	118.9	13.8	1.2	31-Oct-2001	106.1	304 806	9.4	1.3
30-Nov-2001	327096.93	120.3	13.7	1.1	30-Nov-2001	106.6	306 845	9.0	0.7
31-Dec-2001	330287.06	121.5	13.6	1.0	31-Dec-2001	107.2	308 104	8.6	0.4
31-Jan-2002	333224.35	122.5	13.6	0.9	31-Jan-2002	109.0	305 710	8.2	-0.8
28-Feb-2002	336107.66	123.6	13.7	0.9	28-Feb-2002	110.2	304 998	7.4	-0.2
31-Mar-2002	339105.84	124.7	13.8	0.9	31-Mar-2002	111.3	304 677	7.2	-0.1
30-Apr-2002	342863.27	126.1	14.0	1.1	30-Apr-2002	113.1	303 151	6.1	-0.5
31-May-2002	347678.16	127.8	14.4	1.4	31-May-2002	113.9	305 249	6.1	0.7
30-Jun-2002	353368.09	129.9	14.9	1.6	30-Jun-2002	114.7	308 080	6.4	0.9
31-Jul-2002	359343.44	132.1	15.4	1.7	31-Jul-2002	116.3	308 980	5.3	0.3
31-Aug-2002	365385.55	134.4	15.8	1.7	31-Aug-2002	116.9	312 562	4.9	1.2
30-Sep-2002	371118.58	136.5	16.2	1.6	30-Sep-2002	118.1	314 241	4.5	0.5
31-Oct-2002	376601.31	138.5	16.5	1.5	31-Oct-2002	119.9	314 096	3.0	0.0
30-Nov-2002	382020.07	140.5	16.8	1.4	30-Nov-2002	120.3	317 556	3.5	1.1
31-Dec-2002	387602.31	142.5	17.4	1.5	31-Dec-2002	120.5	321 662	4.4	1.3
31-Jan-2003	393756.14	144.8	18.2	1.6	31-Jan-2003	121.6	323 813	5.9	0.7
28-Feb-2003	400546.42	147.3	19.2	1.7	28-Feb-2003	121.5	329 668	8.1	1.8
31-Mar-2003	407947.29	150.0	20.3	1.8	31-Mar-2003	122.7	332 475	9.1	0.9
30-Apr-2003	415443.91	152.8	21.2	1.8	30-Apr-2003	123.1	337 485	11.3	1.5
31-May-2003	422664.34	155.4	21.6	1.7	31-May-2003	122.8	344 189	12.8	2.0
30-Jun-2003	429406.15	157.9	21.5	1.6	30-Jun-2003	122.4	350 822	13.9	1.9
31-Jul-2003	435857.59	160.3	21.3	1.5	31-Jul-2003	122.4	356 093	15.2	1.5
31-Aug-2003	442553.05	162.7	21.1	1.5	31-Aug-2003	122.9	360 092	15.2	1.1
30-Sep-2003	450230.96	165.6	21.3	1.7	30-Sep-2003	122.5	367 535	17.0	2.1
31-Oct-2003	459708.18	169.0	22.1	2.1	31-Oct-2003	121.7	377 739	20.3	2.8
30-Nov-2003	471345.53	173.3	23.4	2.5	30-Nov-2003	120.8	390 187	22.9	3.3
31-Dec-2003	484975.81	178.3	25.1	2.9	31-Dec-2003	120.9	401 138	24.7	2.8

31-Jan-2004	499438.45	183.6	26.8	3.0	31-Jan-2004	121.8	410048	26.6	2.2
29-Feb-2004	513792.94	188.9	28.3	2.9	29-Feb-2004	122.4	419765	27.3	2.4
31-Mar-2004	527628.78	194.0	29.3	2.7	31-Mar-2004	123.2	428270	28.8	2.0
30-Apr-2004	540839.65	198.9	30.2	2.5	30-Apr-2004	123.4	438282	29.9	2.3
31-May-2004	553898.26	203.7	31.0	2.4	31-May-2004	123.5	448501	30.3	2.3
30-Jun-2004	567355.97	208.6	32.1	2.4	30-Jun-2004	123.9	457914	30.5	2.1
31-Jul-2004	581588.45	213.9	33.4	2.5	31-Jul-2004	124.3	467891	31.4	2.2
31-Aug-2004	596052.19	219.2	34.7	2.5	31-Aug-2004	124.1	480300	33.4	2.7
30-Sep-2004	610015.50	224.3	35.5	2.3	30-Sep-2004	124.1	491552	33.7	2.3
31-Oct-2004	622920.15	229.1	35.5	2.1	31-Oct-2004	124.6	499936	32.3	1.7
30-Nov-2004	634403.63	233.3	34.6	1.8	30-Nov-2004	125.3	506308	29.8	1.3
31-Dec-2004	644537.45	237.0	32.9	1.6	31-Dec-2004	125.0	515630	28.5	1.8
31-Jan-2005	654218.53	240.6	31.0	1.5	31-Jan-2005	125.4	521705	27.2	1.2
28-Feb-2005	664092.43	244.2	29.3	1.5	28-Feb-2005	125.6	528736	26.0	1.3
31-Mar-2005	674120.32	247.9	27.8	1.5	31-Mar-2005	126.9	531222	24.0	0.5
30-Apr-2005	684198.57	251.6	26.5	1.5	30-Apr-2005	127.6	536206	22.3	0.9
31-May-2005	693771.02	255.1	25.3	1.4	31-May-2005	127.6	543708	21.2	1.4
30-Jun-2005	702614.13	258.4	23.8	1.3	30-Jun-2005	127.4	551502	20.4	1.4
31-Jul-2005	710748.78	261.4	22.2	1.2	31-Jul-2005	128.5	553112	18.2	0.3
31-Aug-2005	718909.91	264.4	20.6	1.1	31-Aug-2005	129	557295	16.0	0.8
30-Sep-2005	727819.26	267.6	19.3	1.2	30-Sep-2005	129.5	562023	14.3	0.8
31-Oct-2005	737294.21	271.1	18.4	1.3	31-Oct-2005	129.6	568900	13.8	1.2
30-Nov-2005	746999.70	274.7	17.7	1.3	30-Nov-2005	129.5	576834	13.9	1.4
31-Dec-2005	756538.36	278.2	17.4	1.3	31-Dec-2005	129.5	584200	13.3	1.3
31-Jan-2006	765190.56	281.4	17.0	1.1	31-Jan-2006	130.4	586803	12.5	0.4
28-Feb-2006	772891.03	284.2	16.4	1.0	28-Feb-2006	130.5	592254	12.0	0.9
31-Mar-2006	780171.60	286.9	15.7	0.9	31-Mar-2006	131.2	594643	11.9	0.4
30-Apr-2006	787578.30	289.6	15.1	0.9	30-Apr-2006	131.8	597556	11.4	0.5
31-May-2006	795390.68	292.5	14.6	1.0	31-May-2006	132.6	599842	10.3	0.4
30-Jun-2006	803709.68	295.5	14.4	1.0	30-Jun-2006	133.6	601579	9.1	0.3
31-Jul-2006	811522.37	298.4	14.2	1.0	31-Jul-2006	134.9	601573	8.8	0.0
31-Aug-2006	818797.01	301.1	13.9	0.9	31-Aug-2006	136	602057	8.0	0.1
30-Sep-2006	824680.57	303.2	13.3	0.7					

Appendix 6

Housing Production Figures from Statistics South Africa

Table 16 - Recorded building plans passed by larger municipalities at current prices by type of building: Gauteng

Category of building	Type of building	Measuring unit	Jul. 2005*	Jun. 2006	Jul. 2006	Jan. - Jul. 2005	Jan. - Jul. 2006	% Change 1/
1. Residential buildings	1. Dwelling-houses < 80 square metres	Number	1 740	2 112	1 417	9 223	12 059	+30,7
		square metres	76 156	89 179	66 023	402 378	542 786	+34,9
		R'000	134 460	150 226	110 971	761 938	1 086 257	+42,6
	2. Dwelling-houses >= 80 square metres	Number	1 193	1 304	1 172	7 645	8 170	+6,9
		square metres	311 872	312 588	327 807	1 992 747	2 025 913	+1,7
		R'000	858 890	977 919	1 051 943	5 415 961	6 231 099	+15,1
	3. Flats and townhouses	Number	1 728	1 177	1 527	5 430	8 860	+63,2
		square metres	300 736	157 205	228 857	870 937	1 201 083	+37,9
		R'000	908 922	505 154	756 038	2 547 658	3 808 215	+49,5
	4. Other residential buildings 2/	square metres	0	0	3 944	18 290	26 657	+45,7
		R'000	0	0	10 005	44 967	84 759	+88,5
	5. Total residential buildings	**R'000**	**1 902 272**	**1 633 299**	**1 928 957**	**8 770 524**	**11 210 330**	**+27,8**
2. Non-residential buildings	1. Office and banking space	square metres	72 480	20 798	73 836	254 237	253 985	-0,1
		R'000	233 447	70 744	272 764	764 809	892 039	+16,6
	2. Shopping space	square metres	41 047	20 703	12 565	246 831	196 603	-20,3
		R'000	134 883	73 347	37 353	703 334	621 075	-11,7
	3. Industrial and warehouse space	square metres	30 621	61 018	54 913	318 323	427 776	+34,4
		R'000	77 889	183 128	151 993	865 951	1 283 797	+48,3
	4. Other non-residential buildings 3/	square metres	7 488	7 318	11 668	58 006	53 435	-7,9
		R'000	14 475	19 438	34 699	145 722	141 072	-3,2
	5. Total non-residential buildings	**R'000**	**460 694**	**346 657**	**496 809**	**2 479 816**	**2 937 983**	**+18,5**
3. Additions and alterations	1. Dwelling-houses	square metres	197 679	138 422	166 065	1 152 765	1 110 923	-3,6
		R'000	558 765	414 660	521 065	3 206 808	3 343 528	+4,3
	2. Other buildings 4/	square metres	43 092	40 515	37 819	234 453	211 520	-9,8
		R'000	134 540	113 325	120 310	669 264	654 521	-2,2
	3. Total additions and alterations	**R'000**	**693 305**	**527 985**	**641 375**	**3 876 072**	**3 998 049**	**+3,1**
4. Recorded plans passed	**1. Total at current prices**	**R'000**	**3 056 271**	**2 507 941**	**3 067 141**	**15 126 412**	**18 146 362**	**+20,0**

1/ The percentage change between cumulative figures for 2005 and 2006.
2/ Other residential buildings include institutions for the disabled, boarding houses, hostels and tourism accommodation e.g. hotels, motels, guesthouses, holiday chalets, bed-and-breakfast accommodation and casinos.
3/ Other non-residential space includes churches, sport and recreation clubs, schools, crèches, hospitals and all other non-residential space.
4/ Other buildings include other residential buildings, non-residential buildings and internal alterations.
* Revised.

Table 26 - Buildings reported as completed to larger municipalities at current prices by type of building: Gauteng

Category of building	Type of building	Measuring unit	Jul. 2005*	Jun. 2006	Jul. 2006	Jan. - Jul. 2005	Jan. - Jul. 2006	% Change 1/
1. Residential buildings	1. Dwelling-houses < 80 square metres	Number	847	1 496	664	3 665	6 592	+79,9
		square metres	40 163	72 005	29 624	168 948	294 845	+74,5
		R'000	91 289	100 395	53 634	351 705	541 017	+53,8
	2. Dwelling-houses >= 80 square metres	Number	664	792	793	4 080	4 833	+18,5
		square metres	169 731	182 398	230 454	984 123	1 219 619	+23,9
		R'000	459 879	537 281	749 373	2 543 334	3 580 820	+40,8
	3. Flats and townhouses	Number	1 153	1 228	902	5 391	5 634	+4,5
		square metres	142 957	177 758	102 020	743 440	737 777	-0,8
		R'000	419 395	547 118	329 359	2 000 276	2 274 042	+13,7
	4. Other residential buildings 2/	square metres	0	3 356	3 791	259	8 708	+3 262,2
		R'000	0	11 700	9 478	725	25 081	+3 359,4
	5. Total residential buildings	**R'000**	**970 563**	**1 196 494**	**1 141 844**	**4 896 040**	**6 420 960**	**+31,1**
2. Non-residential buildings	1. Office and banking space	square metres	27 390	5 239	20 808	136 354	71 415	-47,6
		R'000	83 471	18 234	74 666	379 684	236 537	-37,7
	2. Shopping space	square metres	5 565	37 757	1 097	50 906	193 313	+279,7
		R'000	12 549	115 322	3 949	124 407	618 935	+397,5
	3. Industrial and warehouse space	square metres	15 073	15 722	30 331	165 497	108 378	-34,5
		R'000	39 993	36 308	82 086	441 062	291 539	-33,9
	4. Other non-residential buildings 3/	square metres	433	448	1 335	9 918	10 051	+1,3
		R'000	1 516	748	2 986	23 062	27 838	+20,7
	5. Total non-residential buildings	**R'000**	**137 529**	**170 612**	**163 687**	**968 215**	**1 174 849**	**+21,3**
3. Additions and alterations	1. Dwelling-houses	square metres	30 762	48 692	55 615	231 303	366 701	+58,5
		R'000	86 611	125 670	163 267	580 876	993 437	+71,0
	2. Other buildings 4/	square metres	6 200	13 357	11 249	75 827	58 824	-22,4
		R'000	17 963	42 895	32 186	196 192	178 128	-9,2
	3. Total additions and alterations	**R'000**	**104 574**	**168 565**	**195 453**	**777 068**	**1 171 565**	**+50,8**
4. Recorded buildings completed	**1. Total at current prices**	**R'000**	**1 212 666**	**1 535 671**	**1 500 984**	**6 641 323**	**8 767 374**	**+32,0**

1/ The percentage change between cumulative figures for 2005 and 2006.
2/ Other residential buildings include institutions for the disabled, boarding houses, hostels and tourism accommodation e.g. hotels, motels, guesthouses, holiday chalets, bed-and-breakfast accommodation and casinos.
3/ Other non-residential space includes churches, sport and recreation clubs, schools, crèches, hospitals and all other non-residential space.
4/ Other buildings include other residential buildings, non-residential buildings and internal alterations.
* Revised.