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INFORMATION ASYMMETRY AS AN IMPEDIMENT TO MARKET LIQUIDITY IN TOWNSHIP RESIDENTIAL PROPERTY MARKETS

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A research project submitted to the Gordon Institute of Business Science, in partial fulfilment of the requirement for the Masters degree in Business Administration

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ABSTRACT

Housing is currently a topical issue in South Africa which has a housing backlog estimated to exceed 2,5 million households. Banks are a critical component of the housing value chain. They have been struggling to facilitate the reduction of the backlog, citing a lack of market liquidity of townships relative to the suburbs as a primary reason for the failure to reduce the backlog.

The aim of this research study is to determine the extent to which information asymmetry is a factor in the liquidity of the township property market, with a view to understanding the impediments to liquidity in the township real estate market, and make recommendations for parsimonious interventions.

Quantitative analysis was performed by examining data obtained on Estate Agents, Properties Registered and Demographics. Descriptive statistics were employed to understand the structure of the market. Thereafter factor analysis was used to identify relationships and narrow the number of variables for further exploration. Finally, multiple regression was applied in order to understand how the variables identified interacted with one another. The findings revealed that estate agents and the type of housing product had a direct impact on market liquidity.

Market liquidity in the township market could be improved by making practical and parsimonious interventions centred on the estate agents, and property developers.

DECLARATION:

I declare that this research project is my own work. It is submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirements for the Masters degree in Business Administration. It has not been submitted before for any other degree or examination at any other university.

Signed:

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Mxolisi Motau

Date _____

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1.1 INTRODUCTION

Research on the Township residential property market conducted by Shisaka (2004) revealed that over the period from 2000 to 2004 (Table 1), 7.5% of properties cumulatively changed owners in the traditional Townships. This particular research was focused on secondary property markets. When compared to the traditionally previously predominantly white Suburbs, whose movement in the same period was 30%, the conclusion drawn was that Township markets are illiquid.

Table 1: Secondary Registrations to erven proclaimed

	Total secondary registrations as a % of proclaimed (cumulative)					
	199	200	200	200	200	Tota
Private	1.1	1.8	3.0	3.3	3.3	12.5
Old	0.9	0.7	0.9	0.7	0.5	3.7
RD	1.0	0.9	1.3	1.6	1.6	6.4
Site and	0.2	0.0	0.8	1.3	1.2	3.5
Tota	0.8	1.0	1.8	2.0	1.9	7.5

Source: Shisaka (2004)

An important factor noted by Shisaka (2004) was that 37% of the 7.5% movement consisted of repossessed properties that were resold, leading them to conclude that the market was illiquid and dysfunctional.

Research conducted by the National Housing Finance Corporation (NHFC, 2003), focused on identifying housing blockages from a buyer perspective, revealed a number of blockages. Significant among these was that many potential buyers (50%) often did not approach the banks for mortgage finance, as they expected to be declined.

The research found that 62% of the individuals who did not approach the banks had negative perceptions of banks. These ranged from distrust and a fear to engage, to general lack of understanding of what the processes involved are. Of the remaining buyers who approached the bank, 35% were declined loans. This decline rate increased to 50% for individuals earning less than R7,500 per month at the time of this research.

The research by Shisaka (2004) highlighted a number of qualitative reasons. The unwillingness to sell was raised as one of the critical findings, and the lack of estate agents as service providers was a constraint on the efficient functioning of the market.

The NHFC research highlighted the unwillingness of individuals to approach mortgage lenders for finance, in addition to a high level of loan applications being declined by the banks.

The combination of a high loan application decline rate, a high percentage of

individuals who don't approach the bank due to adverse-selection, and the unwillingness of homeowners to sell results in a reduced potential for successful property transactions.

1.2 CONTEXT

The terms "Suburb" and "Township" have a specific meaning in the South African context. Whilst the term "Township" has a meaning that refers to the legal urban sub-division, in the South African context this term has inadvertently ended up being used to define the predominantly black residential areas created in the period of apartheid legislation. The term "Suburb" on the other hand inadvertently ended up being associate with affluent and predominantly white residential areas (Mabin: 2005). It is in this context that this research uses the terms "Suburb" and Township.

Baryla and Zumpano (1995) suggest that the residential property market is generally inefficient due to imperfect information resulting from the nature of the housing transaction and the product itself. They also suggest that property transactions are typically complex and confidential, the house itself is a non-homogeneous product and that related in information is costly to obtain.

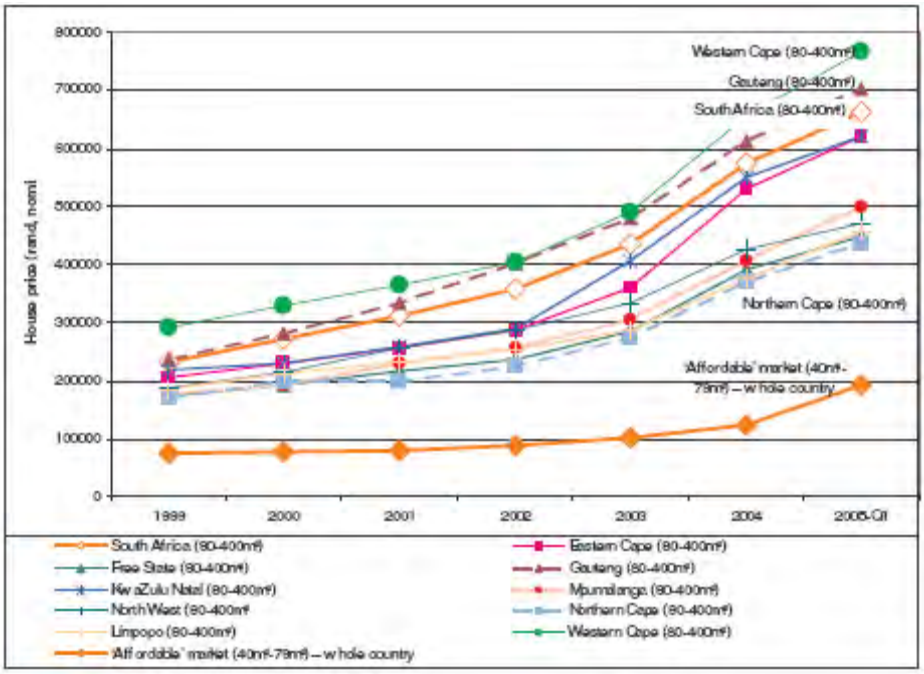
1.3 JUSTIFICATION FOR THE RESEARCH

Housing demand in South Africa is said to overwhelmingly exceed supply, with a housing backlog reported to be as much as 2,5 million households (Banking

Association of South Africa, 2005), and increasing at a rate that exceeds the rate of creation of new housing. The shortage of housing is thus a major problem in South Africa.

In terms of neoclassical economics, this should result in an appreciation of house prices until equilibrium is achieved. The increase in prices should attract entrants into this market as it would be seen to be potentially profitable. However, findings from research conducted by Shisaka (2004) suggests that house prices in Townships, where the demand overwhelming exceeds supply, are not keeping track with average price rises nationally, and that activity levels are far lower.

Figure 1: ABSA Price index for average House Prices



Source: BASA (2005)

Figure 1 above illustrates what is mentioned above where Township markets are

defined in the graph as the affordable market, the show on average a slow rise in property prices, relative to larger houses predominantly in Suburbs.

1.4 THE RESEARCH AIM

Amongst some of the issues raised as potential constraints to market liquidity is the shortage of estate agents (Shisaka, 2004). The nature of the transaction and the product create opportunities for information asymmetry to critically impact on market efficiency (Baryla and Zumpano, 1995).

The aim of the research is therefore:

- ⇒ To compare the property market characteristics between Township property market and Suburban property market
- ⇒ To identify variables that result in the differences in liquidity in the markets
- ⇒ To identify and rank variables that impact on liquidity
- ⇒ To determine the extent to which information brokers shape the market
- ⇒ To derive a model for residential property markets that identifies Pareto efficient interventions to reduce the impediments identified above

CHAPTER 2 - THE THEORY AND LITERATURE REVIEW

Much of the academic literature on this topic is international. The research is predominantly focused on the Estate Agent as the central figure in a property transaction. The research considers the extent to which the estate agent influences the key role players in a property transaction. The international research findings will be considered within a South African context, with the understanding that there may be potential contextual limitations. The research ultimately seeks to explore the property market characteristics of the Townships and Suburbs from a market efficiency perspective.

2.1 CONTEXTUAL FRAMEWORK

2.1.1 THE CONCEPT OF LIQUIDITY

Liquidity is defined in the Random House Unabridged Dictionary as

> *"the ability or ease with which assets can be converted into cash".*

Forgey, Rutherford and Springer (1996) asserted that the concept of liquidity involved both time and price. They also found that a number of factors impacted on liquidity, the main one being the search effort of the individual participants. They found that the search effort of the individual was determined by market conditions, physical characteristics of the property, the size of the brokerage firm and the list price of the property. However, the most critical finding from their research was that properties with higher liquidity sold for a premium over properties with lower liquidity.

Downs and Guner (1999) counter-intuitively found that an increase in the number of informed real estate investors raised information asymmetry, and resulted in reduced market liquidity. The reasoning was that informed investors had heterogeneous information about the asset, whilst the average participants had homogeneous information which provided trade advantages.

Downs and Guner (1999) also found that in illiquid markets, same-size trades affected prices more than in liquid markets. This means that price stability could be seen as an indicator of liquidity.

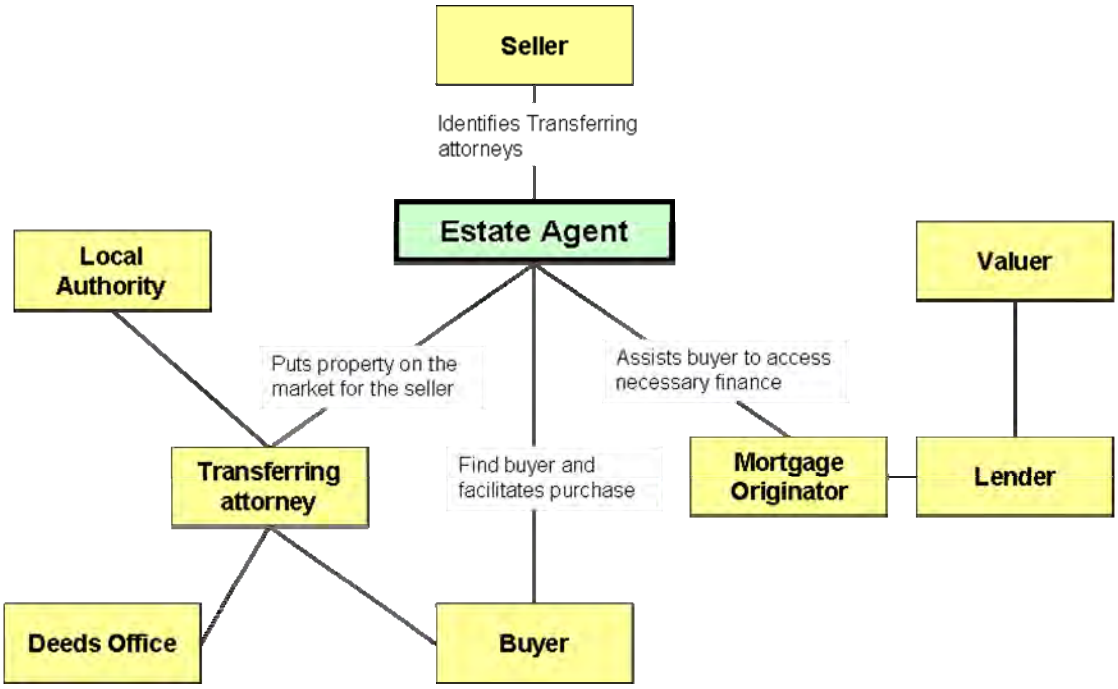
2.1.2 PARTICIPANTS IN THE HOUSING PROCESS

A typical property transaction is defined as follows (Mantrala and Zabel, 1995):

> The principal players are the ***seller***, the ***estate agent*** or broker, and the ***buyer***. The main function of the real estate broker is matching the prospective buyers and sellers. This is done by collecting information about prospective buyers and sellers, providing familiarity with bargaining and details of the transaction, and providing guidance and information.

The above is depicted in Figure 2 as understood collectively by the BASA, which provides in excess of 85% of all residential mortgage loans in South Africa.

Figure 2: Typical Property transaction where an estate agent is involved



Source: BASA (2005)

The above diagram is supported by the findings from the NHFC survey (Table 2) below which illustrates the process in trying to buy a house. The first step is the gathering of information and the third step is the search for a house, as mentioned in the table below. The estate agent plays a significant role in both these steps.

Table 2: Process in trying to buy a house

Ranked in order of activity	2003	2001
1. Gathering information	94%	95%
2. Saving towards a house	70%	66%
3. Trying to find a property	93%	90%
4. Enquiring about a loan or bond	70%	67%

Source: NHFC (2003)

Economics of information, and the role played by the Estate Agent as the information provider to various role players will be explored. The particular focal point will be information asymmetry. The study will look at factors that impact on the formation, accumulation and application of information in housing markets in the South African context, and how the outcomes of these processes result in information asymmetry.

Mantrala and Zabel (1995) identified the following typical characteristics of a housing market that complicate the transaction: fixed location of houses; heterogeneity of houses; infrequent transactions amongst buyers and sellers; financial dimensions; and legal dimensions of the transaction.

2.2 ECONOMICS OF INFORMATION

Information is a key ingredient of a property transaction. The purpose of a transaction is for a seller to find a buyer who is willing to pay a desired price for the property. The more information participants can accumulate, the smaller the knowledge gap will be.

Stiglitz (2000) states that:

> *The recognition that information is imperfect, that obtaining information can be costly, that there are important asymmetries of information, and that the extent of information asymmetries is affected by actions of firms and individuals, has had profound implications for the wisdom inherited from the past, and has provided explanations of economic and social phenomena that otherwise would be hard to understand.*

Stiglitz (2003) defined information asymmetry as the condition where some information is known to some, but not all, parties involved. The application of this concept means that transactions in general contain elements of information asymmetry, which impedes market efficiency in the Township based on the fact that the nature of property transactions is fundamentally dependent on different types of information being exchanged across the housing value chain. These exchanges of information are used to make decisions that lead to the conclusion of transactions.

Lutzkendorf and Speer (2005) state that information asymmetry creates market inefficiencies. According to Vahrenkamp (1991) in Lutzkendorf and Speer (2005), inefficiencies take the form of “adverse selection” and “moral hazard” defined as below:

Adverse selection: The absence of specific information about a product may lead the participants to refer to general information about the product in their decision making. This way, superior products could be subjected to being treated as inferior, and ultimately become average. This can apply to information about borrowers in the financial services context. In some cases, buyers exclude themselves as a reason of their own fears about their eligibility as borrowers. (NHFC, 2003)

Moral hazard: This condition occurs where clients who commission work from agents can find themselves victims of the agents, where the agent concerned is in a position to take advantage of the information at the expense of the client.

Watkins (1998) found that estate agents levelled the playing field between first time-entrants into the property market and repeat purchasers. They found no evidence suggesting that previous participants were in a significantly better position than new entrants when re-entering the market as buyers. The role of information broker played by the estate agent effectively levelled the playing field.

Gordon, Salter and Johnson (2002), seeking to prove that difficult-to-show properties were harder to sell (i.e. took longer and traded at a discount to asking price), found no conclusive evidence in support of their hypothesis. They found that the more informed buyers became, the less power estate agents had on the transaction. They attributed some of this increased buyer awareness to multi-listing services.

Information in a property transaction is critical. The estate agent is exposed to information provided by both the buyer and the seller in order to make a match. However, this invariably places the agent in a position of power relative to both buyer and seller. It seems counter-intuitive that a buyer who was previously exposed to the home acquisition process should be placed on the same level as a first-time buyer. However, the exposure to the same information on the same transaction for different buyers may serve to effectively level the playing field.

2.3 INFORMATION PROCESSING CONTEXT

The more knowledgeable an individual is about a type of transaction, the more informed his/her decisions will be. This could also contribute to improving transaction efficiencies.

Darity (2001) found that the fundamental lack of education and other forms of learning-based discrimination in apartheid South Africa created a significant disadvantage for black South Africans. He described it as "*a system of supra-oppression by a dominant group towards a subaltern group, short of extermination*". This, he concluded, impaired the ability of black people to engage in productive economic activity at the same level as whites, to the extent that further inequality and exclusion could be achieved without legislated discrimination.

Hardin (1999) states that human information processing theory indicates that humans obtain domain-specific schema that lead to their making optimal decisions within the framework of their domain expertise. He further states that bias in decision-making may occur due to the misapplication of the schema that control processing heuristics or under-developed domain knowledge. When considering the education system and the culture that emerged in the Townships, the foundation of the learning for many buyers and sellers in the Township were formed in that context.

Henrich (2000) found that human information processing was fraught with errors, biases and miscalibrations that result in systematic patterns of maladaptation. This

means that undue prejudices and incorrect views can be developed, and exacerbated by a lack of corrective action.

De Bruin and Flint-Hartle (2003) found that investors in residential real estate made decisions based on imperfect knowledge and limited domain-specific information. These findings could be applied to individuals acquiring houses. They often have very little information and even less knowledge of the property market, and as such are most likely to make sub-optimal decisions.

What can be concluded is that the knowledge level of participants in property transactions may be a factor in determining the probability of a transaction being initiated and concluded efficiently. The same can be concluded on access to information. The more information is availed, the better decisions participants can make.

2.4 VALUER BIAS

Valuers are a critical component of the property transaction in that once the transaction has been concluded between the buyer and the seller, they have to determine the appropriate market value of the property as party of the loan acquisition process.

Kempton, Alani and Chapman K (2002) found that confirmation bias was a factor in property valuations, in that valuers formed a hypothesis on first impression and sought information to confirm the hypothesis. Where none existed to confirm the

hypothesis, they sought to interpret the little information that existed in a manner that still confirmed the hypothesis, instead of contemplating an alternative hypothesis.

Gallimore and Wolverton (1997) found that the prior knowledge of the asking price of a property transaction resulted in the valuers basing their valuation around that price, thus resulting in a biased price. This means that the intrinsic value of the property may not be a factor in valuation.

Given that the estate agent influences the price at which the seller places the property on the market, and the price the buyer agrees to, the above literature means that valuers effectively confirm a price that has effectively been set by an estate agent. In the South African context in particular, the valuer is employed by the bank and is deployed to validate value.

Levy and Schuck (1999) found that valuations are influenced by clients through explicit and implicit means. In some cases, the clients requested that the valuers adjust values, to which valuers tended to respond in the required manner.

Gwin and Maxam (2002) found that where the valuers believed that the mortgage lender wanted to close the transaction expediently, they were inclined to overstate the value of the property. Where the valuer believes that the mortgage lender has concerns about default risk, he is more likely to undervalue the asset. They found that market circumstances tended to influence lenders' expectations of valuers. In

a rising market where sellers could move on to the next buyer, who may well end up concluding the transaction with another mortgage lender, the lender would be inclined to accept an overvaluation in order to secure the loan. In a falling market, the lender is more inclined to exert pressure on the valuer to be more conservative.

Daly, Gronow, Jenkins and Plimmer(2003) state that:

> *"Valuers have reduced the valuation task to a confirmation of bid price, and because of lender pressure which occurs worldwide, valuers overlook the economic sustainability of the property asset, which has severe implications for housing markets and national economies that interact with these markets."*

This effectively means that the valuation process may be a mere rubber stamping exercise, and may only serve to give the lender a false sense of comfort.

Hansz, J. A. (2004) found that prior knowledge of the mortgage amount can act as a reference point for the valuer. This is similar to the findings by Daly et al (2003) that knowledge of the purchase price becomes a proxy for the valuation. This suggests that the exchange price, which is facilitated by the estate agent ultimately becomes the value accepted by the valuer and the bank.

2.5 VALUE PERCEPTION

Value is a critical component of a property transaction as it informs the pricing component of the process. Price is also an important factor in market liquidity as it has an impact on time on the market. Price can also make a statement about the property or location concerned.

Des Rosiers, Theriault and Villeneuve (2000) findings confirm the importance of external factors (also known as externalities) such as accessibility, neighbourhood, and availability of socially amenities in house price determination. They further found that the physical attributes of the house, ranked lower than the abovementioned externalities.

Variables commonly used in determining value (Kauko, 2003):

1) Accessibility: general and specific accessibility
2) Neighbourhood: physical and social quality of environment
3) Specific negative externalities: damage caused by air pollution, noise, industrial waste, etc.
4) Public services and taxes: rates and taxes and the effective delivery of services to the neighbourhood
5) Density: the nature of land use, and consequent social effects, and their impact on price

The above factors indicate some of the variables that are considered in the determination of value.

2.6 THE ROLE OF AGENTS

Baryla and Zumpano (1995) suggest that estate agents can play a vital role as information providers to both the buyer and the seller. Estate agents can reduce information asymmetry and reduce buyer search time by channelling the search for a house towards the buyer articulated attributes.

Baryla, Zumpano and Elder (2000), having asserted that most home buyers are infrequent and inexperienced participants in the home buying process, found that the probability of finding a home increased over time for a broker-assisted searcher. They concluded that on self-conducted searches, the probability of finding a home decreased over time.

Sawyer, Crowston, Wigand and Allbritton (2001) found that the nature of the real estate market, being characterised by complex transactions, required the contribution of estate agents in order to run smoothly, and that they were less replaceable than intermediaries such as stockbrokers or travel agents. They also found that real estate transactions were seen in a social context and therefore required the estate agent to have a social link to their area of operation.

Miceli, Pancak and Sirmans (2000) state that there is an inherent conflict in the role of estate agents as they serve as both information provider to the seller, while buyers also perceived that they too were represented by the estate agent, who's traditionally contracted and compensated by the seller.

Yavas in Miceli et al (2000) says that imperfect information created uncertainty about finding a trading partner, as well as uncertainty about completing a trade once a partner was found. The role of the estate agent in finding a trading partner is to use information obtained from both the seller and the buyer to make a match. Miceli, Pancak and Sirmans (2000) concluded that the better the information estate agents could obtain, the higher would be the quality of the match, and the sooner

the transaction could be concluded.

Overall, Miceli et al. (2000) concluded that the bundling of information and representation services provided by estate agents resulted in a trade-off between the interests of both the buyers and sellers in sharing information prior to a transaction match, and a cost to both the parties in revealing information prior to the concluding of the transaction.

Yavas, Miceli and Sirmans (2001), in further research, found that although real estate agents played a role in the matching stage, they did not necessarily improve bargaining efficiency. They also found that estate agents tended to reduce the likelihood of a successful negotiation, and increased the sale price, despite the fact that they had more information than both the seller and the buyer.

The overall conclusion by Yavas et al (2001) was that estate agents added value in the matching of buyer and seller, but negatively impacted the bargaining process. This effectively presents a contradictory scenario. Whilst the role of estate agents in reducing information asymmetry contributed to market efficiency from a matching perspective, further participation could result in the impairment of efficiency, even with information available. This could be attributed to the inherent self-interest of the estate agent.

Furthermore, the estate agent legally typically acts on behalf of the seller, is compensated by the seller, and is expected to deliver the best value for the seller.

However, goal conflict, an agency theory paradigm (Shapiro, 2003), can lead the estate to deliver a service that is contrary to the principle of legal obligation under various conditions, especially since the estate agent is pressed to earn commission as soon as possible.

Results from research conducted by the Federal Trade Commission (1983), quoted in Black and Nourse (1995), revealed that 72% of buyers often operated under the false impression that they were represented by the selling estate agent, which led them to reveal information intended to be confidential from the seller, even though they had not signed an agreement with the agent concerned.

Black and Nourse (1995) also found that in the case where the buyer is also represented by an estate agent, the closing costs of property transactions were shifted to the seller, which indicated an effective price concession by the seller.

Estate agents play a critical role in matching the buyer and the seller. However, they are also in a position of an inherent conflict of interest, and as such, can influence both the buyer and seller to achieve their own end. They are market makers. The intermediation role they play enables them to consolidate information. However, once they have identified a potential match, their participation in the negotiation process could lengthen the time it takes to conclude the transaction.

2.7 MARKET EFFICIENCY

Market efficiency refers to the speed with which a transaction can be concluded. Efficient markets could increase market liquidity. However, it does not follow that market liquidity is a result of market efficiency. Market liquidity refers to the quantum of transactions.

Jud, Seaks and Winkler (2001) suggest that time on the market is the most often used measure of market efficiency. Their research concluded that two factors impacted on time on the market. These are the characteristics of the house, and the list price. They found that the higher the list price, the longer would be the time on the market. The more atypical the characteristics of the house, the longer it would take to sell the house. They found no evidence that particular estate agents could influence the time on the market.

Wang, Lizieri and Matysiak (1997) contrasted direct property investment with indirect property investment (property stock) and found that the indirect market (property stock) was more liquid and efficient than the direct market. They found that Efficient Market Hypothesis could be applied to a limited degree in the analysis of behaviour in the indirect market. However, they found that in direct markets Efficient Market Hypothesis could be rejected outright.

Downs and Guner (1999), contrary to Wang, Lizieri and Matysiak (1997), concluded that information flows in the real estate securities market were potentially as deficient as information flows in the underlying asset market.

Keogh and D'Arcy (1999) argued that in evaluating property market efficiencies, one had to consider the characteristics of the property itself and the processes through which the property is used and traded. They argued that in property markets there are strong *a priori* reasons for expecting inefficiency, including high information costs, infrequency of trade, dispersed markets and heterogeneity of the product. They conclude that evaluating information inefficiency in isolation from allocative and operational efficiency may result in flawed judgements.

The conclusion that can be drawn from above is that time on the market is a variable that can indicate the extent of market efficiency and liquidity. The list price of the house can also have a direct impact on liquidity in that changes to it result in changes to time on the market. The role of the estate agent in this situation is his/her assistance in the setting of a price i.e. providing pricing advice to the seller. The limitation in evaluating the estate agent from an information perspective may be that his/her operational role in the process, once a match has been made, may be ignored.

2.8 LITERATURE CONCLUSION

It must be stressed that the purpose of this paper is to ultimately contrast the Suburbs and the Townships based on the characteristic of these markets, which include the characteristics of the participants. There are a number of themes that emerge from the literature review.

The concept of liquidity involves both a time and price dimension. However, the more critical component of liquidity is price or value, with time being a less important dimension. Liquid markets are characterised by superior price performance. However, the time dimension entails the expeditious conclusion of transactions, which could result in an increased number of transactions.

The estate agent seems to be at the centre of property transactions (Keogh and D'Arcy: 1999). He is the market maker. His ability to collect the information from willing sellers and eligible buyers impacts his success as a matchmaker. His fundamental purpose is reducing information asymmetry between the buyer and seller, in the absence of an exchange. However, once that is concluded, his intermediation role gives him power to create or retain a degree of asymmetry that benefits him (Yavas, Miceli, and Sirmans: 2001). This is the inherent conflict created by the agency role.

The estate agent also effectively determines the value that the bank places on the value of the house because values mostly rely on the price submitted and invariably end up gravitating towards that set price as a true value of the property. However, in the case of Township properties, a biased valuer or a valuer pressured by his employer may override his instincts to accept and confirm the bid price, which could result in an unsuccessful or protracted transaction.

The ability to set the appropriate price has an impact on the length of the transaction. It could also indicate the effectiveness of the estate agent.

There seems to be a component of the property transaction that can be impacted by the knowledge levels of buyers and sellers (Hardin III: 1999). Knowledgeable buyers or sellers can improve their bargaining position with the estate agents. However, there is no clear evidence as to where this would reduce the transaction duration.

This raises demographic attributes as a possible contributor to the overall functioning of the market (Darity: 2001).

Another emergent theme is the nature of the house as a product. It is seen to be a heterogeneous product that is an inherently inefficient product to trade by virtue of the heterogeneity, dispersed locations and infrequent trades (Jud, Seaks and Winkler: 2001).

CHAPTER 3 - RESEARCH QUESTIONS

The purpose is to start by contrasting two seemingly different markets and try to identify those attributes that seem to have the most impact. In light of the exploratory nature of this, research questions have been asked. The research questions come from the perspective of contrasting the Suburb and Township market responses, and are based on the key themes that emerged from the literature review.

In summary, the major themes that have emerged from the literature review are:

⇒ The role of estate agents as the information broker

⇒ The inherent nature of the house as a product

⇒ The valuer as a participant

⇒ The buyers and sellers as information recipients and processors

⇒ Information asymmetry as an underlying theme

Question 1

What are the indicators of market illiquidity in the Township market in relation to the Suburb real estate market?

Question 2

To what extent does the estate agent, as the information broker, impact market liquidity?

Question 3

What are the different market attributes that differentiate the Township market from the Suburb market?

Question 4

What are the key demographic attributes that differentiate the participants of the Township and Suburb markets in relation to information asymmetry?

CHAPTER 4 - RESEARCH METHODOLOGY

4.1 RESEARCH METHODOLOGY

A literature review was conducted in order to explore existing knowledge on the subject and develop a conceptual framework. The conclusions from the literature review and the subsequent questions have led to the identification of quantitative research as the most appropriate method of research.

The purpose of this research is to identify attributes and determine if there are any connections between these attributes, and the significance of those connections.

4.2 UNIT OF ANALYSIS

The unit of analysis is the attributes of the different markets to a range of factors from the role of agents, demographics and participants.

4.3 POPULATION OF RELEVANCE

The population in this study will represent Townships and Suburbs in the Gauteng province. A Township and a Suburb for the purpose of this research have already been defined. The specific areas chosen to be contrasted are Soweto and Randburg municipal districts.

Soweto is the largest Township in the country and can be deemed to be representative of Townships to a degree. Randburg can also be deemed to be representative of Suburbs in general.

What makes the comparison of these two areas significant is that they share the same municipal and deeds offices. They should be affected by the same operational inefficiencies when it comes to the registration of properties. The subjects of the research are estate agents, buyers and sellers, and valuers who are defined below for the purposes of the research.

4.4 SIZE AND NATURE OF THE SAMPLE

Data will be sourced on the townships in Soweto and suburbs in Randburg. The sampling method will be non-probabilistic. The sampling method to be utilised is a combination of incidental and purposive sampling. Incidental sampling is a convenient form of sampling that uses near-ready or readily available units of analysis (Welman and Kruger, 2001, p62). Purposive sampling is used where the research relies on their prior knowledge of the subject (Welman and Kruger, 2001, p62). The choice of the specific locations is based on convenience and purposive sampling.

The choice of Soweto is informed by the relative maturity of the Township. Certain municipal areas will be selected in Soweto. Protea North, Protea Glen, Pimville and Diepkloof are known to be active property markets in the Township. The choice of Northcliff, Cresta, Fairlands and Blackheath is the result of researcher judgement.

4.5 PROPOSED DATA COLLECTION

Simonton (2003) says that historical data can improve the applicability of research beyond the context of the study because it represents real world events. Webb, Campbell, Schwartz, Sechrest and Grove (1981) in Simonton (2003) assert that historical data, being unobtrusive and non-reactive, cannot be contaminated with research effects. Simonton (2003), however, cautions that historical data can contain informational gaps and impact the quality of analysis.

Table 3: Summary of data collection approach

Question	**Data required**	**Potential sources**
1. What are the indicators of market dysfunction in the Township market in relation to the Suburb real estate market?	• Detail, number and value of properties transferred by location over a significant period	• Deeds Office Data
2. To what extent does the estate agent, as the information broker ,impact market liquidity?	• Date registered • Length of time in operation • Location of operations	• Estate Agency Affairs Board
3. What are the different market attributes that differentiate the Township market from the Suburb market?	• Type of house • Size of house • Title deed detail • Time to transfer etc.	• Deeds Office Data
4. What are the key demographic attributes that differentiate the participants of the Township and Suburb markets?	• Population groups • Education levels • Employment etc.	• Municipal database (census data).

4.6 PROPOSED DATA ANALYSIS

Historical data can be subjected to various analytical tool that are found in standard correlation studies (Simonton, 2003). Simonton cites the following examples of analytical tools: factor analysis; cluster analysis; multidimensional scaling; multiple regression; structural equation models; and time-series analysis. However, this analysis will be restricted to factor analysis, multiple regression and time factor analysis.

The approach to the analysis will be in three phases. The first phase will concentrate on broadly understanding the data through descriptive statistics and time-series analysis, creating some structure for the data.

The second phase will entail factor analysis, building on the descriptive statistics in order to identify significant variables that start to provide some insight into the drivers and attributes of the markets concerned.

Fabrigar, Wegener, MacCallum and Strahan, (1999) in Hayton, Allen and Scarpello (2004), define factor analysis as a set of multivariate statistical methods for achieving a parsimonious understanding of measured variables by determining the number and nature of common factors needed to account for the patterns of observed correlations.

Mundfrom and Shaw (2005) state that factor analysis has a number of applications in research, including the development of tests and measures. In this research

factor analysis will be identify variables in a set of data that can be utilised as inputs into a regression exercise to test for causality.

The last phase will be multiple regression modeling. Albright, Winston and Zappe (2003) state that regression analysis can be an appropriate analytical tool when trying to understand the way the world operates or when trying to predict how the world could operate in future.

4.7 POTENTIAL LIMITATIONS

The research will have the following limitations:

⇒ The convenience dependency of the selection method may compromise the ability to find a broad range of transactions, and possibly limit the usability of findings.

⇒ The allocative and operational efficiencies of a property transaction are not considered, which may lead to some incorrect judgements.

⇒ This project is based entirely on secondary data, which could result in missing data as it was not primarily collected for this research.

⇒ The reliance on secondary data means that in some cases, proxy variables are analysed in order to understand a connected phenomenon.

⇒ Transaction costs, macro-economic variables and the role of finance, which can impact liquidity and market conditions, are not considered.

CHAPTER 5 - PRESENTATION OF THE FINDINGS

5.1 INTRODUCTION

This study entailed an analysis of a combination of data sets from three databases. The data on property transactions was obtained from the national deeds office database. The dataset on demographics was obtained from Statistics SA. The data set on estate agents was obtained from the Estate Agents Affairs Board. The common attribute in all the data sets were the locations chosen, representing Townships and Suburbs as defined earlier in this paper. These are Blackheath, Cresta, Fairlands and Northcliff which represented the Suburbs. The specific localities representing the Township were Diepkloof, Pimville, Protea North and Protea Glen.

The first phase of the analysis was the demographic analysis and descriptive statistics aiming to identify attributes and trends. The second phase was undertaken using relational statistics, with a particular emphasis on factor analysis. The variables utilised in factor analysis were based on the findings from the descriptive statistics.

The third phase was regression analysis, based on variables found in factor analysis and the literature review.

The structure of the results follows the key themes from the literature review.
The analysis will consist of descriptive as well as relational statistics.

5.2 DEMOGRAPHICS

The descriptive statistics are extensive as they seek to uncover differences or similarities in the attributes of the population groups, locations and other issues that may emerge.

5.2.1 POPULATION

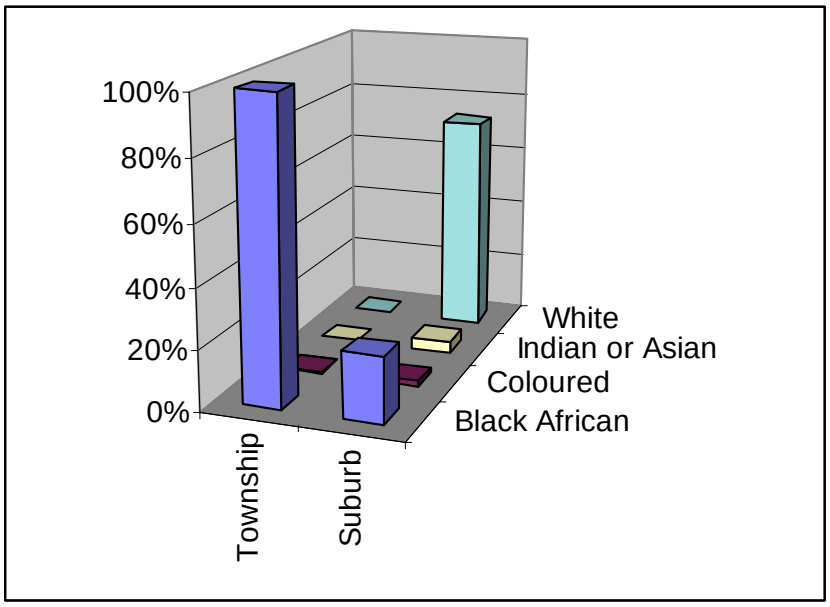
Table 4: Size of the population

Population						
Pop Group	**Township**	**Suburb**	**Total**	**Pop group %**	**Township % of total**	**Suburb % of total**
Black African	203 059	4 578	207 637	92.48%	97.80%	2.20%
Coloured	403	347	750	0.33%	53.73%	46.27%
Indian or Asian	36	753	789	0.35%	4.56%	95.44%
White	100	15 242	15 342	6.83%	0.65%	99.35%
Grand Total	**203 598**	**20 920**	**224 518**	**100.00%**	**90.68%**	**9.32%**

Total size of population of areas chosen is 224528. The Suburb represents 9.3% of the population under consideration.

The number of Black Africans is 92.48% of the sample. Black Africans in the Township account for 97.8% of the total number of blacks in the population. 99.35% of all whites in the population are accounted for in the Suburban population. Indian and Coloured people are significantly underrepresented in both the Suburbs and Townships. The picture painted is that of a still predominantly White suburban area and a predominantly black Township.

Figure 3: Mix of population groups



However, there is more diversity in the white Suburb, as can be seen in Figure 3. Black Africans constitute nearly 99% of the Township population and just fewer than 25% of the Suburban population. The population group profile of the Township is overwhelmingly skewed and is not representative of the demographic profile of the country.

Furthermore, it does not appear as though there is any corrective action taking place. Whilst the suburb picture is also not representative, it is more diverse as there are Black Africans, Indians and Coloured people entering the suburbs.

5.2.2 EMPLOYMENT LEVELS

The employment variable refers to the age group 15 to 65 as employable adults.

Table 6: Employment levels by Suburb

Location	*Employed*	*Unemployed*	*Employed as % of Population*
Suburb	11 682	492	55.8%
Township	53 910	47 494	26.5%
Grand Total	65 592	47 986	29.2%

Table 6 above indicates the employment levels per location. These are presented above as a percentage of the population for comparative purposes. From above it is evident that Township locations have at most a third (34% in Protea) of the population employed, with the lowest level of 23% in Diepkloof. The average percentage of people employed relative to the total population in the Township is 26.5%

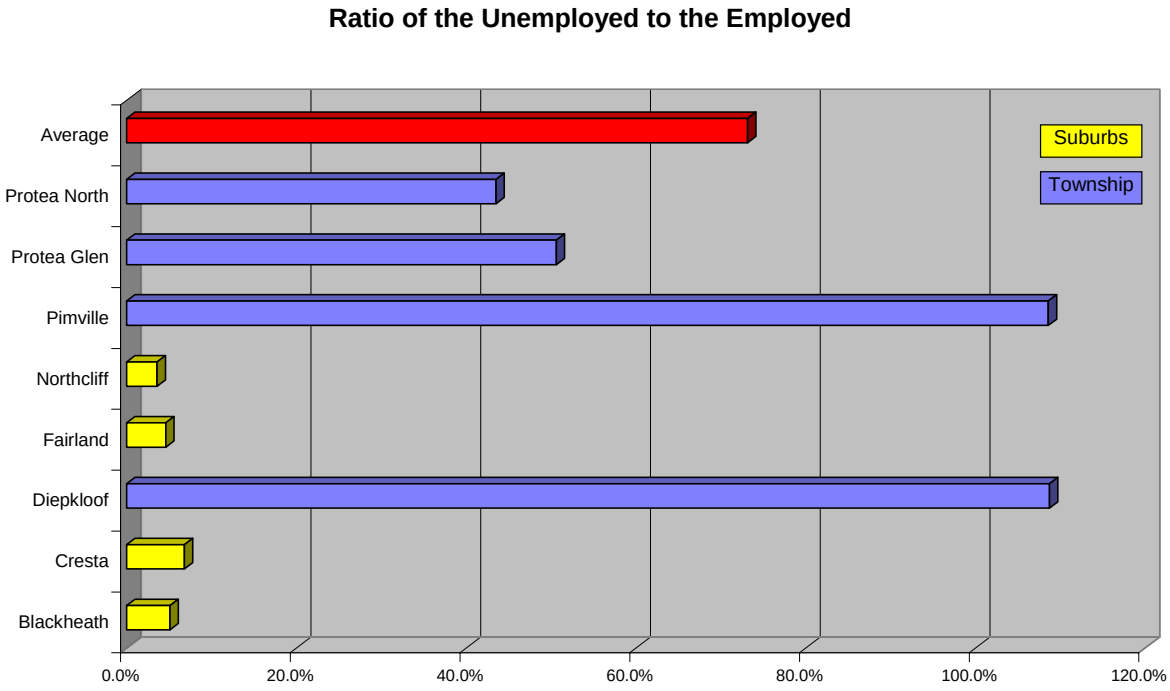
The remaining three-quarters are unemployed and may be dependent on the employed dependent on the 27%, even if indirectly.

Around 56% (Table 6) of the population in the Suburbs is employed. The conclusion that can be drawn is that income levels and disposable income in the Suburbs is higher than in the Townships.

These key differences in employment levels have socio-economic implications, given the likelihood of a superior disposable income in the Suburbs. Higher

incomes also result in the ability to raise more debt, and provide the ability to afford the higher-priced properties.

Figure 4: Employment by location



The above graph is a visual illustration of the severity of the employment level differences in the individual suburbs.

The graph above shows the ratio of employed adults to unemployed adults. The sample average is 73%. The ratio of unemployed Suburban adults to employed adults is at worst 7%. The comparative ratio in the Township is 105 % in Diepkloof and Pimville, indicating that there are more unemployed adults than employed adults.

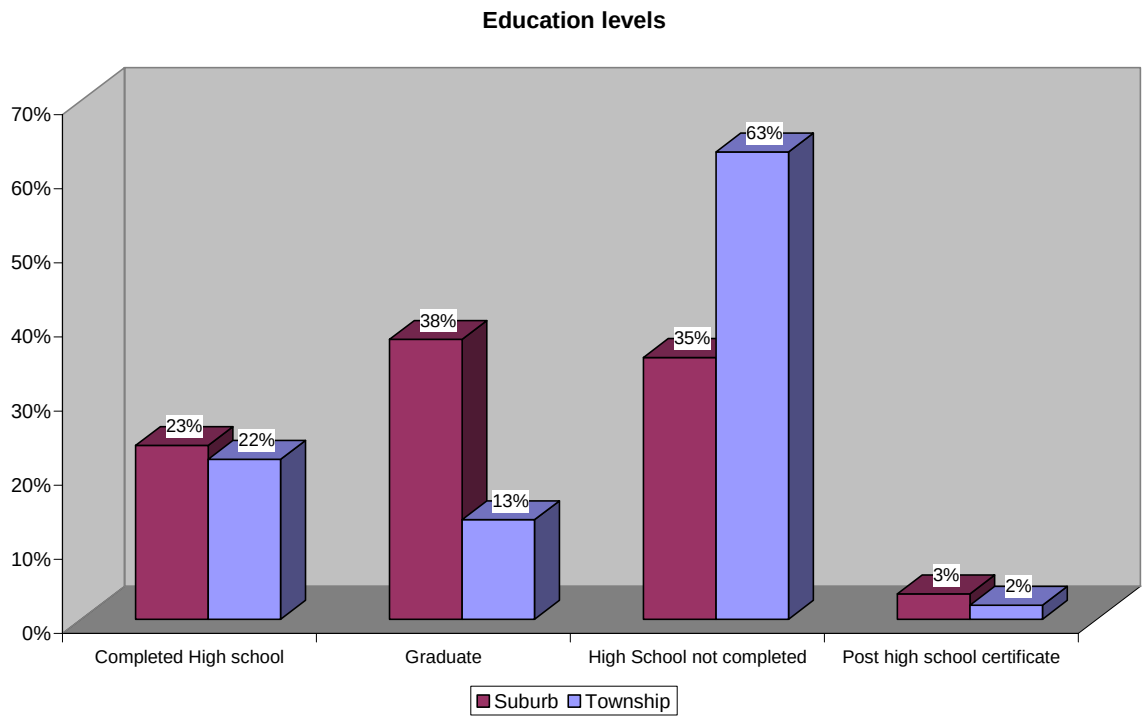
5.2.3 INFORMATION PROCESSING CONTEXT: EDUCATION

Education levels are being used as a proxy indicator of the extent to which people can understand financial and other concepts related to home ownership and investment. This data was obtained from the population group.

The analysis of the education levels consists of individuals in the age group 15 to 65 years, and has been divided into the following 4 categories, namely:

- ⇒ High school not completed: Matric not yet completed
- ⇒ High school completed: Matric completed without further qualifications
- ⇒ Post high school certificate: Completed matric, with an additional certificate obtained.
- ⇒ Graduate: Undergraduate and Postgraduate Diploma or Degree obtained

Figure 5: Education levels



What can be observed in Figure 5 above is that the level of graduates in the Suburbs is nearly 40%, more than three times the amount of 13% observed in Townships. It is important to note that the Suburb education level exceeds the Township level for all the categories.

The dominant category observed in Townships is of those who have not completed high school at 63%, almost twice the 35% observed on Suburb data.

The picture painted in Figure 5 is that of predominantly under-educated people in Townships compared to the predominantly educated populace in the Suburbs.

The assertion is that people who have completed high school and those who have

gone on to become graduates have a better capacity to grasp concepts, especially financial and investment concepts.

5.3 DESCRIPTIVE STATISTICS AND TIME SERIES

The period under observation is as far back as the data was obtained, which goes as far back as the year 2000 and as recently as August 2006. The terms in table 10 are defined below:

Table 7: Summary of descriptive stats for property transactions

	Number of Properties tfr		Number of agents registered		Total value of properties transferred		Average Purchase value	
	Suburb	Township	Suburb	Township	Suburb R'000	Township R'000	Suburb	Township
Sum	7 993	14 895	230	15	5 282 859	636 800		
Mean	1 142	2 128	33	2	754 694	90 971	710 480	47 446
Median	1 145	2 139	25	1	843 762	63 317	684 811	33 932
Stdev	233	624	18	2	212 345	44 131	320 878	29 990
Stdev %	20%	29%	53%	87%	28%	49%	45%	63%
Kurtosis	3.501	-0.666	-2.270	-1.334	-2.188	1.558	-0.162	-0.352

The cumulative number of properties transferred is 22 888 with a cumulative value of nearly R6 billion. The value transferred in the Suburbs is nearly ten times the value transferred in the Township. However, the number of properties transferred in the Township is nearly twice the number of properties transferred in the suburbs.

A critical point to note is that the standard deviation for the township is higher than that of the suburban market across all the variables. This means that the township market is more volatile than the suburb market. The 29% standard deviation for the

township market (20% for suburb) on the number of properties moved is not significantly higher but indicates that there is greater relative movement.

Both the township and suburb have high standard deviations on the average property value, at 65% and 45% respectively. However, the township has a higher standard deviation, indicating greater volatility. This volatility could be an indicator of a higher degree of information asymmetry in the market, resulting in a wide range of values.

Figure 6: Time Series of Total Value of Properties transferred

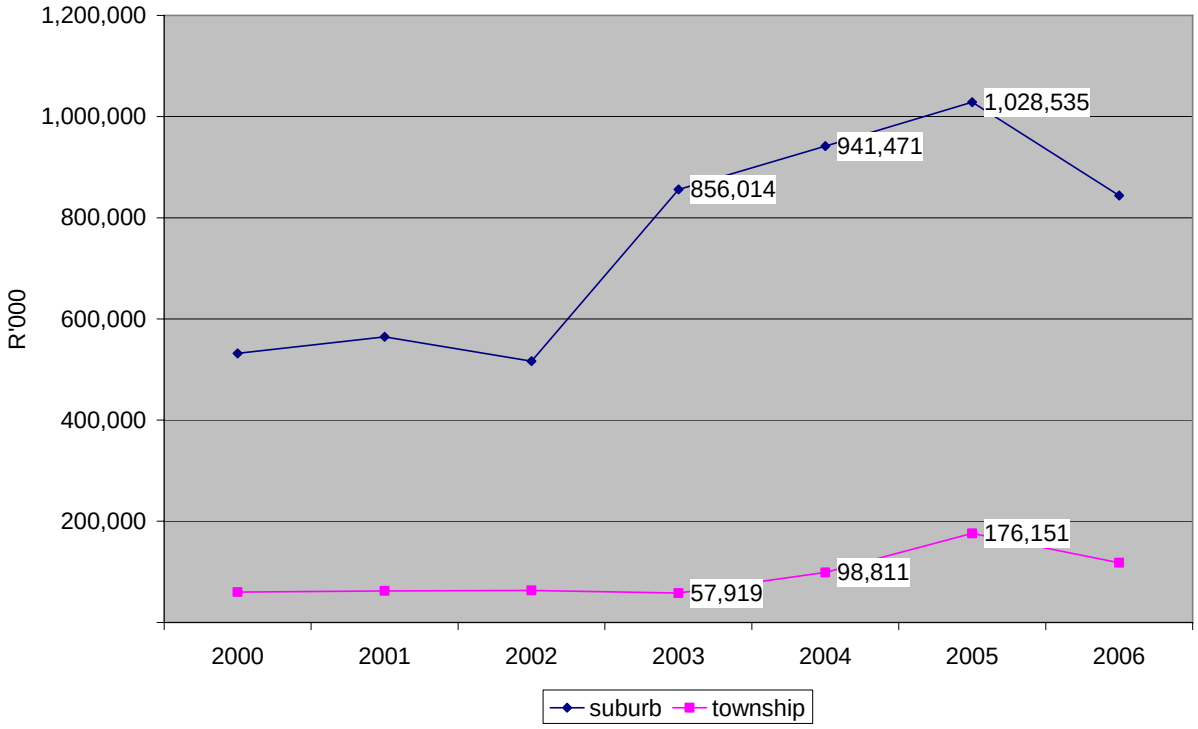


Figure 6 above shows some correlations between the cumulative annual values of properties transferred in the Township and Suburb markets. The spike in the Suburb market in 2003 was not followed in the Township. A slight increase is

evident in 2004, and thereafter the trend is maintained in 2005 and 2006 in the Township, indicating that it is following the trend in the suburbs, albeit to a lesser degree.

Figure 7: Secondary Ratio derivation (A)

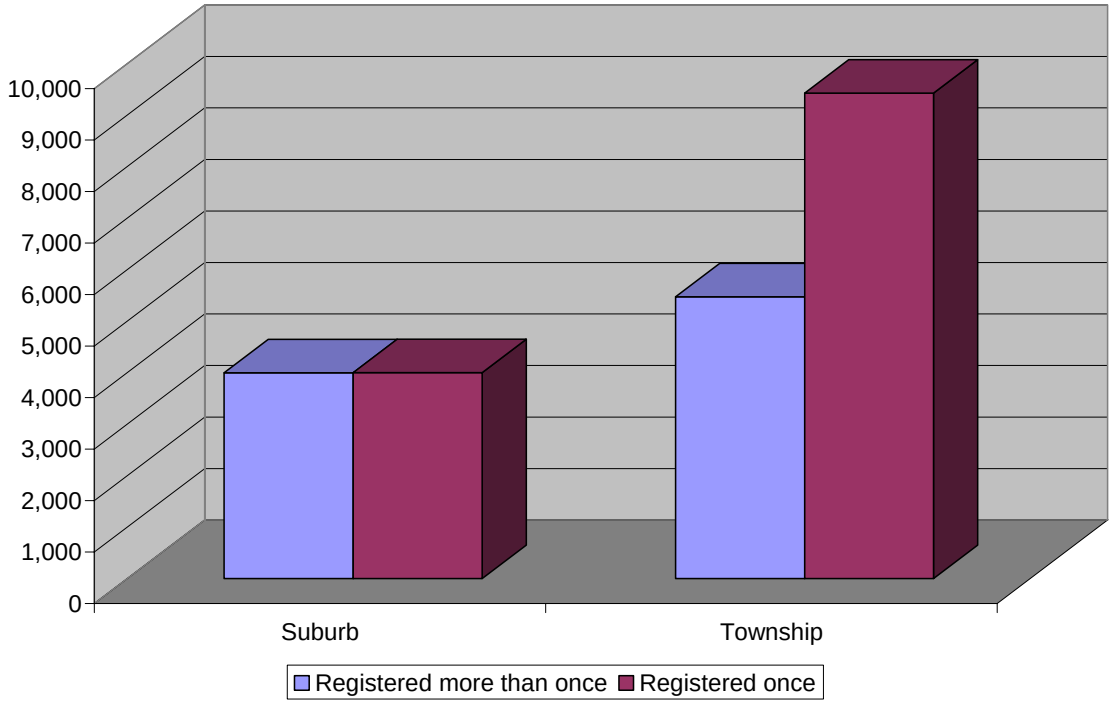
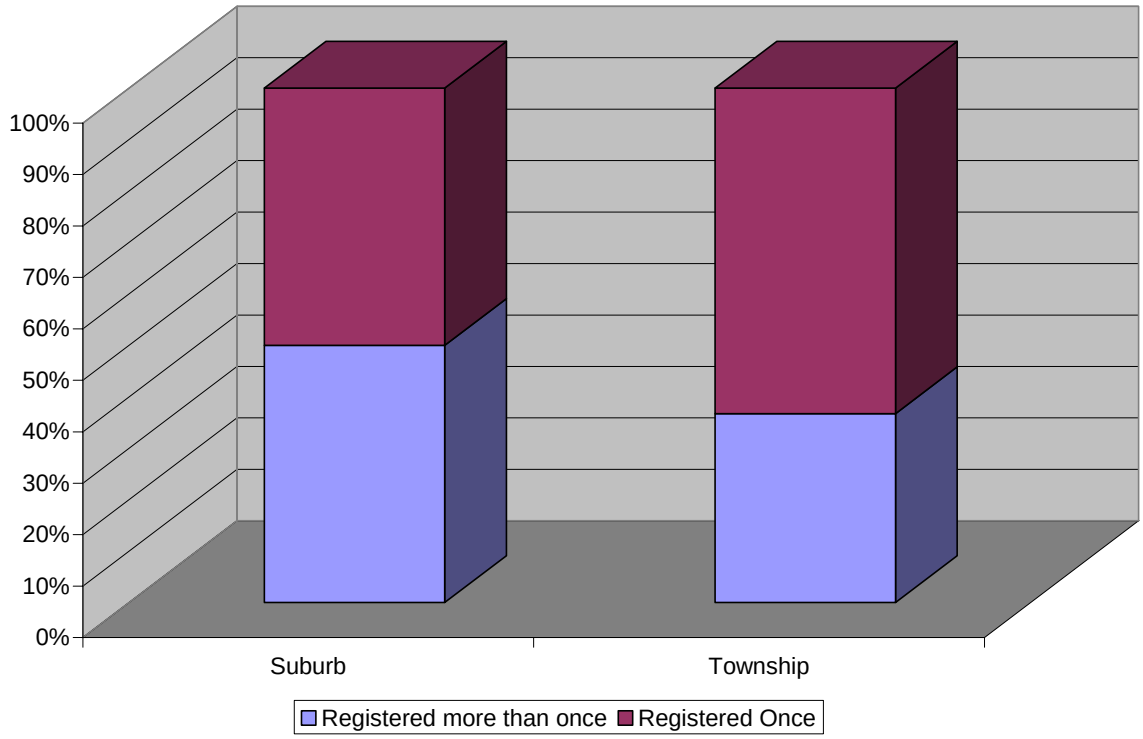


Figure 7 above shows the number of properties that have been registered more than once in the seven-year period, which can be assumed to be as a result of a sale. This is indicates the level of activity in the secondary market. The quantum of secondary market movement in the Suburbs (nearly 4 000) is just over two-thirds of the number registered more than once in the Township (5 598).

Furthermore, the graph in Figure 8 overleaf illustrating the percentage of properties registered once compared to those registered more than once, shows that 50% of

properties in the Suburb have been transferred more than once in the period 2000 to 2006, which is greater than the 18% observed for the township.

Figure 8: Secondary Ratio derivation (B)



Another way to represent this is a derived secondary market ratio as a characteristic of the market. The ratio of properties registered more than once to properties registered once is 1:1 in the Suburbs or 100%. This same ratio in the township is 1:2 (more specifically, 56%).

What must be noted is that the above ratio is within the time context. It does not assume that all other properties are new developments. Even if a property was a secondary market property, the fact that it is only sold once in the period indicates the level of secondary market activity.

Figure 9: Mix of type of housing

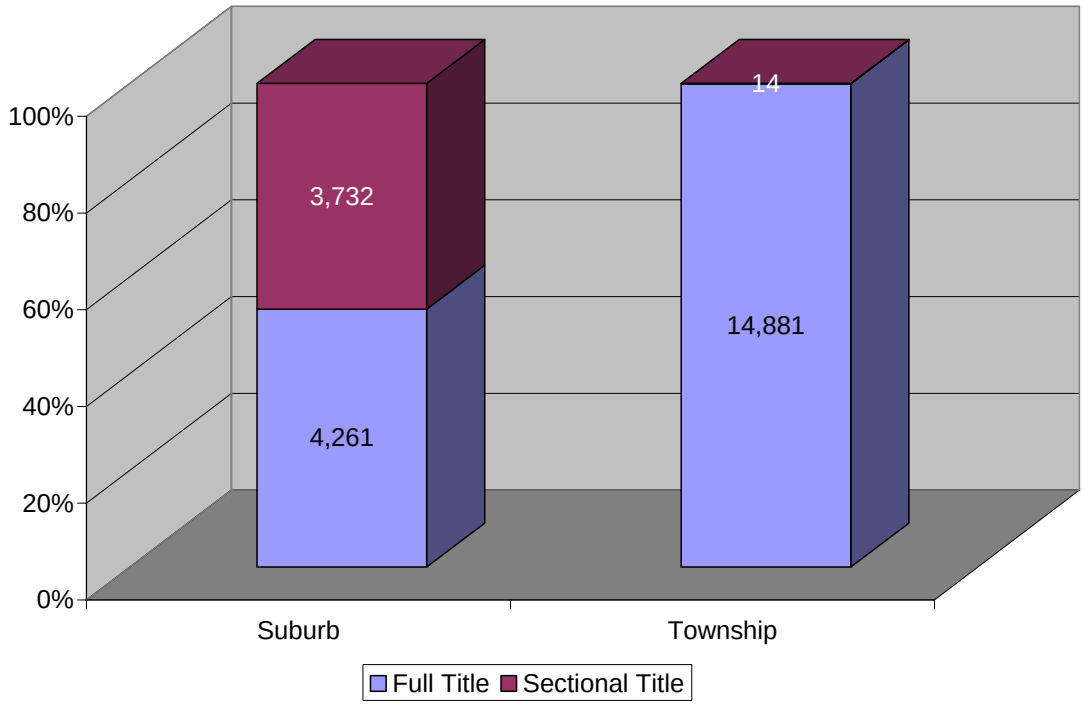


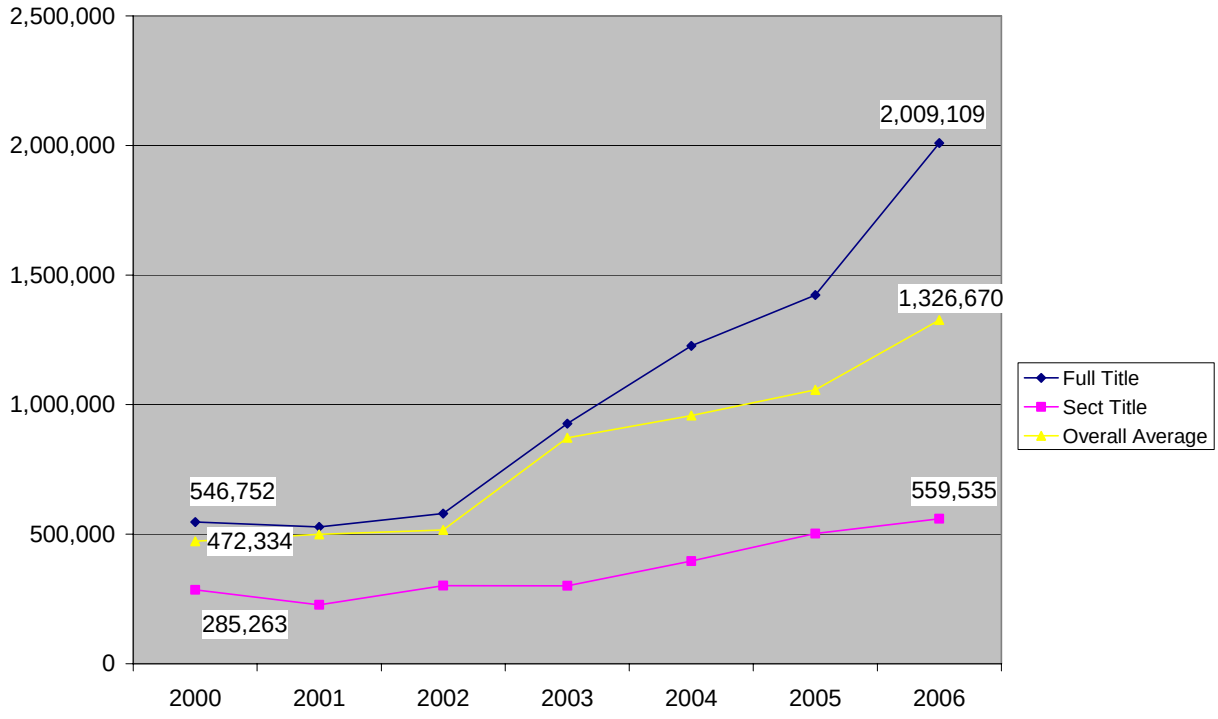
Figure 9 shows the mix of housing and highlights the possible impact of increased product choices. The reason for making the distinction between the Sectional Titles and Full Title house will become apparent. Full Title properties are stand-alone houses, typically with a yard, and are of low density. The size of the stand is a critical component of Full Title housing. Sectional Title housing is typically apartments, townhouse and cluster developments with shared ownership, a smaller total amount of land utilities per unit, and are of a higher density. Sectional Title housing for this reason is space efficient. The size of the unit is more important than the size of the land on which it is built.

There are cumulatively more Full Title houses (4 261) that have been transferred than there are Sectional Title houses (3 732) in the Suburb. Comparatively,

Sectional Title housing seems to be non-existent in the township, with a paltry 14 out of a total of 31 101 having been transferred over time.

Further exploration of this phenomenon in the Suburb is quite revealing.

Figure 10: Average value of house by dwelling type

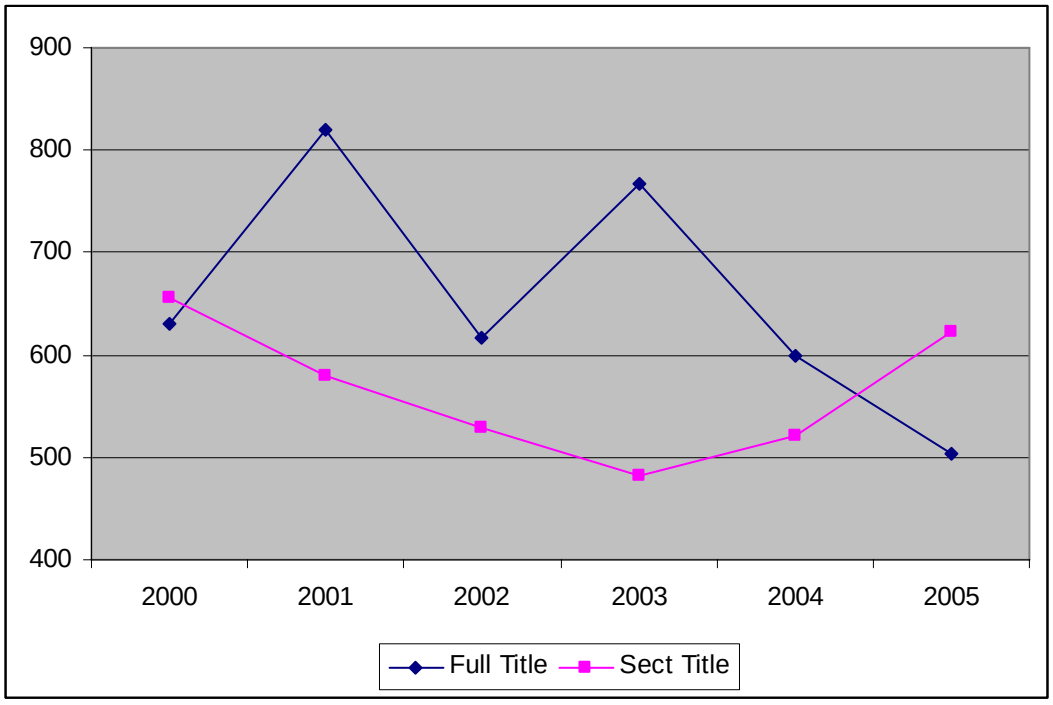


Full Title property average values have been rising at a faster rate than sectional title price values (376% between 2000 and 2006). Sectional title values have risen at a lower 160% in the same period. Full title properties started off priced at 1.5 times the price of Sectional Title properties. However, this has changed to 3.6 times over the period.

Figure 11 below provides some explanation. The number of Full Title properties being transferred has been decreasing over time but has always exceeded the number of Sectional Title properties. However, this trend seems to be changing. The number of Sectional Title properties transferred exceeded Full Title properties transferred for the first time in 2005, continuing an upward trend, pointing to a possible shift in the market structure, seemingly starting in 2003.

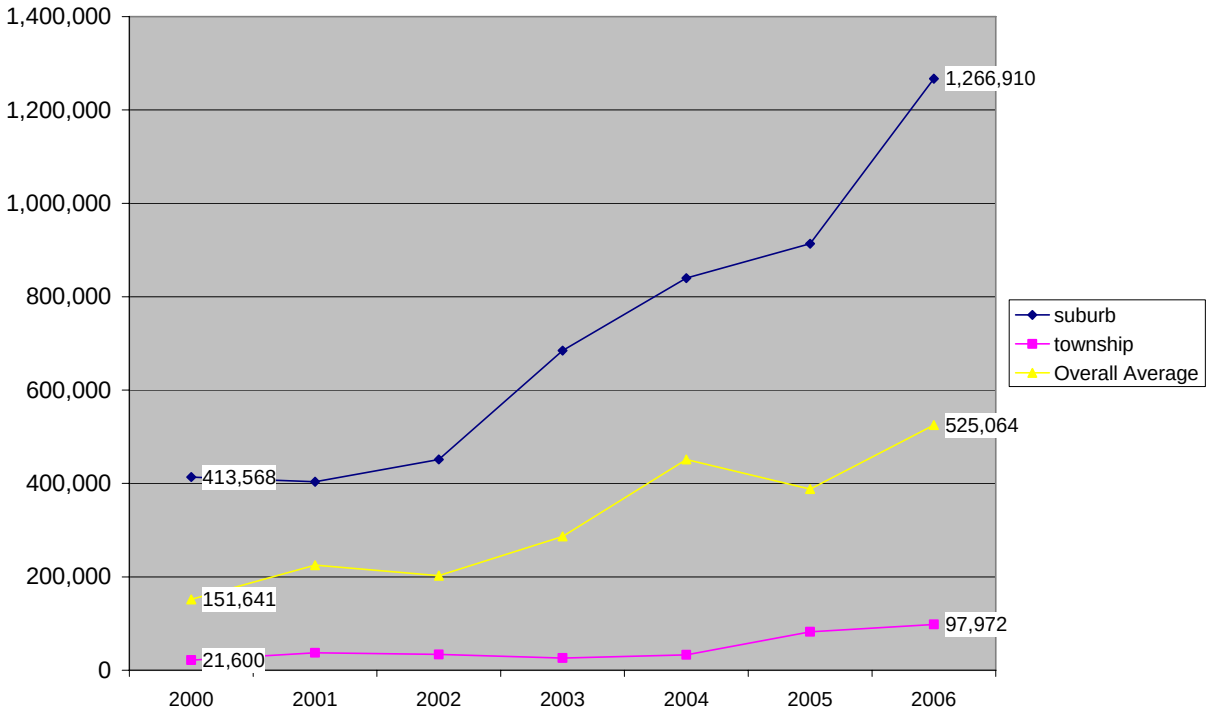
The fact that the average value of Full Title properties transferred is nearly four times that of Sectional Title properties means that Sectional Title properties are far more affordable.

Figure 11: Number of properties transferred by product type - Suburb



Another ratio was derived based on the property type. The ratio of Sectional Title properties was derived in order to determine the significance of this phenomenon. A similar analysis for township could not be performed as the Sectional Title product is virtually non-existent in the township. However, a comparative albeit insignificant ratio was also calculated.

Figure 12: Average value of house by location



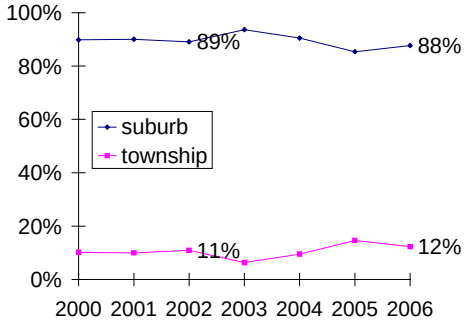
An analysis of the average values of township properties to suburb reveals some glaring gaps. Whilst the average value of Township properties transferred has increased by 456% between 2000 and 2006 (from R21 655 to R98 792), the average rand value increase in the suburbs is far greater, and reflected in the steeper slope of the time series graph.

The average value of the Township properties is much lower than the total portfolio average, at less than 20% of the average, indicating high standard deviation. Average value of Suburb properties is nearly 13 times the average value of Township properties as at the 2006 average values transferred.

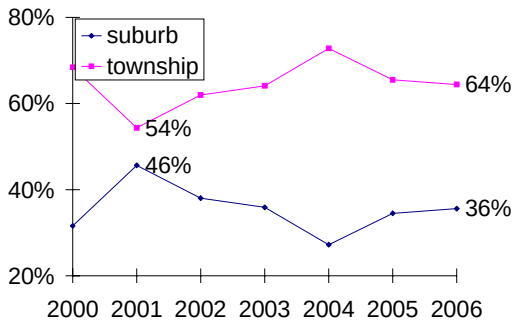
There is no value overlap, which indicates that there is a large gap in equity. This also means that the market structures are fundamentally different.

Figure 13: Relative proportions of property for locations

A: Value



B: Volume



The time series graphs above (Figure 13) illustrate the proportions of properties transferred by number and value. The trend in Figure 13A points to a consistent gap in the value of properties transferred, indicating the relative value of transactions between the Township (increase from 6% to 15%) and Suburb (decrease from 94% in 2003 to 85% in 2005).

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The trend in volume shows very little change in the relative movements over the long term. Township properties have maintained a level of 66% whilst the suburbs have maintained the 36% of the volumes between 2003 and 2006.

Figure 14: Time series for number of properties transferred

The annual number of properties transferred in the Suburbs has been in steady decline since 2001, hovering just above 1 000 properties a month. The Township trend reflects a consistent increase, reaching a peak of 2999 properties. The decline in the number of properties transferred in 2005 amounted to just over 2000 properties.

Figure 15: Secondary Market comparison

Figure 15 reflects the number of properties registered more than once in the suburb has been more or less the same as in the Township from 2000 to 2001. However, an increase is this category is observed in 2004, exceeding the suburb markets, indicating an increasing level of secondary market activity in the township. This increase also exceeded the number of properties registered once, a phenomenon that had not occurred in the preceding four years.

5.3.1 ESTATE AGENTS

Table 8 below represents the number of estate agents registered with the Estate Agents Affairs Board (EAAB) since the year 2000. The column "year registered" indicates the year in which the agent was first registered with the EAAB. The table effectively represents new agents entering the system.

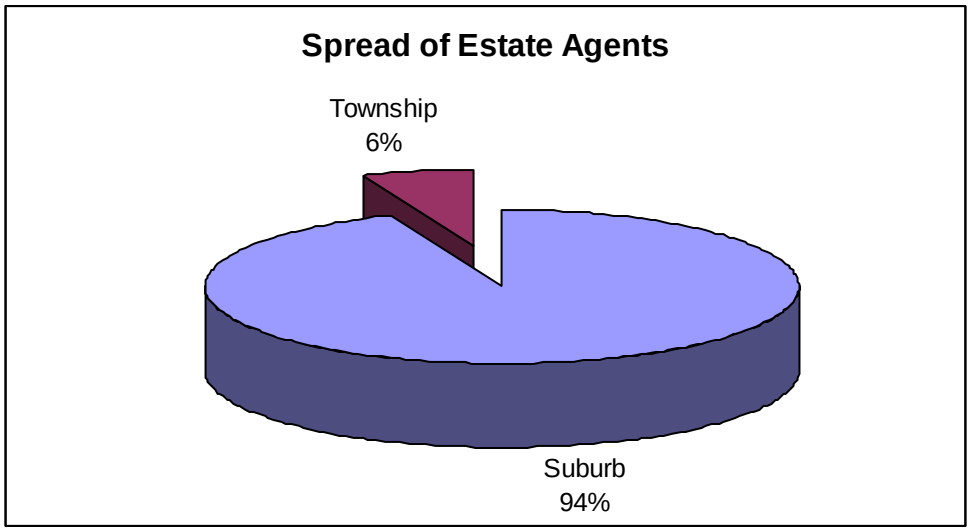
It must be noted that the addresses are not registered as the trade addresses of the estate agents. These are physical addresses to which the EAAB would send official communication.

Table 8: Estate Agents registered per year

Year registered	Suburb	Township	Grand Total
2000	14	1	15
2001	18	3	21
2002	25	0	25
2003	20	1	21
2004	51	1	52
2005	56	5	61
2006	46	4	50
Grand Total	230	15	383

This period of observation is aligned to the period of observation of properties transferred. The numbers above indicate a seemingly highly distorted picture. A cumulative total of 15 new agents over a period of 7 years in a market where nearly 15 000 properties were transferred seems unlikely as it translates into 1 015 properties per new agent.

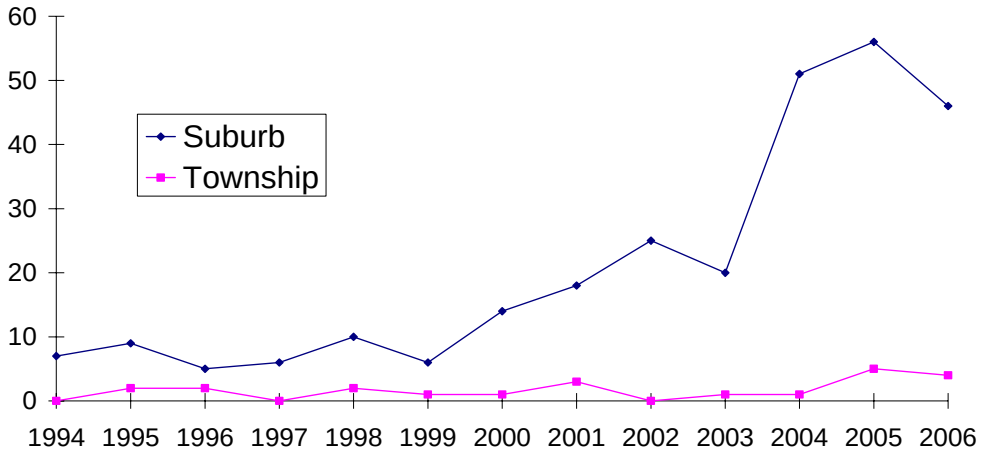
Figure 16: Pie Chart of Estate Agents by location



A reason that was cited was by the EAAB was that, whilst many of the Suburb agents would trade predominantly in the areas that they register as their domicile address, that may not be the case with Township estate agents.

As can be seen in the time series diagram overleaf, there has been a sharp increase in the number of new agents registered in the Suburbs, from 20 new agents in 2003 up to 51 in 2004. This high level is retained. The Township, on the other hand, reflects no notable changes in trends over the same period.

Figure 17: Time series of new estate agents registered



Based on Figure 17, the Suburb market is flooded with estate agents, rising rapidly from 21 agents in 2003 to 51 new agents in 2005. However, based on the data, the average agent in the Suburb has sold a very low but realistic incremental 30 properties over a period of seven years, whereas in the Township, this number is an unrealistic 1 015 properties per incremental agent. On further enquiry with the Estate Agency Affairs Board, it was ascertained that many of the estate agents were not registering with the Estate Agency Affairs Board but were informally trading as estate agents. The lack of representation in the informal market will distort the impact of estate agents.

5.4 STRUCTURE OF DATA FOR FURTHER ANALYSIS

An analysis of variances was undertaken in order to understand the structure of the data, which was required for factor analysis and multiple regression. However, given that this data was not sampled and was taken as the population, it does not require normality testing.

Another reason for this is to ensure the statistical significance of the factor analysis, and ultimately that these results can become more broadly statistically significant. The data has been structured in order to statistically evaluate the relationship and the impact of these relationships on the variable. In restructuring this data, the sample size was then reduced to 14 unique groups of data for both the township and suburb markets.

A test for the normality of residual was then undertaken to ensure that the data is applicable as a sample. A one way analysis of variance (ANOVA) was performed (See Appendix 2 for the full table of results). The result was the acceptance of normality of residuals based on the, Skewness, Kurtosis and Omnibus test. The variables tested were: the Value transferred; Volume transferred; Agents registered; Secondary market ratio; Product mix ratio; and Duration of transfer.

The normality of residuals was accepted on all these tests for all the variables.

The medians test was the Kruska-Wallis and was taken as an additional non-parametric measure, given that the number of records was less than 30.

5.5 FACTOR ANALYSIS

Descriptive statistics alone was not sufficient in establishing relationships between variables. However, it was important in identifying factors that warranted further analysis, based on the trends and patterns observed. Factor analysis was then

undertaken on these chosen variables, listed and explained in Table 10 below. The purpose of factor analysis was to ultimately reduce the number of variables that could be deemed to impact Township property dynamics.

Table 10: Table of variable

VARIABLE	DESCRIPTION
Factors	Suburb, Township and Period (Non-numeric)
Value of properties transferred	The annual value of properties transferred i.e. registered on a title deed
Number of properties transferred	The annual number of properties transferred i.e. registered on a title deed
Time to transfer	The average period of transfer per property. This was calculated as an annual average
Secondary market ratio	This is a derived ratio of the number of properties that have been transferred more than once in the period under observation (2000 – 2006). It is not an input variable. It is a result of market behaviour
Product type ratio	This is the derived ratio of the number of sectional title properties registered relative to full title properties. This is an input variable as it is a product traded in the market

5.5.1 EXTRACTS OF FACTOR ANALYSIS REPORT

Table 11: Descriptive Statistics Section

Variables	Count	Mean	Standard Deviation	Communality
Value transferred	14	422 832 800	374 584 400	0.940
Volume transferred	14	1,635	683	0.699
Agent registered	14	18	20	0.881
Secondary Market Ratio	14	0.85	0.36	0.723
Product type	14	0.46	0.49	0.948
Time to transfer	14	11.50	3.50	0.669

The Phi value of 0.62 was obtained, indicating that there are relationships of significance. A value lower than 0.3 would have led to the rejection of the results.

Table 11 above is a summary of the variables under analysis. The count of 14 observations represents 7 years of data for both the Suburb and Township, analysis as a singular record, and not treated as a chronological data set. The communality column represents the proportion of the variation of the variable that is accounted for by the factors retained, and is similar to the R^2 value used in Regression.

Communality value of 0.90 and above should be accepted. However, variables hovering around the 0.90 mark could be considered even if they were not over 0.90. The communality of the Product Type, Value Transferred and Agents Registered are high at 0.95, 0.94 and 0.88 respectively, indicating that these may be the most critical ratios.

Table 12: Correlation Section

Variables	Value Trans	Volume tfr	Agent reg	2nd Mkt Ratio	Product type	Time to transfer
Value transferred	1.00	-0.73	0.93	0.60	0.92	-0.29
Volume transferred	-0.73	1.00	-0.70	-0.45	-0.75	0.13
Agent registered	0.93	-0.70	1.00	0.64	0.87	-0.18
Secondary Market Ratio	0.60	-0.45	0.64	1.00	0.58	0.22
Product type	0.92	-0.75	0.87	0.58	1.00	-0.39
Time to transfer	-0.29	0.13	-0.18	0.22	-0.39	1.00

The initial indication is that there are a number of variables that display notable correlations. The value of properties transferred and the number of agents show a strong positive correlation with a value of 93%. A similar positive correlation of 92% is returned for value transferred and product type. Estate agents also have a positive correlation with Product type at 87%, indicating strong relationship in the variables.

The derived secondary market ratios however, reflects some poor correlations across all the variables, with a best positive correlation of 64% with estate agents registered, indicating some relationship, albeit a relatively weak one.

Another notable correlation is the high and negative correlation (-0.70) of estate agents registered and the volume of properties transferred, indicating a counterintuitive occurrence.

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Table 13 below shows a bar graph of the absolute correlation, which removes the direction of the relationship, and visually reflects the strength of the relationship.

Table 13: Bar Chart of Absolute Correlation Section

Variables	Value Trans	Volume tfr	Agent reg	2nd Mkt Ratio	Product type	Time to tfr
Value transferred		|||||||||||||||	|||||||||||||||||	||||||||||||	|||||||||||||||||	|||||
Volume transferred	|||||||||||||||		|||||||||||||||	|||||||||	|||||||||||||||	|||
Agent registered	|||||||||||||||||	|||||||||||||||		||||||||||||	|||||||||||||||||	||||
Secondary Market Ratio	||||||||||||	|||||||||	||||||||||||		||||||||||||	|||||
Product type	|||||||||||||||||	|||||||||||||||	|||||||||||||||||	||||||||||||		|||||||
Time to transfer	||||||	|||	||||	|||||	||||||||	

One variable that does not reflect any significant relationship is the time to transfer. This variable was considered in that it represented the time taken from the moment the property was purchased to the time it was transferred. This variable can impact liquidity to a degree as it relates to operational efficiency in the transfer process.

Table 14: Eigenvalues after Varimax Rotation

No.	Eigenvalue	Individual Percent	Cumulative Percent	Scree Plot
1	1.783495	36.85	36.85	|||||||
2	0.972104	20.08	56.93	|||||
3	2.104149	43.47	100.40	|||||||||
4	0.060454	1.25	101.65		
5	-0.025821	-0.53	101.12		
6	-0.054141	-1.12	100.00		

The eigenvalue is the variance in a set of variables explained by a factor or component. It is the sum of squared values in the column of a factor matrix. It is

appropriate in exploratory research in that it seeks to assign to variables some accountability for phenomena observed. An eigenvalue that exceeds 1 must be accepted as a rule of thumb. However, other high eigenvalues can be accepted.

The Varimax rotation maximises the variance of the squared elements in the columns of the factor matrix. It effectively accentuates the relationships observed.

The eigenvalue report in Table 14 enhances the findings on Table 12. Two factors have eigenvalues that exceed 1. A look at the Scree Plot visually reflects that there are possibly three factors to be analysed. The cumulative values of the three factors exceed 100%, whilst the first two factors only add up to 57%, which is insufficient for usage in this test. The first and third factors add up to 80% and cumulatively, 93%.

Table 15: Bar Chart of Absolute Factor Loadings after Varimax Rotation

Variables	Factor1	Factor2	Factor3
Value transferred	||||||||||||	||||||	||||||||||||
Volume transferred	||||||	||	||||||||||||||
Agent registered	|||||||||||||	||||	||||||||||||
Secondary Market Ratio	|||||||||||||	||||||	|||||||
Product type	||||||||||||	||||||||	|||||||||||||
Time to transfer	|	|||||||||||||||	|||

Table 15 above shows the bar chart of absolute factor loadings after Varimax rotation. Three columns for three factors as indicated in the Scree Plot (Table 14 on page 64) have been created.

The final results are shown in table 16. Factor 1 has the variables Value transferred, Agents registered, the secondary market ratio and product type as the variables explained. Factor 2 has time to transfer as the variable volume and the secondary market ratio as the defining variables. Factor 3 only has times taken to transfer properties as a significant contributor.

Table 16: Factor Structure Summary after Varimax Rotation

Factor1	Factor2	Factor3
Secondary Market Ratio	Time to transfer	Volume transferred
Agent registered		Product type
Value transferred		Value transferred
Product type		Agent registered

Factor 1 in the factor analysis was deduced to be the representative of the suburb market as the variables explained by Factor 1 reflected had high correlations with the Value transferred, which is a critical differentiating characteristics of the suburb input data.

Factor 3 in the factor analysis was deduced to be the representative of the suburb market as the variables explained by this factor reflected high correlations with the number of properties transferred, which is a critical differentiating characteristic of the suburb input data. However, a critical point to note is that these variables had a negative correlation with the number of properties transferred, reflecting the impact of the absence of these variables as contributors to market movement.

5.6 CONFIRMATION OF KEY RELATIONS: MULTIPLE REGRESSION

Following the outcomes of the factor analysis, further analysis was taken. One of the key variables that was explained by the factor retained was the Number of Estate Agents registered per year. The other input variable is the product type ratio as this reflects the product choices that estate agents are effectively presenting to the market. These are the independent variables.

The number and value of properties transferred is the measurable outcome of a housing product being traded by the estate agent. Therefore, the estate agent and the house go together. The aim of this particular multiple regression exercise is to validate the findings from the factor analysis and establish the nature of the relationships.

Based on the factor analysis, estate agents impact the value and number of properties transferred. However, the stronger relationship is on the value. The product type as an input variable has a positive correlation with the value of properties transferred (94%). It also has a negative but seemingly high correlation (-75%).

The choice of independent variables and the hypotheses were informed by the positive correlations identified in the factor analysis phase. The dependent variables are the logical measurable outcomes.

The following hypotheses were tested:

Alternative hypothesis (1): An increase in the number of Estate Agents combined with an increase in the product mix ratio will result in the increase in the value of properties transferred per year.

Null Hypothesis (1): An increase in the number of Estate Agents combined with an increase in the product mix ratio will not result in the increase in the value of properties transferred per year.

Alternative Hypothesis (2): An increase in the number of Estate Agents combined with an increase in the product mix ratio will result in the decrease in the number of properties transferred per year.

Null Hypothesis (2): An increase in the number of Estate Agents combined with an increase in the product mix ratio will not result in the relative decrease in the number of properties transferred.

A confidence interval of 95% was used for the test.

5.6.1 RESULTS FROM REGRESSION ANALYSIS

Table 17: Summary of multiple regression report: Value

R2	R2 = 0.913. COEFFICIENT OF VARIATION: 0.28			
Regression equation	Intercept	Do not Reject Null hypothesis (P=0.07)		
	Estate Agent Variable	Reject Null hypothesis (P=0.01)		
	Product Mix Variable	Reject Null hypothesis (P=0.03)		
Durbin-Watson	The test for serial correlation rejected negative or positive serial correlation in the data.			
Multicollinearity		Eigenvalue	Condition number	There no multicollinearity
	No 1	1.86	1.00	
	No 2	0.13	14,32	
Regression Equation	90139018+10202240 x Estate Agents Registered + 337234118 x Product Type Ratio			

The results in Table 17 above indicate that the alternative hypothesis that Estate Agents and the Product Mix variable collectively positively impact the value, as evidenced by the p-values below 0.05, can be accepted. Whilst the regression equation may indicate the quantum of that impact, the purpose of the test was to primarily determine causality in the relationships. The more important factor to note is the positive coefficients in the regression equation.

Table 18: Summary of multiple regression report: Volume

R2	R2 = 0.57 COEFFICIENT OF VARIATION: 0.30			
Regression equation	Intercept	Do not Reject Null hypothesis (P=0.00)		
	Estate Agent Variable	Fail to Reject Null hypothesis (P=0.61)		
	Product Mix Variable	Fail Reject Null Hypothesis (P=0.19)		
Multicollinearity		Eigenvalue	Condition number	There no multicollinearity
	No 1	1.87	1.00	
	No 2	0.13	14,32	
Durbin-Watson	The test for serial correlation rejected negative or positive serial correlation in the data.			
Regression Equation	2118 - 7.27 x Estate Agents Registered -779.09 x Product type ratio			

The second regression analysis resulted in the failure to reject the null hypothesis. The increase in estate agents, combined with the increase in the product mix, cannot be concluded to result in the decrease in the number of properties transferred per year. The p-values for both variables exceed (0.61) for estate agents, 0.19 for the product mix ratio) far exceed the cut-off level of 0.05.

5.6.2 CONCLUSIONS

The descriptive section of the analysis highlighted a number of factors. There are clearly significant differences in the market structure of the Township market and the Suburb market. The notable differences resulted in some ratios being defined for further analysis in the next section. These are specifically the secondary market and the product type ratios.

The property type variable is an example of some of the fundamental structural differences in the market. It's a key attribute that seems to have warranted further analysis.

The secondary market ratio is a ratio that quantifies market behaviour over time and seems to be a better measure of market liquidity. It is also important to note that another factor that put the market efficiency in perspective is the population relative to property movement comparison, indicating the extent to which the population participates in the market.

Another significant finding is the very large property value gap. What makes this gap even more significant is that the properties chosen in the township are considered to be amongst the more active property markets.

The role of estate agents in the Suburbs seems to impact a range of variables, key amongst which is the value of properties transferred. However, the seemingly informal nature of the Township estate agency market may distort the findings.

The factor analysis built on the key variables found in the descriptive statistics to test whether the relationships identified were valid. Even though the data was chronological, each period represented a group of related variables, which were then compared to other variables in other periods.

CHAPTER 6 - DISCUSSION OF FINDINGS

This section of the research report comprises a discussion of the findings presented in Chapter 5, with specific reference to the research questions. The key findings will be summarised in relation to the research questions posed in Chapter 4.

6.1 FINDINGS RELATING TO QUESTION 1: CONFIRMATION OF LIQUIDITY

What are the indicators of market illiquidity in the Township market in relation to the Suburb real estate market?

The research findings confirm that relative to the Suburb property market, the Township property market has a lesser degree of liquidity. There are several indicators that confirm this finding.

6.1.1 MARKET STRUCTURE

The research findings indicate that the market structures of the Township and Suburb property markets are different. Findings from the factor analysis revealed that the Township market is characterised primarily by movements in the number of properties, the product mix ratio and the value transferred and estate agents, the last three variables being characteristic by their absence. These variables are so conspicuously absent in the township market that they resulted in negative correlations in the factor analysis, with the only variable that is fundamentally characteristic of the township market, being the number of properties transferred.

The factor analysis findings revealed that the Suburb market, on the other hand, is characterised by the value of properties transferred, the derived secondary market ratio, the derived product type ratio and the proliferation of estate agents. This is consistent with the findings by Forgey, Rutherford and Springer (1996) that market conditions, physical characteristics of the property, the size of the brokerage firm and the list price of the property were elements of the property search component which contributes to liquidity.

The descriptive statistics on the property transactions revealed significant differences in the standard deviations of the means of the number of properties transferred per year, the total value of properties transferred and the average value of properties transferred per year. This further confirms that these two markets are structurally different with different market behaviour. The higher standard deviation could be symptomatic of a higher information asymmetry, which manifests in the divergence of prices of properties. It could also reflect a market with a broader range of properties showing wide dispersions. This seems less likely, as evidenced by the singular product choice.

The Suburb market has two types of products, namely the full title property and the sectional title property. This choice of two products is an important variable of the market structure, as evidenced by product type ratio being one of the variables of the first factor retained, showing a high positive correlation of 92% with the value of properties transferred.

These different products have different externalities and value implications, further confirming the findings by Forgey, Rutherford and Springer (1996) that market conditions, and actual property characteristics are factors linked to liquidity. The township only has the full title traditional house. These product choices present their own externalities. Sectional title properties are more efficient and result in different social structures, with shared space and a perception of security. The analysis revealed that the average value of a full title property transferred was nearly four times that of a sectional title property. Sectional title properties effectively offered an affordable alternative. However, the township market was not comparable in this regard.

Based on the factor analysis, the role of the estate agent is critical in the suburb, which confirms the assertion by Miceli, Pancak and Sirmans (2000) that estate agents are market makers. However, this does not seem to be the case in the township as evidenced by the low degree of proliferation and the lower number of new agents.

Based on the market structure, it seems that the township reflects an absence of the variables that are key ingredients to market liquidity. These are the gap in the number of formal estate agents and product choices. These differences are significant enough to conclude that interventions to increase the product choices and the number of formally registered estate must be considered.

6.1.2 SECONDARY MARKET CONSIDERATIONS

The question of market liquidity is fundamentally based on movement in the secondary market. By definition, liquidity refers to an existing asset being traded. This definition of liquidity effectively implies that secondary market activity levels are potential indicators of liquidity. A critical component of the definition of liquidity is price or value exchanged. Liquidity is measured by the measure in value and volume of transactions in a particular market over a particular period of time. In this research, the time period was 2000 to 2006.

The derived secondary market ratio, which is based on the number of properties transferred, was nearly 100% in the suburb market. This means that for every property that was sold once in that period, there was one that was being sold for at least the second time. This is a measure of liquidity against which the township is being compared. The township ratio, on the other hand, is 58%. This means that for every 2 properties transferred once, only one property is being transferred more than once, which shows a very low degree of relative liquidity. This then confirms that the suburb market is more liquid from a relative volume perspective.

Whilst the secondary market ratio did not return high correlations in the factor analysis, it nevertheless featured as a variable in factor 1. This ratio, combined with the returned results of factor analysis, also related a higher secondary market ratio, to the value variable further confirming the dimension of value.

This reflects the dependence on new property stock. Developers register the land

value transferred on the title deed. The cost of the top structure is not recorded in the initial transfer title on a first-time transfer of a property.

Making the conclusion that Township properties are undervalued based on the relative average prices would be incorrect. The second transfer is the one that reflects the land and improvements. Secondary property transactions more accurately reflect the value of a property.

It also indicates that Townships are primarily dependent on new property development for market activity, which is reflected in the greater impact. Whilst this confirms that relative liquidity is certainly lower in the Township market than in the Suburbs, on its own it cannot be seen to be a conclusive indicator of market dysfunction. It may be an indicator of a phenomenon that is inherent in the area.

6.1.3 CONCLUSION

As stated, the impact of the lack of liquidity in a market is that price changes are not consistent. The relative value changes in this case would be reflected in the standard deviation of the means of property values transferred. A high standard deviation indicates a lower degree of liquidity, which then impacts the variation of pricing. A lower standard deviation indicates consistency in value movements.

The standard deviation for suburb markets was 45% of the mean. The comparative standard deviation for the township is 65%. A liquid market would be less affected as assets would be more readily available, with a lower impact on price.

However, liquidity in this case is not an absolute measure; it is a relative measure. The number of properties sold in the suburbs has been consistent with a standard deviation of 20%. However, the value of the properties sold has increased 400% over the period 2000 to 2005, which could be the result of a limited stock, meaning low levels of liquidity or the impact of estate agents.

6.2 FINDINGS RELATING TO QUESTION 2: THE ROLE OF ESTATE AGENTS

To what extent does the Estate Agent, as the information broker impact market liquidity?

Baryla and Zumpano (1995) found that estate agents could play a vital role as information providers to both the buyer and the seller. They effectively reduced information asymmetry and reduced search time. Therefore, the increased number of estate agents should result in reduced information asymmetry and increased market liquidity. The research findings confirmed that estate agents were a vital component of the real estate market as information brokers.

6.2.1 ESTATE AGENTS AS MARKET MAKERS

Findings from the factor analysis revealed that estate agents could be linked to a number of variables. They were highly correlated with the value of properties (93%) and the product type ratio (87%). A counterintuitive finding was the negative correlation of 70% between estate agents and the number of properties

transferred.

The research findings are not conclusive on the extent to which the estate agents impact the number of properties. However, it seems conclusive that they impact the value component of liquidity. The findings from the factor analysis related estate agents to factors of the three retained. There was evidence that the estate agent played a role in the increase in property values transferred in the suburb. This was not only reflected by the high positive correlation of 93% with the value transferred. It was reflected in the results of the multiple regression exercise performed.

The regression analysis established that the increase in the value of properties transferred over time could be attributed to the increase in the number of estate agents to a degree. This conforms to the findings by Forgey, Rutherford and Springer (1996) that the size and characteristics of estate agents impact liquidity. The hypothesis that estate agents and the type of property combined increased value over time was not rejected. The extrapolation of this into the township market leads to the conclusion that the absence of formal estate agents in the township market could explain the persistent value gap between the township and the suburb despite the overwhelming housing demand exceeding 2.5 million houses in the country.

Furthermore, the comparison of the volumes of houses transferred in the township (14 898) to the suburb (7 998), overlaid with the comparative population of 203 598

and 20920 respectively, indicates that over the period 2000 to 2006, at least 1 in 3 people in the suburbs will have acquired a house. The ratio in the township is 1 in 13.

The number of registered agents in the township is 0.01% of the population. Comparatively, this number is 1% in the suburb. Based on this, the probability of finding an estate agent in the suburb is 150 times greater. It is important to note qualification of the data by the Estate Agency Affairs Board, who indicated that they believed that there was an informal market of estate agents that were not registered. Nevertheless, based on the data, the relative deficiency in access to estate agents, and by implication, information, implies that there is greater potential for information asymmetry in the township as a result of a lack of estate agents.

Using the comparative population to estate agent ratios, and number of properties to population, a conclusion can be drawn that despite a higher number of properties being transferred in the township, the market is illiquid compared to the suburb. However, the unrealistically high number of properties sold per agent in the Township (1 015 over the period, compared to 35 in the suburbs) indicated that the may be more participation than is being formally recorded.

This is consistent with the findings by Yavas, Miceli and Sirmans (2001) that one of the consequences of estate agent intervention is the increase in property prices. They found that estate agents tended to reduce the likelihood of a successful negotiation, and increased the sale price, despite the fact that they had more

information than both the seller and the buyer.

6.2.2 SPECIFIC IMPACT ON VALUE AND VOLUME

Results from the regression demonstrated that estate agents do not have a negative impact on the number of properties transferred, even though the negative correlation in the factor analysis suggested a potentially negative relationship for one of the factors. Whilst this rejects the hypothesis that estate agents have a negative impact on the number of properties traded, it does not confirm that estate agents do not impact the number of properties traded.

The lower levels of secondary market activity in the township, as evidenced by the derived secondary market ratio of 57% compared to a ratio of 100% in the suburbs, is symptomatic of the lack of estate agents, but not solely attributed to the estate agents, as the correlation of estate agents and the secondary market ratio was positive and moderate at 64%.

The reducing number of properties being transferred in suburbs, even though there is an increase in the number of estate agents, contributes to the negative correlation revealed in the factor analysis. This phenomenon could also explain the increase in property prices. The shortage in houses becoming available for sale should logically lead to increases in prices according to neo-classical economics of supply and demand.

This negative correlation is further exacerbated by the increase in the number of

properties in the township without the increase in the number of estate agents. This means there are fewer transactions being concluded on an ongoing basis, which can also act as a deterrent to new market entrants. There was a lower but still positive correlation with the secondary market ratio, indicating some relationship.

A negative relationship was observed on the number of properties transferred and estate agents registered. However, they are not a factor when it comes to the number of properties transferred. Their impact was limited to the increase in property prices.

As already stated, the number of properties sold in the suburb has declined steadily whilst the values have increased. A reason for this is that the selling processes commence with the Estate Agents presenting a value to the seller in order to win the mandate. This means that the Estate Agent who presents the highest value is most likely to win the mandate to sell the house as the motivation is to sell the property for as much as possible, as quickly as possible.

The decline in the number of properties being sold could also be attributed to a potentially negative impact of the estate agent participating in the bargaining process, and slowing it down, which according to Yavas, Miceli and Sirmans (2001), is a potential consequence of their intervention beyond the matching phase.

Increasing competition in the Estate Agency market as evidenced by the positive correlation between properties transferred and new estate agents registered could be resulting in the property prices rising. The impact for the estate agents would be reduced commission as they would have to compete for the mandate.

The declining number of transactions seems to confirm the findings by Jud, Seaks and Winkler (2001) that a higher list price results in a house being in the market for longer. Whilst this aspect was not tested, it could be inferred from the consistent decline in the number of properties being transferred in the suburb market.

Townships are characterised by volumes, which effectively means that whatever activity is taking place in the township is reflected in the volumes of properties. This characterisation by volume could also indicate that liquidity is improving in the township market. The number of properties transferred more than once in the period increased in 2004, peaking at 2 999, and maintained a higher than previous level. Although the township property market is less liquid, it is improving. This improvement in liquidity is reflected in the improvement in the increased average value of properties being transferred.

The absence of estate agents in the Township seems to explain the fundamental differences in the performance of the Township market on with regard to value and relative secondary movement, both of which are components of liquidity. The impact of the absence of real estate agents in the township market confirms the need for real estate agents to increase their participation. This confirms the

findings by Sawyer, Crowston, Wigand and Allbritton (2001) that the real estate market requires the contribution of estate agents in order to run smoothly.

This absence of estate agents being as primary information brokers confirms that information is a factor in the performance of real estate in the Township.

6.3 FINDINGS RELATING TO QUESTION 3

What are the different market attributes that differentiate the Township market from the Suburb market?

The attributes that differentiate the township markets from the suburb markets are the proliferation of estate agents, the mix of property types and the demographic attributed to the participants, which are described in a later section.

Keogh and D'Arcy (1999) argued that in evaluating property market efficiencies, one had to consider the characteristics of the property itself, and the processes through which the property is used and traded. Some serendipitous findings were revealed and explored in this research, which are aligned with Keogh and D'Arcy's assertion. The derived property mix ratio eventually became a key component of the analysis. This was a ratio defined in order to determine the extent to which the nature of the house as a product could impact movement.

Mantrala and Zabel (1995) identified product heterogeneity of a house as a characteristic that impacts the saleability of a house. Sectional title properties are

more homogeneous than full title properties. The proliferation of sectional title houses may reduce the impact of heterogeneity in the housing market. Furthermore, the average price of full title houses in the Suburb is nearly three times that of a sectional title house.

The Township market does not have a sectional title product offering. The Township is characterised by full title houses, trading at very low average values. Whilst the secondary market ratio features, it is far lower than the Suburb market secondary market ratio. Mature markets are unlikely to have much new stock, whereas developing markets will have a bias towards new stock. In this particular case, the level of market liquidity in these markets may be an indicator of the state of maturity of the market instead of dysfunction.

Findings from the regression suggested that the type of house had an impact on the property market. Two product choices were revealed, namely the sectional title property and the full title property. The sectional title property featured in the suburb market and constituted 50% of the transferred property. The number of Sectional Title houses transferred has been rising steadily, whilst the number of Full Title Houses has been decreasing.

The average value of a Sectional Title property transferred has risen by 196% in the period 2001 to 2006, whilst the value of Full Title properties has increased by 367%. The comparative overall increase in the township has been 456% in the same period. However, the rand value quantum is far more significant as the

equivalent absolute value increase is eleven times the value increase of the township average market value, indicating a large value gap. This value gap is symptomatic of the structural market differences.

Keogh and D'Arcy also suggested that the process through which property is traded must be evaluated. The regression exercise confirmed the impact of the estate agent on value, and by implication, the adverse impact of the absence thereof. The property trading process giving the comparative proliferation of estate agents registered suggests that the operating environments are different. In suggesting that there are informal estate agents in the township that it cannot regulate, the Estate Agency Affairs Board points to another key difference in the market.

6.4 FINDINGS RELATING TO QUESTION 4

What are the key demographic attributes that differentiate the participants of the Township and Suburb markets?

The critical demographic attributes that different the Township market participants from those the Suburb seem to be the education level, the level of employment and the dynamics of the population groups. Relative to the suburb, the township is characterised by lower education levels, a high level of unemployment, and a skewed population group mix that could result in some external contributing factors.

6.4.1 EDUCATION

Hardin III (1999) states that human information processing theory indicates that humans obtain domain-specific schema that lead to their making optimal decisions within the framework of their domain expertise. The significantly higher number of educated people in Suburbs means that heuristically, they would have a more appropriate base from which to form future knowledge of finance and investment concepts.

De Bruin and Flint-Hartle (2003) provide the foundation in the theory for using education levels as a proxy for evaluating knowledge levels. They found that investors in residential real estate made decisions based on imperfect knowledge and limited domain-specific information. The lower level of education suggests that a smaller proportion of the Township markets has the capacity to participate directly in the application of the concept of real estate investing and to process information more accurately.

The findings from the research revealed significant differences in the education levels of the respective locations. In the Township, 37% have completed high school, whilst 65% in the Suburb have completed high school. The level of post-matric graduates in the Suburb is nearly three times that of the Township at 38% and 13% respectively.

Vahrenkamp (1991) in Lutzkendorf and Speer (2005) states that information inefficiencies take the form of moral hazards, where the seller and the buyer are

both dependent on the estate agents to set the indicative price and participate in the negotiation. The generally lower level of education means that the domain-specific schema of township participants is less developed than the domain knowledge of a more educated individual, thus increasing information asymmetry.

Furthermore, Stiglitz suggests that wisdom is inherited from the past and as such, flawed domain schema could be perpetuated if there is no corrective action.

However, Watkins (1998) found that estate agents levelled the playing field between first-time entrant into the property market and a repeat purchaser. This seems to counter Hardin's assertion that domain-specific knowledge can improve the quality of a decision. Watkins (1998) seems to suggest that regardless of the domain expertise, the estate agent levels the playing field and mitigates the condition of limited prior knowledge and information asymmetry.

6.4.2 EMPLOYMENT

What can be inferred from employment levels is that disposable income in Suburbs is on average greater than in the Township. This presents positive externalities in the Suburbs in general. It means that the overall quality of housing products will be better as those with a higher income can afford higher loans and by implication, high quality housing. This could be viewed as a form of economic exclusion (Darity: 2001).

The mix of population groups means that all population groups desire or are willing

to live in the Suburbs. This also means that the Suburb market is open and desirable to all population groups. The 223% increase in property prices is evidence of this increased demand, especially given that the number of properties in Suburbs has been steady over the period 2001 to 2005. Income is likely to be the main hurdle.

In contrast, the Township is still overwhelmingly black and does not seem to attract other population groups. This may also mean that the aspiration for Township dwellers could be the Suburbs, with income being the main hurdle. The gap in average properties already discussed could be reflective of the income gap.

6.4.3 POPULATION GROUPS

The notable observation from the population groups is the skew in the population groups. Suburbs will continue to be locations desired and generate increases in property price. The potential market for Townships may only constitute black Africans whilst the Suburbs attract all population groups.

That the average price of a house in the Suburb is nearly 10 times that of a house in the Township indicates a significant migration barrier. The average occupant in a Township is effectively unlikely to realise sufficient equity on their property to acquire a house in the Suburbs as a migratory step. This further perpetuates inequality as found in the research by Darity (2001).

The lack of diversity in the Township may also be the result of perceived and actual negative externalities by other population groups based on the history of townships, thus perpetuating inequality by economic exclusion (Darity 2001), represented by lower property values.

The increase in the number of black Africans in the Suburb may be as a result of their exit from the Township, thus perpetuating the cycle of discrimination overall by adverse-selecting out of the township, also confirming Darity's assertions.

CHAPTER 7 - CONCLUSIONS AND RECOMMENDATIONS

This chapter provides a summary of the research, highlighting the problem, the research method, the main findings and the recommendations.

7.1 OVERVIEW OF THE PROBLEM

The aim of the research was to determine the extent to which information asymmetry was a factor in the liquidity of the township property market. The problem of liquidity in the township was raised in research commissioned by the Banking Association of South Africa, indicating that the non-delivery of housing loans was due to a shortage of stock and a generally dysfunctional township property market evidenced by low levels of secondary market activity. Evidence of this market dysfunction was illustrated by the depressed values in the township markets and overwhelming demand. The suburb was primarily meant to be the normal market against which the township would be evaluated.

This entailed identifying the differences in the attributes and structure of the township and suburb markets, and understanding the behaviour of the market and the characteristics of participants in the market. Thereafter, it was anticipated that potential interventions and possible areas of further research would be identified.

The premise for contrasting the two markets was based on the fact that the suburb market is deemed to be more mature and perform better than the township market, and as such provided some form of benchmark for the comparison.

The research literature review was critical in building constructs and ultimately identifying the variables to be tested. Most of the literature was from an international context. It raised the role of information asymmetry as a potential impediment to market efficiency, which is an input into liquidity. The estate agent was also identified as the information broker in a real estate transaction and given the central role. Other behavioural factors were identified, such as the impact of under-developed knowledge bases, in combination with inherently flawed information processing in human beings, leading to participants exacerbating the impact of the information asymmetry.

The variables that were identified to be most appropriate in exploring this subject related to market structure, market performance, the demographics of participants and the dynamics surrounding estate agents. The exploratory nature of this research meant that some variables had to be defined or derived as the research unfolded.

7.2 OVERVIEW OF THE RESEARCH METHOD

This research was a quantitative study based on secondary data sourced from three different databases, with the locations being the common factor. The data obtained for the property was in excess of 20 000 records from the deeds database. The data obtained from the estate agents was 16 000 records from the Estate Agency Affairs Board. Lastly, the demographic data was sourced from Statistics SA.

The populations of specific suburbs represented a sample of the township and suburb markets. Eight suburbs, four in Soweto and four in Randburg, were chosen and formed two groups: the Suburb and the Township.

The interrogation of the data was in three phases. The first phase was the descriptive phase. The second was the factor analysis, due to the exploratory nature of the research. Factor analysis sought to identify related variables. The third phase was regression modelling. As input data into the multiple regression, t was tested for normality in order to determine statistical significance. The research findings indicated that the market structures of the Township and Suburb property markets are different.

7.3 SUMMARY OF FINDINGS

7.3.1 DEMOGRAPHICS

An analysis of the demographic data revealed the different levels of educational development. It also revealed factors that could impact externalities such as a low level of employment in general. The township seems unlikely to attract ethnically diverse groups of people. Other population groups may not contemplate Soweto as a possible area to live in – despite the lower property prices – because of externalities associated with the township, and thus perpetuate the lack of diversity.

7.3.2 DESCRIPTIVE STATISTICS

Descriptive statistics revealed some fundamental differences in the behaviours of the two markets. The standard deviations revealed the different dispersions from means and the implications for asymmetry and liquidity. However, it also pointed to an improving situation in the township market with relative values converging over time.

The suburb markets exhibited signs of estate agent inherent conflict, and abuse of information broker position as values keep rising, and the number of properties keeps reducing, indicating that sales could be taking longer to close as the initial list price may be too high.

7.3.3 FACTOR ANALYSIS

Factor analysis helps identify and validate other relationships that are possibly serendipitous outcomes of the research. Two factors were retained exhibiting similar but opposing relationships with the same variables. The Suburb market reflected positive relationships with the variables (Agent registered, Product mix, Value and 2nd market ratio). The township reflected negative relationship (Agent registered, Product mix, Value and volume transferred).

The conclusion drawn was that the township market and the suburb market were structurally different, as reflected by the existence of the estate agents and the product portfolio mix in the suburbs having a positive and measurable impact, and the absence of the same variables in the township, manifesting in relatively

undervalued properties.

7.3.4 MULTIPLE REGRESSION

The regression analysis revealed a positive relationship between product mix and estate agent registrations with the value of properties transferred, which confirmed the alternative hypothesis. The same equation run on the basis of the alternative hypothesis, expecting a negative outcome, failed to reject the null hypothesis, indicating that over time, the number of estate agents has not had an impact on the number of properties.

7.3.5 OVERALL

There is evidence of information asymmetry in the housing value chain. It is also evident that estate agents are at the centre of the information value chain. It is also evident that the township market structure is different from the suburb market. The reason for this seems to be the relative absence of the variables that drive the suburb market, specifically the extent of formal estate agent participation and the product choices.

Information asymmetry is a factor in the value of properties and in this regard impacts the volumes in the suburb. In the township context, the absence of estate agents seems to be reflected in the seemingly underperforming values, even though there is overwhelming demand.

Regression proved that a model could be developed to predict market behaviour

based on the estate agents and the introduction of alternative products as input variables.

7.4 SUMMARY OF RECOMMENDATIONS

A number of variables have been identified as being critical to the functioning of the real estate market, the role of estate agents and the nature of the product mix:

⇒ Develop measures to actively track market liquidity, such as the market liquidity ratio derived in this research. It is critical that the correct metrics are identified and monitored

⇒ Introduce educational interventions from an early age on the value of home ownership and investing

⇒ Introduction of an appropriate property directory in the township

⇒ Promote the formalisation and regularisation of the Estate Agency market in the township

⇒ Introduce alternative housing products to a heterogeneous and sizeable market

7.5 FUTURE AREAS OF RESEARCH

A number of future areas have been identified:

⇒ The township estate agency market should be explored to understand the how it functions, with a particular focus on understanding the extent of the proliferation of informal agents.

⇒ The impact of the externalities that are township specific could be explored further in order to determine the extent to which they impair property values.

⇒ The introduction of high density developments as an alternative product could be investigated for appropriateness to the environment.

⇒ The regression model developed in this research could be enhanced for macro-economic variables as predictors of local level real estate economics.

7.6 CONCLUDING REMARKS

The aim of this research was to explore information asymmetry as a factor in real estate market liquidity. Estate Agents effectively act as the proxies for information as they are fundamentally information brokers. This can enable the development of targeted and parsimonious recommendation.

The huge body of international research on the real estate markets indicates that this is a complex and important subject. It also seems to indicate that the South African context is not fundamentally unique. There is very little targeted research in the South African context and this seems to have resulted in many of the interventions appearing to deal with the township market as an environment with a homogeneous group of people with similar needs, as evidenced by the limited housing product choices.

This approach could easily perpetuate the cycle of illiquidity and result in missed opportunities to introduce appropriate market-driven interventions such as alternative products and professional real estate brokerage services. The interventions suggested in this research attempt to address this by recognising the market differences to be reflective of a state of affairs as opposed to them being defining characteristics. This approach to the township market should lead to market-driven interventions that can add value.

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APPENDIX 1: SURBURB LEVEL EMPLOYMENT

Location	Employed	Unemployed	Total Pop	% of Pop
Blackheath	939	48	1717	54.69%
Cresta	324	22	588	55.10%
Diepkloof	24353	26478	104096	23.39%
Fairland	4782	220	8392	56.98%
Northcliff	5637	202	10223	55.14%
Pimville	11063	12014	44687	24.76%
Protea Glen	13460	6812	39996	33.65%
Protea North	5034	2190	14819	33.97%
Grand Total	65592	47986	224518	29.21%

APPENDIX 2: NORMALITY OF RESIDUALS

TEST OF ASSUMPTIONS	VARIABLE	P-VALUE (Z-VALUE FOR KW)	VERDICT
Skewness Normality of residuals	Value transferred	0.91	Accept normality
	Volume transferred	0.94	Accept normality
	Agents registered	0.46	Accept normality
	Secondary market ratio	0.68	Accept normality
	Product mix ratio	0.69	Accept normality
	Duration of transfer	0.88	Accept normality
Kurtosis Normality of Residuals	Value transferred	0.97	Accept normality
	Volume transferred	0.38	Accept normality
	Agents registered	0.87	Accept normality
	Secondary market ratio	0.16	Accept normality
	Product mix ratio	0.12	Accept normality
	Duration of transfer	0.87	Accept normality
Omnibus Normality	Value transferred	0.99	Accept normality
	Volume transferred	0.37	Accept normality
	Agents registered	0.75	Accept normality
	Secondary market ratio	0.34	Accept normality
	Product mix ratio	0.27	Accept normality
	Duration of transfer	0.98	Accept normality
Kruskal Wallis (Z-Value (HO: All medians are equal)	Value transferred	3.13	Medians are different
	Volume transferred	2.74	Medians are different
	Agents registered	3.14	Medians are different
	Secondary market ratio	1.98	Medians are different
	Product mix ratio	3.14	Medians are different
	Duration of transfer	1.17	Medians are different

APPENDIX 3: MULTIPLE REGRESSION REPORT: VALUE TRANSFERRED

Run Summary Section

Parameter	Value	Parameter	Value
Dependent Variable	Value_Trans	Rows Processed	14
Number Ind. Variables	2	Rows Filtered Out	0
R2	0.9128	Rows with Weight Missing	0
Adj R2	0.8970	Rows with Y Missing	0
Coefficient of Variation	0.2844	Rows Used in Estimation	14
Mean Square Error	1.445818E+16	Sum of Weights	14.000
Square Root of MSE	1.202422E+08	Completion Status	Normal
Completion			
Ave Abs Pct Error	29.409		

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
Agent_reg	14	17.5	19.92968	0	56
Product_type__vol	14	0.4571144	0.4943488	0	1.238569
Value_Trans	14	4.228328E+08	3.745844E+08	5.791864E+07	1.028535E+09

Correlation Matrix Section

type__vol

	Agent_reg	Product_	Value_Trans
Agent_reg	1.0000	0.8695	0.9298
Product_type__vol	0.8695	1.0000	0.9170
Value_Trans	0.9298	0.9170	1.0000

Regression Equation Section

Independent	Regression Coefficient	Standard Error	T-Value to test	Prob	Reject H0 at	Power of Test

Variable	B(i)	SE(i)	H0:B(i)=0	Level	5%?	at 5%
Intercept	90139018.3848	44818470.8588	2.011	0.0695	No	0.4505
Agent_reg	10202240.9514	3387450.0481	3.012	0.0118	Yes	0.7827
Product_type__vol	337234118.3372	136565140.8207	2.469	0.0312	Yes	0.6144

Estimated Model

90139018.384824+ 10202240.9514099*Agent_reg+ 337234118.337169*Product_type__vol

Regression Coefficient Section

Independent Variable	Regression Coefficient	Standard Error	Lower 95% C.L.	Upper 95% C.L.	Standardized Coefficient
Intercept	90139018.3848	44818470.8588	-8505770.8734	188783807.6431	0.0000
Agent_reg	10202240.9514	3387450.0481	2746513.6651	17657968.2377	0.5428
Product_type__vol	337234118.3372	136565140.8207	36656270.0047	637811966.6696	0.4451

Note: The T-Value used to calculate these confidence limits was 2.201.

Normality Tests Section

Test Name	Test Value	Prob Level	Reject H0 At Alpha = 20%?
Shapiro Wilk	0.6968	0.000342	Yes
Anderson Darling	1.5271	0.000623	Yes
D'Agostino Skewness	3.7344	0.000188	Yes
D'Agostino Kurtosis	3.4114	0.000646	Yes
D'Agostino Omnibus	25.5840	0.000003	Yes

Durbin-Watson Test For Serial Correlation

Parameter	Value	Did the Test Reject H0: Rho(1) = 0?
Durbin-Watson Value	2.3284	

Prob. Level: Positive Serial Correlation	[illegible]	Yes
Prob. Level: Negative Serial Correlation	0.0000	Yes

Multicollinearity Section

Independent Variable	Variance Inflation Factor	R2 Versus Other I.V.'s	Tolerance	Diagonal of X'X Inverse
Agent_reg	4.0980	0.7560	0.2440	7.936559E-04
Product_type__vol	4.0980	0.7560	0.2440	1.28993

Eigenvalues of Centered Correlations

No.	Eigenvalue	Incremental Percent	Cumulative Percent	Condition Number
1	1.8695	93.474	93.474	1.000
2	0.1305	6.526	100.000	14.322

All Condition Numbers less than 100. Multicollinearity is NOT a problem.

Plots Section

APPENDIX 4: **MULTIPLE REGRESSION REPORT: NUMBER OF PROPERTIES TRANSFERRED**

Run Summary Section

Parameter	Value	Parameter	Value
Dependent Variable	Volume_tfr	Rows Processed	14
Number Ind. Variables	2	Rows Filtered Out	0
Weight Variable	None	Rows with X's Missing	0
R2	0.5715	Rows with Weight Missing	0
Adj R2	0.4935	Rows with Y Missing	0
Coefficient of Variation	0.2973	Rows Used in Estimation	14
Mean Square Error	236175.2	Sum of Weights	14.000
Square Root of MSE	485.9786	Completion Status	Normal
Completion			
Ave Abs Pct Error	21.133		

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Minimum	Maximum
Agent_reg	14	17.5	19.92968	0	56
Product_type__vol	14	0.4571144	0.4943488	0	1.238569
Volume_tfr	14	1634.857	682.8806	666	2999

Correlation Matrix Section

	Agent_reg	Product_type__vol	Volume_tfr
Agent_reg	1.0000	0.8695	-0.7027
Product_type__vol	0.8695	1.0000	-0.7486
Volume_tfr	-0.7027	-0.7486	1.0000

Regression Equation Section

Independent Variable	Regression Coefficient b(i)	Standard Error Sb(i)	T-Value to test H0:B(i)=0	Prob Level	Reject H0 at 5%?	Power of Test at 5%
Intercept	2118.3253	181.1413	11.694	0.0000	Yes	1.0000
Agent_reg	-7.2760	13.6909	-0.531	0.6057	No	0.0775
Product_type__vol	-779.0990	551.9506	-1.412	0.1857	No	0.2520

Estimated Model

2118.32526251349-7.27604192733487*Agent_reg-779.099033797424*Product_type__vol

Regression Coefficient Section

Independent Variable	Regression Coefficient	Standard Error	Lower 95% C.L.	Upper 95% C.L.	Standardized Coefficient
Intercept	2118.3253	181.1413	1719.6360	2517.0145	0.0000
Agent_reg	-7.2760	13.6909	-37.4096	22.8575	-0.2123
Product_type__vol	-779.0990	551.9506	-1993.9341	435.7360	-0.5640

Note: The T-Value used to calculate these confidence limits was 2.201.

Analysis of Variance Section

Source	DF	R2	Sum of Squares	Mean Square	F-Ratio	Prob Level	Power (5%)
Intercept	1		3.741861E+07	3.741861E+07			
Model	2	0.5715	3464309	1732154	7.334	0.0095	0.8527
Error	11	0.4285	2597927	236175.2			
Total(Adjusted)	13	1.0000	6062236	466325.8			

=

Normality Tests Section

Test Name	Test Value	Prob Level	Reject H0 At Alpha = 20%?
Shapiro Wilk	0.9647	0.799709	No

Anderson Darling	[illegible]	[illegible]	[illegible]
D'Agostino Skewness	0.4333	0.664792	No
D'Agostino Kurtosis	0.8375	0.402330	No
D'Agostino Omnibus	0.8891	0.641110	No

Durbin-Watson Test For Serial Correlation

Parameter	Value	Did the Test Reject H0: Rho(1) = 0?
Durbin-Watson Value	1.9929	
Prob. Level: Positive Serial Correlation	0.0000	Yes
Prob. Level: Negative Serial Correlation	0.0000	Yes

Multicollinearity Section

Independent Variable	Variance Inflation Factor	R2 Versus Other I.V.'s	Tolerance	Diagonal of X'X Inverse
Agent_reg	4.0980	0.7560	0.2440	7.936559E-04
Product_type__vol	4.0980	0.7560	0.2440	1.28993

Eigenvalues of Centered Correlations

No.	Eigenvalue	Incremental Percent	Cumulative Percent	Condition Number
1	1.8695	93.474	93.474	1.000
2	0.1305	6.526	100.000	14.322

All Condition Numbers less than 100. Multicollinearity is NOT a problem.