

# How does transfer duty relates to housing demand in the city of Johannesburg, South Africa?

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## Abstract

**Purpose** – Acknowledging that housing forms a large part of households' and country's long-term wealth, the South African Government has implemented various housing-related policies towards that end. Among these, the government has extended transfer duty exemption to house buyers – both individuals or natural persons and companies or other parties – to enable them buy houses of their choices since January 1950 to date. This paper aims to investigate the relationship between historical transfer duty exemption and housing demand in the City of Johannesburg (CoJ) over a longer period, where a comprehensive data set on house sales and other predictors was available.

**Design/methodology/approach** – This paper uses multi-year data on repeat house sales from 2010 to 2020 and other macro- and socio-economic variables to test the relationship between transfer duty exemption and housing demand in the CoJ, a core part of Gauteng province, South Africa. After cleaning the original data, final analysis was based on 139,121 repeat sales transactions. Data was analyzed in R.

**Findings** – Findings suggest that, when macro-, socio-economic and yearly effects are controlled, transfer duty has a damping effect on housing demand in the CoJ. The results were consistent across all the estimated models. While the motivation behind the implementation of transfer duty exemption in South Africa continues to encourage home ownership, these findings are unexpected because they do not offer support to that policy intention. These unexpected results are partly explained by the prevailing complexities of the housing market and related policies and the progressive tax regime. However, there are welfare effects that all buyers achieve across the housing market ecosystem.

**Originality/value** – This paper extends work on housing markets research in South Africa through the investigation of mortgage-based housing market in the CoJ that presents one of the densest, developed, bustling and growing housing market in the country. It also presents a fertile ground where all the effects of all the housing policies coalesce – in the statistical sense, one can control the effect of some aspects of housing policies, while appropriately testing the link between a specific policy (in this case, transfer duty exemption) and housing dynamics.

**Keywords** Housing demand, Transfer duty exemption or rebate, City of Johannesburg, Housing policy, South Africa, Home ownership

**Paper type** Research paper

## Introduction

Housing is a major driver of national and regional economies as it provides jobs and contributes to economic growth and sustainability. These benefits are realized as direct



and indirect effects as well as short-, medium- to long-term at the macro level. At the household level, housing represents the largest investments that households make in their lifetime and often the most prominent asset that households transfer between generations in the modern capitalist system (Litheko *et al.*, 2019, citing Piketty, 2014). Wolff (2004) describes that owner-occupied housing provides services directly to their owner; as a wealth asset, it can be converted directly into cash and thus provide for immediate consumption needs; as a financial asset, it can provide liquidity to a family in times of economic stress, such as occasioned by unemployment, sickness or family break-up; and in a representative democracy, the distribution of power is often related to the distribution of wealth, including wealth held in housing. This means that an adequate understanding of housing demand is worthwhile towards appropriate policy formulation.

Housing delivery in South Africa is composed of state-funded as well as open-market options spearheaded by banks and other lenders. The state-funded options include the finance-linked individual subsidies (FLISP, or gap market) and the fully subsidized options, including incremental housing and social and rental housing. In spite of a developed, bustling and growing open housing market in South Africa (compared to its African peers), the continued role of the government in fostering housing through various instruments and agreements with the private sector emanates from its apartheid history, where government policies then led to a housing dichotomy and crises. Pre-1994, implementation of various apartheid legislation, such as the Natives Land Act of 1913 (RSA, 1913), the Group Areas Act of 1950 (RSA, 1950) and the Reservation of Separate Amenities Act, No 49 of 1953 (RSA, 1953), was to blame. Several authors, such as Ramokgadi (2014), cite that these laws prevented Black households from home ownerships in urban areas and forbid interracial property transfer for the whole population to enforce racial segregation. In this case, the role of the state in promoting home ownership mirrors restorative justice, especially post-1994 (Marais and Cloete, 2015).

Among the oldest instruments, the South African Government has implemented transfer duty exemption since 1950 following the promulgation of *Gazette Extraordinary* 4193 on 28 July 1949. The motivation behind implementation of transfer duty exemption to encourage home ownership and long-term households' wealth creation is seen as a noble effort by the government. These exemption rates have changed over the years to accommodate the consumer price indices as reflected in the general cost of living and property market rates fluctuations. It is worth noting that, what started as a partial exemption (ranging from 1% to 3% of first qualifying amount) payable as a percentage of property value from 1950 until February 2002 has metamorphosed into a complete exemption (0% of first qualifying amount) from March 2002 to date for the first qualifying property value. The first complete exempted amount has increased from R100,000 in February 2002 to the R1,000,000 for 2020/21 tax year (coinciding with March 2020 to February 2021) (SARS, 2021).

In spite of continued debates on what appropriate housing policy is needed in the country, existing research has blossomed. Marais and Cloete (2017) state that much of the housing research has been focusing on state-subsidized programme and informal settlement upgrading for poor households (e.g. work by Huchzermeyer and Karam, 2006; Huchzermeyer, 2004). They add that less and more non-academic work has focused on ways to expand the housing market and private sector housing finance across broad topics, including housing finance logjams at the lower end of the market, the appropriateness of mortgage finance, the conflict between housing finance institutions, historical and current problems with extending private sector finance to lower income black households, housing markets in former black townships, the impact of HIV and AIDS, the problems of mortgage defaulting and the performance of housing loans at the lower end of the market [Marais and Cloete, 2017, citing various authors such as Rust (2002), Rust and de Villiers (2002),

Tomlinson (1997, 2001, 2002, 2007), Shisaka Development Management Services (2004), Marais *et al.* (2005) and Centre for Affordable Housing in Africa (CAHF, 2012, 2014)]. Tissington (2010) provides a review and critique of the several legal and policy instruments that the South African Government has enacted and implemented since 1994.

This paper extends work on housing markets research in South Africa through the investigation of mortgage-based housing market. It tests the relationship between historical transfer duty exemption and housing demand in the City of Johannesburg (CoJ) – controlling for other macro- and socio-economic variables. For example, the substantial increase in mortgages in the mid-1990s was a period when interest rates were relatively low, GDP growth rate was high, and pressure from government on banks to invest in lower income areas and increased use of securitization to fund new mortgages ensued (Marais and Cloete, 2017, 2015). The study covers the 2010–2020 (11 years) period, where a detailed dataset was available. The choice of the CoJ as a study area is important. It is in the CoJ where one is presented with one of the densest, developed, bustling and growing housing markets in the country. The CoJ also presents a fertile ground where all the effects of all the housing policies coalesce – in the statistical sense, one can control the effect of some aspects of housing policies, while appropriately testing the link between a specific policy (in this case, transfer duty) and housing dynamics.

The next section of the paper focuses on a review of relevant literature covering the theoretical background to home ownership and the history of housing and delivery mechanisms in South Africa. The review also covers transfer duty exemption in South Africa and housing demand estimation. The following section describes the data and methods used, while results are presented and discussed in the subsequent section. The last concludes the paper.

## Review of related literature

### *Theoretical background to home ownership*

Homeownership in South Africa has been encouraged by the government through policies targeting the social and mortgage housing market segments partly as a process of restorative justice, rather than homeownership being seen largely as a means of reducing the state's welfare burden (Forrest and Yip, 2011; Parkinson *et al.*, 2009). Viewed from the asset-based theorization, the government, by supporting different housing typologies, and especially market-based housing, has contributed to housing ownership, where a house is seen as asset or property that allows government to enhance owner-occupied housing-linked wealth, and the general enhancement of household standard of living. In the long run, accumulated housing-linked wealth can, at least in theory, be tapped or used to supplement consumption and welfare needs when income is reduced, for example, in retirement; provide liquidity to a family in times of economic stress, such as occasioned by unemployment, sickness or family breakup; and acquire other forms of investment such as educational qualifications (Doling and Ford, 2007; Wolff, 2004).

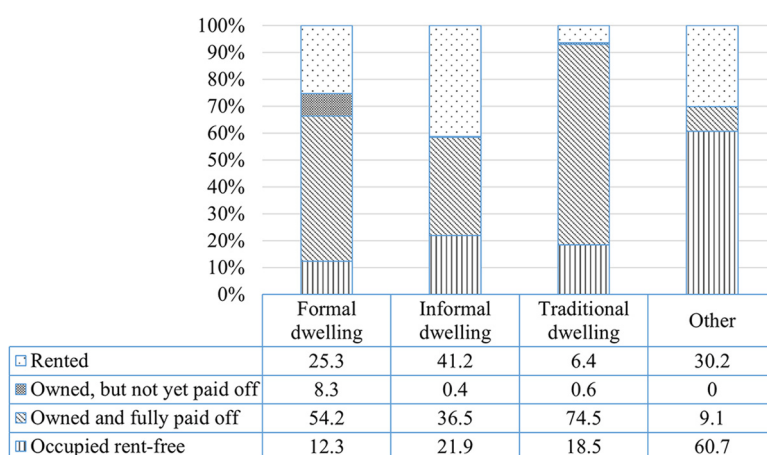
This scenario, where individuals accept greater responsibility for their own welfare needs by investing in financial products and property assets which augment in value over time, is seen as providing potential opportunities and security to governments in other important ways (Sherraden, 1991; Doling and Ford, 2007). For instance, as more households apply for credit through the formal financial sector, this provides multiplying effects where initial gains achieved by accessing financial resources for home ownership lead to the need for further credit secured on the property for the acquisition of non-housing goods and services. Doling and Ford (2007) also note as well that as mortgages act as “hook” upon which further financial products (e.g. life assurance and payment protection insurance) are sold, it is also a significant source of profit to lenders. As all these happens, the government could recoup what it provided as initial

incentives through tax rebates (transfer duty in the case of this paper) in the form of taxes on sold financial instruments along the entire housing value chain. The overall success of the preceding, of course, is dependent on the prevailing macro-economic environment in the national economy, especially the size of equity and its accessibility; the long-term strategies and saving plans by households; and whether housing is prone to bubbles (Doling and Ford, 2007; Tomlinson, 2007).

The attempt by the South African Government to continually enact new legal and policy instruments – notwithstanding the mix of successes and failures – towards supporting the development of a robust housing delivery value chain can be seen in the context of “asset-based” or “property-based” welfare approach (for a complete of asset-based welfare literature in the both the global north and south, including South Africa, see Litheko *et al.*, 2019). Other areas specifically tailored to boost the market-based housing delivery value chain can be seen in the context of asset-based or property-based welfare approach as well. These include the government: offering transfer duty exemption; entering into memorandum of understanding with private sector lenders to boost housing finance in low-income markets; establishing the National Housing Finance Corporation and the Rural Housing Loan Fund in 1996 to provide wholesale housing finance to intermediaries, the later selling direct housing finance to households; and providing housing subsidy (e.g. FLISP or Gap market) to assist qualifying households to secure mortgage finance to acquire a residential property for the first time.

#### *Quantifying home ownerships in South Africa*

Two indicators are used in this paper to quantify home ownership. These are the percentage of households who own their homes and have either “fully paid” their dwellings or are “still paying off” their dwellings to either bank/financial institutions or private lenders; and the mortgage debt expressed as a percentage of GDP. Among other questions in its general household surveys (GHS), Statistics South Africa (StatsSA) collects information on the type of dwellings in which South African households live and the extent of use of state-subsidized housing as well as the perceived quality thereof. Figure 1 shows a cross-tabulation of dwelling types by tenure status in the 2018 GHS (StatsSA, 2019). It is clear



Source: StatsSA (2019)

**Figure 1.**  
Percentage of  
dwelling units by  
tenure status, 2018

from [Figure 1](#) that there is a sizeable amount of home ownership in the country across the dwelling types. Particularly, in formal dwelling type, 54.2% of households “own and have fully paid” their dwellings, while 8.3% of households “own, but still paying off” their dwellings to either bank/financial institutions or private lenders. The patterns as per Census 2011 is not much different from that obtained from [StatsSA \(2019\)](#). For example, in the formal dwelling type, households who “owned and had paid off” were the majority at 42.9%, followed by households who rented, households occupying free and households who “owned, but still paying off” at 26.7%, 14% and 16.4%, respectively ([StatsSA, 2011](#)).

To measure the relative size of mortgage debt to GDP size, the paper uses mortgage debt data from the [National Credit Regulator’s \(NCR\) \(2020\)](#) annual reports and GDP (measured as gross value added at basic prices) data from Quantec ([EasyData, 2020](#)). The NCR’s data for 2016Q4, 2017Q4, 2018Q4 and 2019Q4 show outstanding total mortgage debt of R875bn, 904bn, R939bn and R978bn, respectively. This represents a growth of 11.81% from 2016Q4 to 2019Q4. These latest outstanding mortgage debts relative to GDP size represents 22.49%, 21.66%, 21.63% and 21.63%, respectively. While steady, these mortgage debt relative sizes are a far cry when compared to historical data. [Marais and Cloete \(2017\)](#) show that household mortgage finance expressed as a percentage of GDP had risen to 36% in 2007. Attributing it to several macroeconomic variables such as stricter lending practices and slower economic growth (for 2008 relative size) and negative growth in 2009 and slow growth in 2010 (for 2010 relative size), they show that the relative size of mortgage debt to GDP declined to 31% in 2008, then increased to 37% at the end of 2010 and substantially dipped again to 22% at the end of 2013.

Several factors explain the sizeable proportion of home ownership in South Africa, especially after the end of apartheid. [Marais and Cloete \(2015\)](#) posit that the democratic dispensation saw the government providing subsidies to assist approximately three million low-income households since the early 1990s, while at the same time, the increased housing finance to the historically disadvantaged black population of South Africa that started in the 1980s was upped in the 1990s. Some 500,000 low-income households also benefited through the restoration of home ownership and rights in state rental properties ([Marais et al., 2014](#)). In addition, [Delmendo \(2020\)](#) cites key main factors that drove the house demand in South Africa after apartheid: the emergence of a financially stable black middle class encouraged by individual tax reliefs in the context of a growing economy; much of the in-flow of funds by South Africans who had parked their money offshore during the apartheid era, but were allowed and/or required to return the money, went into property; and better stability and security after apartheid helped to boost house prices relative to the economy. Changes in the financial and tax policies encouraged by the government also boosted housing demand. For instance, the Financial Sector Charter in 2003 boosted mortgage loan growth as financial institutions committed to provide R42bn (US\$2.83bn) of housing finance to the low-income market. Similarly, the continued raising of capital gains tax (CGT) exemption on primary residences and the lowering of transfer duties on properties have encouraged housing demand ([Delmendo, 2020; Marais and Cloete, 2017](#)).

#### *Transfer duty and housing demand*

In the literature, the usefulness of any tax policy relates closely on how the incidence of that tax shapes the decisions of intended economic agents. In the housing market, the incidence will depend on the relative elasticities of demand and supply – with the incidence falling on the most inelastic side of the market. So, in the case where house supply is more elastic than demand, the tax burden falls on the buyers, while if demand is more elastic than supply, the tax will be borne by sellers. [Davidoff and Leigh \(2013\)](#) argue that while from



the administrative standpoint, it seems apparent that stamp duties are typically levied on the buyer, suggesting that its statutory incidence will be borne by the purchaser, they further argue that shaped by prevailing elasticities, it may well be that economic incidence of stamp duty entirely falls on the buyer, entirely on the seller or shared between both parties. They argue that regardless of incidence, theory also predicts that higher taxes will increase the “tax wedge” between buyers and sellers, and reduce total sales (Davidoff and Leigh, 2013). Dachis *et al.* (2012) posit that imposition of a tax increases the cost of buying or selling a house; thus, rational households to avoid these taxes hold on to their existing houses, thus reducing the volume of real estate transactions. Other scholars have found that transaction taxes on owner-occupied housing unambiguously reduce homeowners’ mobility – with the implication that few houses will be transacted in the market (Lundborg and Skedinger, 1999, 1998; Sinai, 2000).

In South Africa, transfer duty, enjoyed by natural persons and companies and other parties, is one of the key tax revenue sources in South Africa. However, to encourage home ownership in the country, it is concomitantly administered by South African Revenue Services as an exemption on the first qualifying amount and a tax on any values or amounts above what qualifies for exemption. The *partial* exemption component ranged from 1% to 3% since 1950 until February 2002. From March 2002 to date, a complete exemption was implemented for natural persons – with the exempted amount increasing from R100,000 in February 2002 to the R900,000 for 2019/20 tax year (coinciding with March 2019 to February 2020) (SARS, 2021). According to SARS’ rule, transfer duty is payable within six months of the date of acquisition of the property, failing which interest will be charged. The motivation behind implementation of transfer duty exemption component has been to encourage home ownership.

Table 1 shows formulae for calculating the transfer duty from March 1992 to February 2010 – a period that coincides with analysis in this paper. This period was determined by availability of data. The transfer duty resulting from the calculation in Table 1 encompasses both the exemption on the first qualifying amount and the tax burden on the residual amount beyond the amount that initially qualified for exemption. Table 1 further shows that from March 2009, first qualifying amount for exemption (0%) was R500,000. The first value qualifying for exemption has since risen considerably to R1,000,000 for the tax year March 2020–February 2021 (SARS, 2021).

## Study area, data and methods

### *Study area*

The CoJ is one of the three metropolitan municipalities (others are Cities of Tshwane and Ekurhuleni) that form the core of the Gauteng province. With human settlement typologies that are transforming rapidly, the demand for housing in Gauteng remains high. While access to public services, such as water, electricity, sanitation, health, education, social welfare and transport, remain satisfactory for most of the residents, it is always not true for the vulnerable poor and low-income households. And because of residual apartheid legacies, spatial fragmentation and housing crisis still prevail in the province. Figure 2 shows the CoJ’s main places.

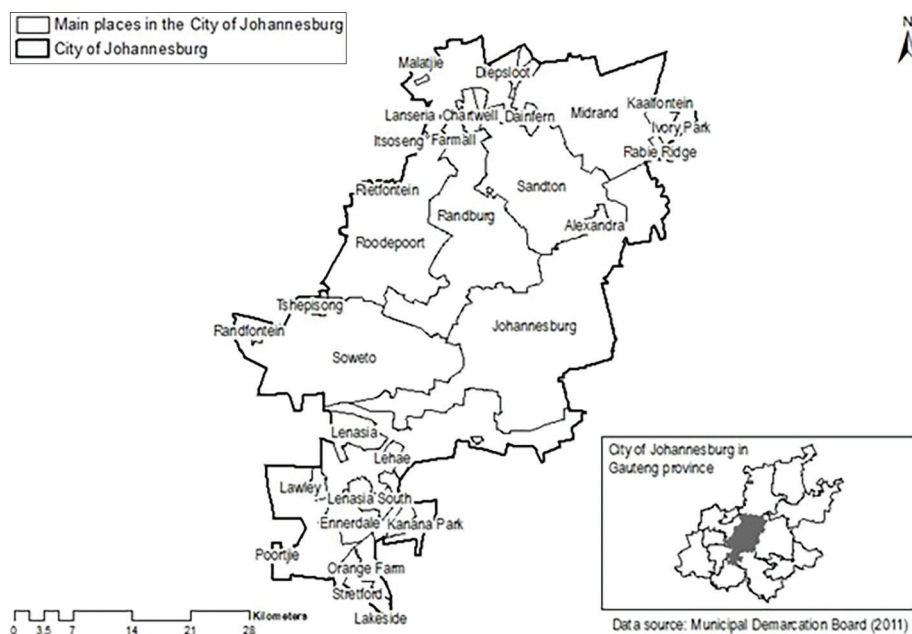
### *Description of variables*

This research used secondary data obtained from various sources covering 2010–2020. The choice of this period was informed by the available comprehensive data set on repeat house sales for the study area. The following data were used in this study.

**Table 1.**  
Transfer duty in  
South Africa  
regarding natural  
persons only, March  
2009–February 2021

Fiscal year	Rate
From 1/3/2009 to 22/02/2011 Natural persons	<ul style="list-style-type: none"> <li>● 0% on R500,000</li> <li>● 5% above R500,000 and not above R1,000,000</li> <li>● 8% above R1,000,000</li> </ul>
From 29/02/2011 to 28/02/2015 Natural persons	<ul style="list-style-type: none"> <li>● 0% on R600,000</li> <li>● 3% above R600,000 and not above R1,000,000</li> <li>● 5% above R1,000,000–R1 500,000</li> <li>● 8% above R1,500,000</li> </ul>
From 01/03/2015 to 29/02/2016 Natural persons	<ul style="list-style-type: none"> <li>● 0% on R750,000</li> <li>● 3% above R750,000</li> <li>● R15,000 + 6% above R1,250,000</li> <li>● R45,000 + 8% above R1,750,000</li> <li>● R85,000 + 11% above R2,250,000</li> </ul>
From 01/03/2016 to 29/02/2017 Natural persons	<ul style="list-style-type: none"> <li>● 0% on R750,000</li> <li>● 3% above R750,000</li> <li>● R15 000 + 6% above R1,250,000</li> <li>● R45 000 + 8% above R1,750,000</li> <li>● R85 000 + 11% above R2,250,000</li> <li>● R 937 500 + 13% above R10,000,000</li> </ul>
From 01/03/2017 to 29/02/2020 Natural persons	<ul style="list-style-type: none"> <li>● 0% on R900,000</li> <li>● 3% above R900,000</li> <li>● R10,500 + 6% above R1,250,000</li> <li>● R40,500 + 8% above R1,750,000</li> <li>● R80,500 + 11% above R2,250,000</li> <li>● R 933,000 + 13% above R 10,000,000</li> </ul>
From 01/03/2020 to 29/02/2021 Natural persons	<ul style="list-style-type: none"> <li>● 0% on R1,000,000</li> <li>● 3% above R1,000,000</li> <li>● R11 500 + 6% above R1 375,000</li> <li>● R44 250 + 8% above R1 925,000</li> <li>● R88 250 + 11% above R2 475,000</li> <li>● R 1026 000 + 13% above R 11,000,000</li> </ul>
<p><b>Notes:</b> A complete table covering 01/01/1950–February 2020 is available here <a href="http://www.sars.gov.za/TaxTypes/TransferDuty/Pages/Transfer-Duty-Payment-Rates.aspx">www.sars.gov.za/TaxTypes/TransferDuty/Pages/Transfer-Duty-Payment-Rates.aspx</a></p> <p><b>Source:</b> SARS (2021)</p>	

*Number of sales:* The original individual property records obtained from Lightstone Property Limited's meta file comprised of about 170,000 privately owned, residential repeat sales for the period 2010–2020. Lightstone is a private company that supplies data in bulk for various uses as requested by clients. The data obtained in this paper included detailed per record property information (i.e. price, location at suburb or town level, size, etc.) extracted from the CoJ Deed's office data. Based on the respective individual property's price, all transactions that were less than R200,000 were excluded. This was based on the CoJ's valuation policy and records showing that most government-provided houses, such as RDP, are valued at most at 200,000 rands. As per CoJ's policies, these house typologies do not attract any form of tax. The excluded property records – those less than 200,000 rands – also included individual property records that were incomplete



**Figure 2.**  
City of Johannesburg  
in Gauteng province

or were out of range (some properties recorded unreliable low house prices, e.g. R1,000) compared to the suburb characteristics. Thereafter, transfer duty payable was calculated as per [Table 1](#) on the remaining 139,121 transactions. The calculated transfer duty payable was then classified into frequencies per year. The obtained frequencies were defined as the number of sales – ultimately, indicating the dependent variable. By doing this an endogeneity problem that would have resulted had transfer duty exemption values were regressed on sale prices, as the dependent variable, was avoided. Because the distribution of the number of sales was skewed, a boxcox-transformed version of the *dependent variable* was used in the study.

The *predictor variables* are listed below – with population growth, GDP growth, disposable income, interest rates and inflation rates used as controls:

- *Transfer duty amount* – this was calculated as the amount payable by a house buyer to SARS. The amount payable is calculated as a proportion of the transfer house price given the transfer duty guidelines declared by the Minister of Finance in the respective tax years (see [Table 1](#)). These covered the period 2010–2020. The final amount payable above incorporates an exemption amount, where applicable, as detailed in [Table 1](#). The exemption by lowering the final transfer duty payable – ultimately, lowering the transactions costs of acquiring a new house – encourages house buying, thus increasing housing demand ([Davidoff and Leigh, 2013](#)). A boxcox transformed version of transfer duty variable was used in modelling.
- *Population size* – The growth in population, and especially the growth in the number of household's growth, is hypothesized to lead to an increase in house demand ([Ahmed, 2015](#)). The CoJ, as part of the leading Gauteng agglomeration, continues to



witness urban population growth resulting from immigration and *in situ* growth. A lagged urban population growth obtained from EasyData was used in this paper. EasyData (also Quantec) is a private, consultancy firm that has a long-track record in providing economic and financial data, country intelligence, and quantitative analytical software in South Africa.

- *GDP growth* – Among important macro-economic variables, growth in regional growth is theorized to lead to an overall increase in the demand for goods and services, including housing (Owusu-Ansah *et al.*, 2021). The paper used lagged growth rate of gross value added (GVA) at basic prices. GVA is commonly used as a regional measure of production in South Africa (EasyData, 2020).
- *Income level* – It is hypothesized that as incomes increase following economic growth, for instance, the number of people who are able to budget for housing demand increases as well (Ahmed, 2015; Bajari and Kahn, 2005; Fontenla *et al.*, 2009). The income variable from EasyData, used in the paper, was measured as household disposable income, that is, current household income less taxes on household income and wealth.
- *Unemployment rate* – Unemployment rate has a dampening effect on housing markets by causing declining household disposal income (Green and Hendershott, 2001). This in turn denies households the propensity to spend on long-term investments, including housing. The unemployment data was obtained from EasyData that derives its employment data from the two main official sources of labour data in South Africa, that is, the Quarterly Employment Statistics (QES) and the Quarterly Labour Force Survey (QLFS) that are published by Statistics South Africa (Stats SA). To avoid any discrepancies between the surveys-based employment figures and the actual employment figures, EasyData adds formal agricultural and domestic workers to the QES formal figure. It reconciles QLSF and QES by taking into account SMMEs unemployment data, the latter often not accounted for in the QES. While acknowledging the difficulty of adequately estimating labour-related data from surveys, it argues that its data estimate overall employment and unemployment data well. It further argues that its data is adequate for medium-term indicators at the sub-provincial level. A lagged unemployment rate was used in the study.
- *Interest rates (%)* – Chan *et al.* (2015) argue that mortgage credit allows the household to purchase its home with far less of an up-front consumption sacrifice. A lower mortgage interest rates should encourage households to buy houses and vice versa. A lagged real prime lending rates were obtained from South African Reserve Bank.
- *Inflation rate (%)* – Inflation has the potential to erode the purchasing power of households. House ownership is always seen as a longer term investment – that is, once the decision to buy a house, a household is locked for a long in inflationary cycles, etc. This unfortunately has the propensity to force households to defer house buying. Lagged real inflation rates obtained from South African Reserve Bank was used in the study.
- *Year dummies* –  $m - 1$  years dummies were included in the panel model to control for time or trend effects.

It was hypothesized that, on the one hand, interest rates and inflation rates will have a negative relationship with housing demand, while on the other, population size, household size, GDP growth, level of income and transfer duty will have positive relationship with housing demand.

### Choice of methods

The paper used regression estimations to test the hypothesized relationship that implementation of some transfer duty exemption has a positive effect on housing demand. Use of descriptive and correlation formed part of preliminary analysis, while regression models covering the period 2010–2020 were estimated in R software. The estimated model is as shown below:

$$y_{it} = \beta_0 + x_{it}\beta + \varepsilon_{it} \quad (1)$$

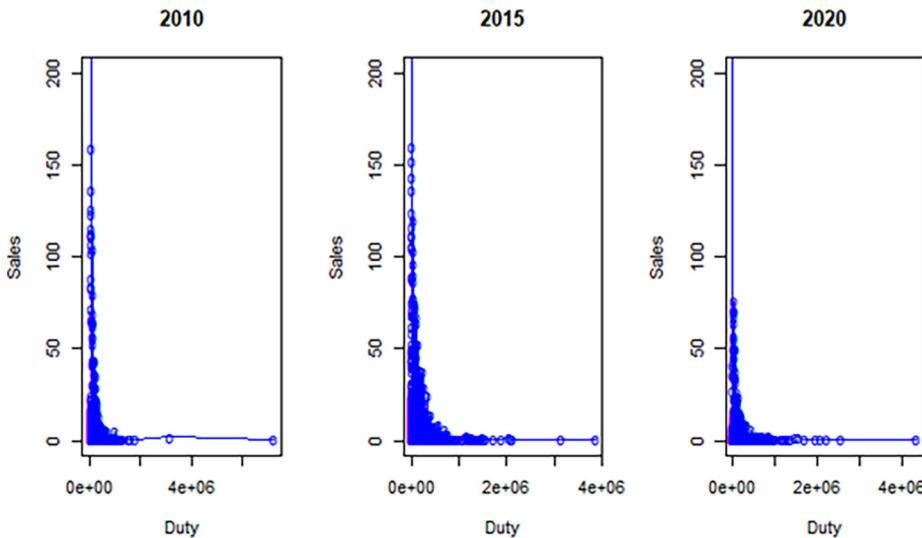
In [equation \(1\)](#), for  $i = 1 \dots N$  and  $t = 1 \dots T$  years,  $y_{it}$  is the number of sales. In [equation \(1\)](#),  $x_{it}$  is a  $K$ -dimensional vector of explanatory variables (explained in previous section) plus a year dummy, without a constant term;  $\beta_0$  is the intercept, that is, independent of  $i$  and  $t$ ;  $\beta$  is a  $(K - 1)$  vector of slopes or regression coefficients that are also independent of  $i$  and  $t$ ; and  $\varepsilon_{it}$  is the random error that varies over  $i$  and  $t$  as well as i.i.d.

We also made a subset of the data into sales that attracted zero transfer duty and sales that attracted transfer duty (of course, including the portion exempted from transfer duty). For the former, it was not possible to estimate [equation \(1\)](#) because the coefficient for transfer duty would return null values. For the latter, [equation \(1\)](#) was estimated. This was necessary because evidence show that transaction taxes, including transfer duty, have a damping effect on homeownership rates, as shown in the literature review section ([Scanlon et al., 2017](#); [Dachis et al., 2012](#); [Davidoff and Leigh, 2013](#)).

## Results and discussions

### Descriptive results

[Figure 3](#) shows a scatterplot of the number of sales versus the amount of transfer duty paid for selected years – 2010, 2015 and 2020, respectively. The plots show a negative relationship between number of sales and amount of duty paid. The plots for the other years, including the aggregate data (i.e. that combines all the years' data into one data set), depicted negative relationships between the number of sales and the amount of duty paid as well. These latter plots



**Figure 3.** Scatterplots of sale volumes versus the amount of transfer duty paid for select years

were not included here because of space. All the model variables were subjected to diagnostic tests. In terms of normality tests, the null hypotheses for normality regarding the number of sales and the amount of duty paid were rejected. Subsequently, the paper used boxcox transformation and log-transformation for the number of sales and the amount of duty paid, respectively. This step was to ensure that we achieved robust estimation results.

Bivariate correlation analysis was also undertaken (not reported because of space). The correlation between sales and duty was negative and statistically significant. Sales had no statistically significant correlation with the rest of the model variables. The explanatory variables on their own had varying relationships with each other – some relationships were either positive or negative and some were statistically significant. Most of these correlations were moderate (under 0.6), except the correlation between population growth and unemployment rate was almost perfect (0.92). So, except for the latter relationship, there was little initial indications of multicollinearity.

*Regression results and discussions*

The data used in the model was structured in a way that the dependent variable represented the frequency of sales per amount of transfer duty paid. Because the dependent variable was not capturing individual observations that are expected to vary, it became apparent that the suitable estimation technique was an ordinary regression model with year dummies – the latter allowing the data to vary over time. With the number of sales as the dependent variable, the predictor (some were control) variables are listed in Table 2. Ten dummy variables to represent time (2010–2020) were additional predictor variables in model. The 10-year dummies represent  $m - 1$ , where  $m$  is equal to 11. This was necessary to avoid dummy variable trap. The excluded year (2010) subsequently acted as a reference year.

Variables	(1) Full sample	(2) Full sample	(3) Partial sample (duty paid > 0)	(4) Partial sample (duty paid > 0)
Log-transformed transfer duty	−0.032***	−0.032***	−0.029***	−0.030***
Interest rate	0.024***		0.023**	
Inflation rate	−0.003		−0.003	
Population growth	0.287***		0.283**	
Gross domestic product growth	0.017***		0.017***	
Disposable income	−0.007***		−0.007	
Unemployment	0.003		0.002	
2011 dummy		0.006		0.006
2012 dummy		0.008		0.009
2013 dummy		−0.014		−0.013
2014 dummy		−0.079***		−0.078***
2015 dummy		−0.055***		−0.054***
2016 dummy		−0.092***		−0.091***
2017 dummy		−0.072***		−0.072***
2018 dummy		−0.119***		−0.119***
2019 dummy		−0.057***		−0.007***
2020 dummy		−0.027***		−0.125***
Adj. $R^2$	0.016	0.016		0.014
Valid $N$	139,121	139,121	88,172	88,172

**Table 2.**  
Regression model  
results

**Note:** \*\*\*Indicates significance at 1 %

As indicated earlier in the previous section, four models were run. Because of multicollinearity observed through the calculation of variance inflation factor (VIF), some variables were dropped, in turn, in either of the models based on the full or partial samples. Specifically, Models (1) and (3) controlled for macro- and socio-economic variables, while Models (2) and (4) controlled for yearly effects.

Table 2 shows the model results that are, overall, consistent across all the models. The estimated models have low explanatory power, indicating other key predictors were missing in the models. Diagnosis tests were performed to test the robustness, including meeting OLS assumptions, of the results obtained in Models (1)–(4) in Table 2. Multicollinearity tests showed that all the VIF for the predictor variables were less than 5 – implying lack of multicollinearity. A histogram of standardized residuals for the estimated models were “fairly” normal – implying lack of heteroscedasticity. Overall, these diagnostics results indicate that the model was well fitted.

All the coefficients for transfer duty, interest rates, population growth and regional domestic product are statistically significant across all models. That is, controlling either for macro- and socio-economic or yearly effects, the results suggest that a transfer duty has a negative effect on housing demand in the City of Johannesburg. Interestingly, the results of the unemployment variable are inconsistent with Marais and Cloete’s (2017) suggestion that the housing-related impacts of post-global crisis (i.e. the 2008/09) induced unemployment was probably only to be fully realized after 2010. In Models (1) and (3), the unemployment variable did not return any statistically significant results across all models.

The transfer duty coefficients in Models (2) and (4) results suggest how much the number of sales changes overtime, controlling for yearly differences. With 2010 used as a reference year, all yearly dummies, except for the dummies for 2011, 2012 and 2013, enter statistically significant. These results imply that compared to 2010, yearly effects – except the three years stated above – have a negative effect on housing demand in the City of Johannesburg.

A further step was made to compare the results of “sale volumes where no transfer duty was paid” to “sale volumes where at least R1 amount of transfer duty was paid”. This was achieved by treating the transfer duty variable as a nominal – with transfer duty variable taking a value of “0”, indicating transfer duty was not paid, and “1” indicating at least R1 transfer duty was paid. To overcome multicollinearity as before, two models were run, and the results are shown in Table 3.

Results for the transfer duty are consistent in both models. The results for the transfer duty variable show a negative coefficient implying that where “at least R1 transfer duty was paid”, housing demand was less compared to the reference category (where no transfer duty was paid). These results are consistent with earlier results, indicating that regardless of the incorporation of the exemption, the portion of duty paid still has a damping effect on housing demand. With respect to the yearly effects, the dummies for 2014 through 2020 had statistically significant negative coefficients, implying that these years had damping effects on housing demand – compared to 2010 that was used as a reference year.

The results show that controlling for macro- and socio-economic variables, the results for transfer duty are consistent under the full and partial samples. The coefficient for transfer duty shows that even after incorporating respective exemption in the calculation of the transfer duty due, it is still apparent that the coefficient is still negative. The negative relationship implies that the more the amount of transfer duty due, the higher the propensity of households to forestall their demand for housing. This could be explained by the fact that rebate amount is negligible portion of the overall stamp duty due by households that are buying houses. Given that house buying is seen as a long-term investment by household house buying is seen as a long-term investment by households, the negligible once off exemption or rebate provides minimal enticement to households’ propensity to up their housing demand. The burden of saving for a

**Table 3.**  
Regression model  
results – with  
transfer duty as  
nominal variable

	(1) Full sample	(2) Full sample
Log-transformed transfer duty	–1.141***	–1.142***
Interest rate	0.019***	
Inflation rate	–0.003	
Population growth	0.237***	
Household growth		
Gross domestic product growth	0.017***	
Disposable income	–0.006	
Unemployment	–0.001	
2011 dummy		0.010
2012 dummy		0.017
2013 dummy		–0.002
2014 dummy		–0.060***
2015 dummy		–0.042**
2016 dummy		–0.080***
2017 dummy		–0.072***
2018 dummy		–0.119***
2019 dummy		–0.060***
2020 dummy		–0.123***
Adj. $R^2$	0.009	0.009
Valid $N$	139,121	139,121

**Note:** \*\*\*Indicates significance at 1 %

deposit for most buyers on top of transfer duty similarly dampens households' housing demand. When some buyers also choose to perhaps pay just under the threshold amount to avoid paying the tax, this behaviour further dampens the number of house transactions in the market. These further cause immobility of households who would want to relocate (Scanlon *et al.*, 2017; Dachis *et al.*, 2012; Chan *et al.*, 2015).

While these results show the complexity inbuilt in the progressive tax regime (e.g. for instance, where the portion of tax exemption declines with house price), and further that the effect of transfer duty (incorporating both the exemption and the tax due component) dampens housing demand, there is, however, some welfare effect that all buyers achieve across the board. While cumbersome, it is possible, however, to estimate these welfare benefit. Similarly, as noted by several authors, the government also faces tax-related revenue decline because the imposition of the transfer duty dampens the number of housing transactions, anyway. If possible, to estimate the number of foregone sales, it is clearly possible to estimate the amount of tax decline owed to government (Davidoff and Leigh, 2013; Dachis *et al.*, 2012; van Ommeren and van Leuvensteijn, 2005; Hilber and Lyytikäinen, 2012). Estimating both welfare benefits and tax-related revenue was beyond the scope of this paper and lends itself for future research.

### Conclusion

This paper tests the relationship between transfer duty and housing demand in the CoJ metropolitan municipality of Gauteng province covering the 2010–2020 (11 years) period, where data was available. None of the existing literature has explored this important policy question since the South African Government implemented transfer duty exemption policy in 1950.

The South African Government has also implemented other several policies aimed at stimulating housing demand for so long. With the South African Government having contributed to housing dichotomy and crises, especially emanating from the apartheid era,

the role that housing policies can play in correcting such disastrous history is most welcomed. Implementation of appropriate mix of housing policies – encompassing state-funded options as well as open-market options spearheaded by banks and other lenders – is further important in boosting housing investment towards enabling households to build long-term wealth.

The empirical results show that, once macroeconomic policy variables (e.g. interest or mortgage rates, inflation rates) and socio-economic variables (e.g. population growth and income levels) are controlled or accounted for, transfer duty tax regime dampens housing demand. These results were consistent with prior research (Davidoff and Leigh, 2013; Green and Hendershott, 2001; Dachis *et al.*, 2012). While the motivation behind the implementation of transfer duty exemption or rebate in South Africa was and still is to encourage home ownership, the results in this paper do not offer support that policy intention. These could be explained by several reasons, including the complexity of the progressive transfer duty tax regime as noted in the last section. This complexity, paradoxically, is where households gain other welfare benefits, while the government experiences transfer duty tax-related revenue decline, or where shaped by prevailing housing market elasticities, the economic incidence of transfer duty entirely falls on the buyer, entirely on the seller or shared between both parties. The answers to these questions bear on whether or not transfer duties limit residential mobility (and therefore labour mobility) (Davidoff and Leigh, 2013). These need to be further explored in new research. Overall, there is no denying the important role that governments can play in fostering housing investments through a good mix of the many available monetary and fiscal policy options, if such policies are tailored to the specific contexts (Holmans, 2002; Hoekstra and Marais, 2016).

Further work is needed, in several areas, including how housing tax policy affects immobility of households and household's decision to own or rent. Research work is also needed to explore the distribution of mortgage credit in terms of access and price, by race, ethnicity, income and over the lifecycle. Spatial analysis covering several aspects of the housing market is also needed.

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