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**A TALE OF TWO SECTORS: UPWARD
MOBILITY AND THE PRIVATE HOUSING MARKET IN
SINGAPORE**

By

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“A Tale of Two Sectors: Upward Mobility and the Private Housing Market in Singapore”¹

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Abstract

Our paper examines the determinants of new private residential units sold in Singapore during the 1990s. The Singapore housing market is characterized by the coexistence of a dominant public sector and a small, growing private sector with relatively higher quality housing. The distinguishing feature of our model is that we account for the impact of the former on the latter, and the interaction between the two. Our analysis generates three principal conclusions: First, there is a statistically significant “wealth effect” driving private residential activity. Second, the real loan interest rates have a statistically significant negative impact on private residential activity. Third, an increase in the rate of change of public housing resale prices has an important and significant positive impact on the number of private residential units, due in part to mitigation of downpayment constraints of upwardly mobile households.

Key words: international real estate, urban housing policy, public sector, segmented markets, interaction between private and public sectors, housing mobility

JEL Classification: H4, L33, R21, R31, R38, R52

I. Introduction

Singapore is one of the few countries in the world that practices an integrated housing sector policy in which planning, urban policy and government objectives define the parameters of real estate development (Phang, 2001). Housing institutions and policies have been developed systematically and comprehensively to advance social development and economic growth in Singapore.

A lynchpin of our analysis is that private sector housing in Singapore cannot be understood without taking into account public sector behavior. In this study we develop and estimate a model for the determinants of new private residential units in Singapore with explicit tracking of the public-private linkage.² A singular feature of the residential market in Singapore is the existence of a relatively small private sector. Almost 86% of Singaporeans live in public housing (Lum, 2002). The Government, including land destined for private development, owns more than eighty percent of the land in Singapore. The private residential market caters mainly to upwardly mobile local households, those who do not qualify for public homeownership and expatriates. Although the two sectors have been relatively segmented in the past, a series of public policy measures, including deregulation of the public housing sector that began in the late 1980's, has engendered increasing integration.³ This implies that any change in Government policy that has an impact on the stock of public housing, its quality,

² Prior Singapore housing market research is overwhelmingly qualitative. Structural models and formal econometric analyses of housing market behavior are relatively scarce (Lum, 2002). While data limitations pose some problems, a major omission of the Singapore housing literature is an explicit recognition of the linkages between the public and private housing sectors.

³ Appendix A provides some details on these policies.

affordability or price is likely to affect private housing activity. The small size and novelty of the private residential market allow us to treat it as a thin and embryonic market that elicits signals from the quasi-private, public housing resale market.

An authorized public housing resale market has existed in Singapore since 1971 (Phang and Wong, 1997). In the 1990s, liberalization coupled with excess demand for housing gave a further boost to this market. Since public units were allocated at subsidized rates, but could be re-sold at higher market-determined prices, ownership of public housing became a source of “fortuitous” wealth (Lum, 1996). Many “upgraders” who filtered up from public housing to better quality private housing relied on tax-free capital gains to fund a substantial part of the purchase (Ong, 1999). Factors that typically determine private housing market activity in other countries appeared to have played a far less significant role compared to public housing policy changes in Singapore (Phang and Wong, 1997).

There are two main channels through which activities of the Housing and Development Board (HDB) may affect the private market. First, public housing is rationed directly by the state using non-price criteria. This implies that the amount of public housing stock may compete with and reduce the number of private units needed to accommodate households. Second, capital gains from resale HDB units may be an important determinant of upgrading mobility.

Despite evidence of price discovery between the public and private housing sectors (Ong and Sing, 2002), standard explanations of private housing market behavior in Singapore invariably focus on macroeconomic demand-side variables (for instance, Ho and Cuervo, 2000). In an official study, for example, private house prices

have been modeled exclusively as a function of national income (The Economics Division, Ministry of Trade and Industry, 2000). Other fundamentals, such as interest rates and stock prices, were not found to impact significantly property prices, even in the short run. Economists are now beginning to add policy variables to their models of Singapore private housing market behavior (Lum, 2002; Tu, 2002).

The remainder of the paper is organized into three subsequent sections. In the following section, we briefly discuss the evolution of the housing market in Singapore with emphasis on the gradual integration of the public and private housing sectors⁴. Section III, the heart of the paper, describes our data and outlines the empirical model for the new private residential units as well as the statistical results. The final section is a brief conclusion.

II. The Singapore Housing Market

Historically, the Singapore private sector housing market has catered to those groups that were not eligible to buy subsidized housing from the government, generally, the top decile income group in Singapore, which includes affluent natives, foreign investors and the expatriate community (Lum, 2002). On the supply side, private developers constructed bungalows, semi-detached houses and terraced houses mainly for the rich.

The residential property market has undergone a fundamental change in the last two decades. The increasing affluence and higher aspirations of Singaporeans have generated a demand for more, better quality and a greater variety of housing. During the early 1980's the Government recognized that with increasing economic

affluence, the proportion of high-income families who wanted to own private housing exceeded the capacity of the private land supplied to private developers. Consequently, the Government scaled back the HDB's target of housing 90% of the population in public housing to 75%, leaving the residual to own private properties. To achieve this goal the state began selling 99-year land leaseholds to private developers to build high-rise condominiums (Chua, 2000).

At the same time, rapid asset price inflation meant that many of the households who wanted to own private property could not afford to do so. These households were also too rich to qualify for public housing, thus creating a sandwiched class of residents (Lum, 1997). Hence, the Government shifted its policy to provide better quality housing with a greater variety of housing forms at more affordable prices to meet the needs of the upwardly mobile. In an effort to bridge the gap between public and private sectors, the HDB initiated a program called the Executive Condominium (EC) Housing Scheme. Introduced in 1995, the EC are strata-titled apartments with design, facilities and finishes comparable to private condominiums since they are built and sold by private developers. They are different from wholly privatized condominiums because only applicants who meet the basic HDB eligibility criteria (but with household income ceiling of S\$ 11,000/month) can buy an EC unit. Owners have to occupy the units for the first five years before considering resale.

⁴A brief history of the public housing sector and the eligibility criteria are discussed in Appendices A and B.

In the 1990's, many of the institutional barriers that had kept the public and private sectors separate have been gradually removed.⁵ The government has been relaxing the HDB's strict eligibility rules. While private housing owners were previously excluded entirely from the HDB market, it is now possible under certain conditions for private owners to participate in the secondary HDB resale market. In addition, it has been possible since late 1991 for HDB flat owners who have owned and stayed in their flats for at least five years to use their excess Central Provident Fund (CPF)⁶ savings for investment in private residential properties.

The residential property market in Singapore can be viewed as a housing pyramid structure with the largest stratum encompassing households living in low-end public housing. Above that in ascending order are the larger and newer public units, executive condominiums, entry-level private housing, and medium level private housing and finally, luxury units and landed properties. There is a possibility of direct competition and thus overlap between 5-room HDB flats, EC units and entry-level private apartments and condominiums. Generally, the prices in each residential stratum are supported by the prices of properties in the stratum immediately below it.

⁵ The Singapore Government has devised several policies to facilitate provision of private housing (see Tan, 2000). The first method used was to convert the leases of some existing semi-public housing units into private titles. These units were developed by the Housing and Urban Development Corporation (HUDC), incorporated as a private company in 1974 to provide housing for those whose total household incomes exceeded the income ceiling for HDB flats but who were unable to afford private estates. The HUDC was dissolved in 1982 and its units were transferred to the HDB. (See HDB website, Phang, 2000 and Lum, 1997). The second program, as mentioned in the text is the EC Scheme.

⁶The Central Provident Fund (CPF) was established in 1955 to provide financial security for workers' retirement. Over the years, it has evolved into a comprehensive social security savings program jointly supported by employees, employers and the Government. Until recently, employees and their employers contributed 20 per cent of gross wages to the Fund for workers up to 55 years of age. The CPF enables easy home-ownership through two popular financing Schemes - The Public Housing Scheme for HDB flats and the Residential Properties Scheme for all housing properties built on freehold land or with a lease of at least 60 years remaining.

III. Modeling the Singapore Private Housing Market

III.a Determinants of Private Housing Activity

Our model will explain the activity for the number of **new private residential units sold**, *PRS*, defined to be the total number (flow) of new private residential units sold in the primary market by homebuilders per quarter.

The increase in private housing demand, particularly during the early 1990's, may be explained at least in part by the existence of a "bubble" in both the property and stock markets. According to this view, changes in expectations coupled with wealth effects from public housing sales and equity stock appreciation fuelled purchases of new, relatively higher quality, private sector housing units.

The second set of determinants of new private housing is economic and demographic fundamentals. Singapore experienced rapid economic growth during the earlier part of the 1990s, but the pace of GDP expansion decelerated after the 1997 Asian Financial Crisis. In essence, strong economic growth during the early 1990's led to increased levels of per capita income and wealth as well as positive expectations about future growth, which in turn, created an increased demand for higher quality private market housing. User costs are also critical in determining housing consumption behavior. At the aggregate level, the main components of user cost are the level of mortgage rates, which have remained low during the 1990's, and the expected rate of house price appreciation, which has been relatively high for a substantial portion of the 1990's. Simultaneously, Singapore's population has been boosted by immigration-friendly policies, favoring high-income earners. One in four of the resident population is a foreigner.

The third determinant for new private housing activity stems from the increasing integration between the previously segmented private and public housing sectors. In an effort to reduce the long queues for subsidized new public housing units during the late 1980's and early 1990's, the Government began to liberalize the public housing secondary market. This generated unanticipated capital gains for sellers of HDB units. Many deployed sizeable gains for upgrading into private market units.

As mentioned before, the private residential market is thin and volatile. For these reasons, we deem it appropriate to adopt a market signaling approach. The vast, established public market together with its substantial resale sub-market provides both a downpayment mitigating factor for those upgrading from the public to the private sector, as well as signals for transactions in the private sector, since the latter's own price might not reflect the relative scarcities, i.e. parties transacting in the private market take into account price dynamics in the public resale market. Our reliance on the level of public sector housing prices as a key determinant of the number of transactions in the private sector is not total. Our modeling approach captures both the signaling effect of the public sector and the interactive impacts of the public and private sector.

III.b Data:

Most of our data has been obtained from the Urban Redevelopment Authority (URA) of Singapore. Our main variable of concern, PRS, the number of new housing units sold by the private sector each quarter, is a flow variable. The URA has also provided the home loan rate data (HLR), the public housing sector resale price (HDBRE) as well as the private sector housing price (RPPI) indices. The data for GDP and the Singapore Straits Time Index (STI) have been obtained from the official

Singapore Statistical website: www.singstat.gov.sg and DataStream, respectively.

Table I and figure I depict the dependent variable, PRS. Figure II shows the movements of key exogenous variables⁷.

Table I: Summary statistics of PRS (1990-2001, quantity)

Variable	Mean	Median	Standard Deviation
PRS (w/o EC)	1627.94	1408.00	825.79
PRS (w/ EC)	1787.08	1715.50	846.17

Figure I: PRS with and without Executive Condominiums

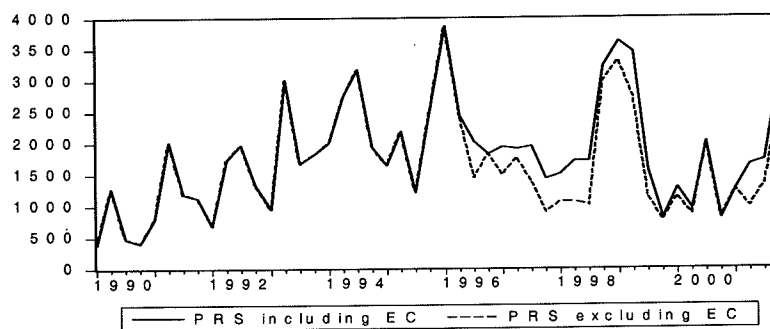
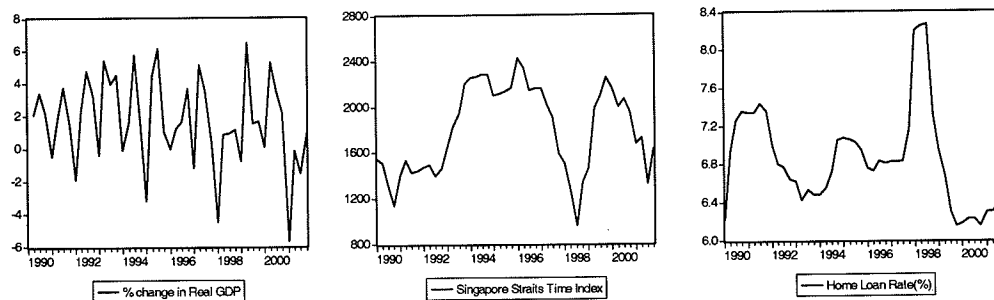


Figure II: Key Exogenous Variables



⁷ Real Gross Domestic Product is in 1997-1998 Dollars. Singapore STI and home loan rate are shown in nominal terms.

III.c Empirical Model:

Our model for the determinants of new private residential units sold is equation 1:

$$PRS_t = \beta_0 + \% \Delta X_t \beta_1 + I_t \beta_2 + D_t \beta_3 + \mu_t \quad (1)$$

where $\% \Delta X_t$ = vector of variables expressed as percentage change; at quarter t;
 I_t = an interaction variable between the public and private housing markets (explained later);
 D_t = set of time dummy variables
 μ_t = the random error term and,
 β_t = regression coefficients to be estimated;

PRS is the number of new private units sold to the public per quarter. Our X vector contains four variables. They are the percentage changes in the real Singapore Stock Index (STI), populations, both native and foreign residents, and the real GDP as well as the level of the real home loan rate.⁸ To determine how the public housing market influences the number of new private housing units, we use two variables – the real % change in the HDB (public) resale price index as well as an interaction variable, I_t :

$$I_t = \% \text{ change in HDB Resale Price Index} \times \frac{\text{HDB Resale Price Index}}{\text{Private RPPI}},$$

where RPPI is the real private property price index (Base year 1990=100 for both RPPI and the HDB Resale Price Index).

Finally, we employ time dummies to capture effects of the Singapore Anti-Speculation Package and the Asian Financial Crisis.

⁸ To convert nominal Singapore Stock Index to real we used GDP deflator, for the other variables, we used CPI for the purpose of conversion. The GDP is in 1997-98 Dollars.

III.d Statistical modeling issues

The estimation of equation (1) poses a variety of potential econometric issues. Autocorrelation may exist in some exogenous variables because they are slow moving stocks, (e.g. population, number of units, etc.). Another problem may stem from the omission of many potentially important exogenous variables that capture the unique aspects of the sub-markets in Singapore. There is latent simultaneity between private and public housing activities. However, the price variables that are used to explain PRS are mainly from the large public market and are assumed to be exogenous. The sparse time sample limits our ability to examine the dynamic properties of the model. The private housing sales, PRS, are stationary, but the fundamental independent variables are not. We therefore include the independent variables in a percentage change format, wherein they are all stationary.

We estimate equation (1) using a multivariate autoregressive moving-averages (MARMA) model with and without instrumental variables. A MARMA model relates the dependent variable to its lagged values, current and lagged values of one or more independent variables, and an error term, which is partially explained by a time-series model⁹. Combining time-series and regression analyses typically generates better estimates than would be possible by the use of either of the techniques alone. We first form a regression model with independent variables that can explain the variations in PRS. Then we apply time-series analysis by constructing an ARMA model for the residual μ_t . We then substitute the ARMA model for the implicit error term in regression equation 1.

⁹ A general MARMA (1, 1) process is acceptable rather than more complicated processes requiring higher-order terms. Processes that are more involved than an MARMA (1, 1) model are usually very difficult to analyze. Moreover, given the small sample size, use of higher order MARMA is not feasible. Our tests evaluated up to MARMA (4, 4) terms, but none of the MARMA terms above order 1 were significant (Kennedy, Peter (1998). A Guide to Econometrics. 4 th edition. MIT Press.)

III.e Empirical Findings and Discussion

Tables II, III and IV contain our principal empirical findings. Table II consists of four statistical sub-models (columns 1, 2, 3 and 4) for estimating PRS excluding Executive Condominiums. Columns 1 and 3 are generated from Non-linear Least Squares (NLS), ARMA(1,1) estimators. Columns 2 and 4 are ARMA(1,1) with instrumental variables estimators. Table III is a replication of Table II, except that the dependent variable, PRS, includes Executive Condominiums (EC). Table IV provides various point estimates for measuring the impact of changes in the public housing prices upon PRS activity levels, taking into account the public – private housing sector interaction.

In general, the statistical findings in table II and III are consistent with our a priori notions. First, real home loan rates (mortgage rates) are a key determinant of new private housing activity and, as expected, the sign of the coefficient for the real mortgage rate variable is negative. Second, the estimated coefficient for stock equity wealth has a statistically significant positive impact on the number of new private housing units in Singapore. Third, for Singapore, changes in the public housing market are critical for explaining changes in private housing market behavior¹⁰. These findings are robust across model specifications and estimation techniques. GDP and demographic variables, such as foreign and resident population (omitted in regressions presented in Table II and III) tend to be not significant statistically.

We conducted Chow breakpoint tests for the onset of the Asian financial crisis during the summer-fall of 1997, as well as for the point of introduction of the anti-

¹⁰ See full explanation later.

speculation measures in the spring of 1996. The structural change hypothesis can be rejected statistically, although our sample size allows for a false sense of comfort. To explore the possibility of one-time changes, we use time dummies for several different quarters, such as 1996:2 and for the period from 1997:2 till 1998:1. In all cases the dummy variables were not statistically significant.

Table II: Determinants of PRS.

(Dependent Variable: New Private units transacted (PRS) excluding Executive Condominiums).

Variable	Column 1	Column 2	Column 3	Column 4
Constant	2286.646** (11.705)	2283.836** (11.332)	2212.838** (11.214)	2173.130** (9.427)
GDP	-22.174 (-1.429)	-8.840 (-0.494)	-18.353 (-1.317)	-15.013 (-0.521)
Real Singapore Stock Index	16.176** (3.174)	13.515** (2.319)	13.386** (2.857)	11.538* (1.985)
Real home loan rate	-133.532** (-9.552)	-126.443** (-5.997)	-141.339** (-11.267)	-150.873** (-5.926)
Public resale prices	59.192** (3.311)	33.124* (1.718)	341.983** (3.014)	471.306** (2.361)
Interaction term	-----	-----	-253.042** (-2.491)	-365.395** (-2.121)
R ²	0.58	0.56	0.63	0.60
Adjusted - R ²	0.51	0.48	0.57	0.52
S. E. of regression	570.89	589.88	536.34	565.17

Terms in parenthesis are t statistics.

All the regressors are expressed in percentage changes except the real home loan rate. The real home loan rate is the nominal mortgage rate adjusted for inflation.

Coefficients marked with ** and * are significant at 5% and 10% levels, respectively.

Column 1 and 3: Non-linear Least Square (NLS) ARMA (1, 1) estimates.
Column 2 and 4: ARMA (1, 1) with Instrumental variables.

The interaction variable is defined as

$$It = \% \text{ change in HDB Resale Price Index} \times \frac{\text{HDB Resale Price Index}}{\text{Private RPPI}}$$

Table III: Determinants of PRS.
 (Dependent Variable: New Private units transacted (PRS) including Executive Condominiums).

Variable	Column 1	Column 2	Column 3	Column 4
Constant	2219.139** (6.488)	2238.871** (6.542)	2221.738** (7.038)	2319.572** (7.845)
GDP	10.72 (0.316)	11.243 (0.309)	-1.118 (-0.035)	-20.308 (-0.581)
Real Singapore Stock Index	20.03** (3.277)	15.919** (2.283)	17.686** (3.272)	13.093** (2.301)
Real home loan rate	-90.765** (-2.398)	-100.018** (-2.462)	-112.153** (-3.300)	-137.246** (-4.051)
Public resale prices	42.556** (2.197)	41.474 (1.388)	362.57** (2.625)	371.516* (1.813)
Interaction term	-----	-----	-289.352** (-2.324)	-286.987 (-1.614)
R ²	0.47	0.47	0.54	0.56
Adjusted - R ²	0.39	0.375	0.45	0.476
S. E. of regression	653.30	652.99	616.618	597.63

Terms in parenthesis are t statistics

All the regressors are expressed in percentage changes except the real home loan rate. The real home loan rate is the nominal mortgage rate adjusted for inflation.

Coefficients marked with ** and * are significant at 5% and 10% levels respectively.

Column 1 and 3: Non-linear Least Square (NLS) ARMA estimates.

Column 2 and 4: ARMA (1, 1) with Instrumental variables.

The interaction variable is defined as

$$It = \% \text{ change in HDB Resale Price Index} \times \frac{\text{HDB Resale Price Index}}{\text{Private RPPI}}$$

Table IV: The effect of a percentage change in public resale prices on the quantity of new private units sold (PRS).

Net effect of 1 percent increase in public resale prices on the quantity of new private units sold	Results from Table II		Results from table III	
	coefficients		coefficients	
Mean of the ratio* = 1.186 Standard deviation = 0.248	Column 3	Column 4	Column 3	Column 4
At the mean	41.875	37.947	19.40	31.15
At the mean - 1 (S. D.)	104.629	128.565	91.16	102.32
At the mean + 1 (S. D.)	-20.88	-52.67	-52.36	-40.02

*The ratio is defined as $\frac{\text{HDB Resale Price Index}}{\text{Private RPPI}}$.

Our statistical results support the hypotheses that capital gains from the HDB secondary market, growth in stock market wealth, the real home loan rate as well as changes in expectations are significant determinants of the new private housing units transacted. Prior to the introduction of the Anti-Speculation package, appreciation from flats combined with stock market equity growth increased the mobility of housing upgraders. After the requirement of a 20% down payment was imposed for purchases of private housing units, substantial gains created by large increases in the HDB resale market continued to boost PRS by jointly improving household mobility and easing down payment constraints. This interpretation is consistent with the regression results in Table II (columns 1 & 2; Excluding EC) and Table III (columns 1 & 2; Including EC). Our results show that an increase in public housing resale prices has a stimulative effect on PRS. That is, an increase in public housing resale price index increases household wealth, which in turn leads to an increase in sales of new housing at the next size and/or quality level.

The likely interaction between private and public housing sectors may cause endogeneity-simultaneity bias in estimating our model; hence instrumental variables are also employed. The results with instrumental variables estimation are shown in columns 2 & 4 of Tables II (Excluding EC) and III (Including EC). The results with executive condominiums, included as part of PRS are marginally inferior to those that exclude EC; otherwise the two sets of statistical results are similar.

In table IV, the impact of the interaction variable, I_t , on *PRS* is evaluated at the mean value of the ratio of public resale housing prices and private housing price indices, and also at the mean value plus and minus one standard deviation. *Ceteris paribus*, the effect of a percent change in the real HDB resale price index will have a combined effect on *PRS*. The first effect is the direct effect of the public resale price. The second is the combined effect of the public resale price and that of relative price changes between the private and the public housing sectors. The net impact of a percentage change in the resale public prices is mostly positive for a wide range of values of the relative price ratio. At the mean value of the ratio (1.186), a one percentage change in the resale price has a combined positive impact on *PRS*, (i.e. the effect of one percent increase in real HDB resale price is 41.875 units per quarter ($=341.983 - 253.042 * 1.186$) (please refer to Table IV, column 1; without instrumental variables)¹¹.

Evaluated at the mean minus one standard deviation of the ratio, the positive impact is even greater, whereas at mean plus one standard deviation, the impact at last turns negative. Our explanation for this behavior rests on a combination of factors, such as the mobility constraints, role of expectations, and the correlation in prices

between the public and private housing sectors. The increase in HDB resale prices mitigates the upward mobility constraint and boosts the number of units sold in the private market. In addition, because of speculative motivation of the buyers, a current increase in the resale prices in the public sector spills into the private sector in the form of increased prices in the latter (The HDB resale price index and the RPPI are highly positively correlated (correlation = 0.94)). Adaptive expectations lead to an increase in PRS through speculative buying. In other words, buyers expect the future prices in the private sector to increase. On the other hand, if the HDB resale prices are already significantly higher than those of the private sector, any further increase may cause “regressive” expectations, fears of anti-speculative measures, lesser affordability and hence a negative impact on the transactions of private residential units¹².

IV. Conclusion

A major omission of the Singapore housing literature is an explicit recognition of the linkages between the public and private housing sectors. Our approach, in contrast, explicitly models the linkage between the public and the private housing markets. A public-private sector interactive variable is utilized to capture upgrading mobility, changes in the linked housing markets, and household expectations.

The results of our study are economically meaningful and statistically robust across specifications. First, there is a significant positive financial wealth effect as well as a significant negative impact for real lending rate on new private housing

¹¹ $\partial(\text{PRS})/\partial(\% \text{ change in Public resale price}) = \text{Coefficient on Public resale price} + (\text{coefficient on interaction variable} * \text{ratio of public resale prices to private housing prices})$

¹² This finding can be qualified on two grounds: first, we look only at the 1990s, admittedly a small dataset, and a decade of many changes. Second, our result does not hold for all values of the interaction variable. If the public resale price index is significantly higher than the private, then an increase in the former leads to the more intuitive result, i.e. the quantities transacted decrease in the private sector.

transactions. Second, changes in GDP or population do not have statistically significant effects on private residential activity. Finally, apart from the macroeconomic fundamentals, the effect of information (signal) filtering from the public to the private sector is modeled both through the public housing price index as well as an interaction variable. Over a wide range of relative price changes between the public and the private housing sectors, increases in public resale prices (through its direct effect and indirect effect via an interaction variable) have a positive impact on the number of units transacted in the new private market. These findings support and are consistent with the hypotheses that growth in wealth, as well as capital gains in the public sector generate upward mobility of households into the higher quality private housing sector, and also create expectations about the private housing market, that are positive or negative, depending upon the relative price levels in the two sectors.

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Appendix A:

A brief history of the public housing market in Singapore and recent policy changes.

The Public Sector

The public housing program in Singapore can be traced back to 1927 when the colonial government founded the Singapore Investment Trust (SIT). During its 32 years of existence SIT built only 22,115 housing units (HDB, 1997). Consequently, at the time of internal self-government, rapid growth in population and policy neglect resulted in deplorable housing conditions.

The People's Action Party (PAP) government that came to power in 1959 made housing a priority of public policy. Through the Housing and Development Act, passed in 1960, the national public housing authority, the Housing and Development Board (HDB), was established as a statutory board (Phang Sock Yong, 2001). As an autonomous agency, the HDB operates financially and administratively as if it were a private corporation that freely enters into contractual relations with other entities. It was also entrusted with all development processes, from land clearance and resettlement to planning and designs of flats, as well as allocation and maintenance of the properties.

Even today, the Singapore housing market is overwhelmingly dominated by the public sector. Currently, about 86% of Singapore's 4 million people live in public housing developed by the HDB, of which, around ninety percent own the residence in which they live through a 99-year lease officially called the "home-ownership scheme" started in 1964. The political and economic motivations are well understood in the words of the then Prime Minister Lee Kuan Yew (2000) (Phang Sock Yong, 2000):

“ My primary preoccupation was to give every citizen a stake in the country and its future (p.116)..... I believe this sense of (home) ownership was vital for our new society, which had no deep roots in a common historical experience (p.117).”

Policy changes: 1980-2001

<u>Year</u>	HDB Policies	CPF	Others
1980			Residential GLS <ul style="list-style-type: none"> Quantum of 130 units released, a decrease of 328 units from 458 units released in 1979
1981	Income ceiling raised: \$3500 (4/5/Exec)	<u>Approved Residential Properties Scheme (ARPS)</u> <ul style="list-style-type: none"> 90% of members' balance and monthly contributions in their ordinary account can be used to redeem outstanding loan on 1 private residential property (June 1981) 	Residential GLS <ul style="list-style-type: none"> Quantum increased by 3419 units to 3549 units
1982	Resale Flats <ul style="list-style-type: none"> New system of graded resale levy based on the flat types introduced (September 1982) (10% for 3 rm flats; 15% for 4 rm; 20% for 5 rm; 25% for Executive and 30% for HUDC flats). Prior to this, the levy was at a flat rate of 5% for all flat types. 	<u>ARPS</u> <ul style="list-style-type: none"> 90% of members' balance and monthly contributions in their ordinary account can be used to purchase all types of private residential properties of freehold or at least 75 years tenure. 	Residential GLS <ul style="list-style-type: none"> GLS sites for residential development was suspended
1985	<u>New flats:</u> <ul style="list-style-type: none"> Income ceiling revised: \$4000 (All) \$6000 (HUDC) <u>Resale flat:</u> <ul style="list-style-type: none"> Resale levy waived for 1st flat. (July 1985) 	<u>ARPS (July 1985)</u> <ul style="list-style-type: none"> 100% of members' balance and monthly contributions in their ordinary account can be used to purchase all types of private residential properties of freehold or at least 75 years tenure. The maximum amount withdrawn cannot exceed 80% of purchase price or valuation at time of purchase whichever is lower. Time bar to reuse funds for property purchases reduced to 1 year. 	MARKET REVIVAL MEASURES (JULY 1985) <ul style="list-style-type: none"> 30% property tax rebate 3 year deferment on the repayment of outstanding loan for GLS sites PCP for projects extended by 35% of original PCP
1986			MARKET REVIVAL MEASURES <ul style="list-style-type: none"> 50% property tax rebates PRs can use half of their \$1m deposits which foreigners are given PR status for private housing purchases (Apr 1986)
1989	<u>Resale Flats:</u> <ul style="list-style-type: none"> PRs can buy resale flats. (Sep 1989) Removal of income ceiling for resale flats. (Sep 1989) Owners who purchased flats from resale market allowed to invest in private property (Sep 1989) 		
1991	<ul style="list-style-type: none"> Singles above 35 years old can purchase 3 rm or smaller resale flats outside Central Area (Oct 1991) Owners of new HDB flats can invest in private property, but they must continue to reside in flat. 		Residential GLS <ul style="list-style-type: none"> GLS resumed with a quantum of 2000 units

<i>Year</i>	HDB Policies	CPF	Others
	(Oct 1991)		
1992	New flats: <ul style="list-style-type: none"> Income ceiling raised to \$7,000 		GLS Residential <ul style="list-style-type: none"> Quantum increased by 500 units to 2500 units
1993	Housing Loan liberalization <ul style="list-style-type: none"> HDB revises quantum for subsidized HDB mortgages from 80% of the posted price of the flat as at 1984 as determined by HDB to 80% of market valuation or purchase price, whichever is lower. (April 1993) 	<u>Liberalization of ARPS</u> <ul style="list-style-type: none"> CPF members can make additional withdrawal to service interest payments even if the total sum withdrawn exceeds the purchase price of the private property (wef Oct 1993) 	GLS Residential <ul style="list-style-type: none"> Quantum increased by 500 units to 3000 units
1994	New flats: <ul style="list-style-type: none"> Income ceiling raised to \$8,000 From Oct 1994, the minimum occupancy period before HDB lessees can reapply for a new flat from HDB was raised from 18 months to 5 years. Resale flats: <ul style="list-style-type: none"> Under the graded resale levy introduced in Sep 1982, lessees who sell their flats in the open market can pay either a graded resale levy on their 1st flat or a standard premium on their 2nd flat purchased from HDB. The quantum of the standard premium was doubled to 20% of the selling price of the new HDB flat. (Oct 1994) 	<u>CPF Housing Grant Scheme</u> <ul style="list-style-type: none"> \$30,000 grant for eligible 1st timers to purchase resale flats within 2 km of parents' homes. (Oct 1994) 	GLS Residential <ul style="list-style-type: none"> Quantum increased by 500 units to 4000 units GLS of 99 year landed properties introduced OTHER POLICIES <ul style="list-style-type: none"> Buyers have to pay 5% booking fees for private housing
1995	Contra Scheme <ul style="list-style-type: none"> HDB flat owners purchasing a resale flat allowed to offset the cash payment and shortfall against the cash proceeds pending the completion of the sale of their existing flat (June 1995) 	<u>CPF Housing Grant Scheme</u> <ul style="list-style-type: none"> All 1st timers who purchase resale flats are eligible for grants, even if they do not live near their parents. They get \$40,000 while those near parents get \$50,000. (June 1995) 	GLS Residential <ul style="list-style-type: none"> Quantum increased by 2000 units to 6000 units OTHER POLICIES <ul style="list-style-type: none"> Privatization of selected HUDC estates. Buyers have to pay 10% booking fees for private housing ECs were introduced in Aug 1995
1996	NEW FLATS <ul style="list-style-type: none"> HDB stopped accepting applications for executive apartments 	<u>CPF Housing Grant Scheme</u> <ul style="list-style-type: none"> Grants extended to 1st-timer applicants for Executive Condominiums. (Aug 1996) 	GLS Residential <ul style="list-style-type: none"> Quantum of 6000 units for private housing remained unchanged Sites for 2100 units of executive condominiums were released <u>Anti Speculation Measures: (May 1996)</u> <ul style="list-style-type: none"> Capital gains tax introduced for <u>all</u> residential property: <ul style="list-style-type: none"> 100% of gains taxable if sold within 1 yr 66% of gains taxable if sold within 2 yr 33% of gains taxable if sold within 3 yr Stamp duty is payable

<i>Year</i>	HDB Policies	CPF	Others
			<p>by vendor (in addition to buyer) if the sale was within 3 yrs of purchase. Parties pay on signing of Sales & Purchase agreement instead of completion.</p> <ul style="list-style-type: none"> • Financing is limited to 80% of purchase price or valuation, whichever is lower. (80% includes CPF but excludes grants) • Housing loans in S\$ not allowed for foreigners.
1997	<p>Eligibility for Second New HDB Flats</p> <ul style="list-style-type: none"> • Time bar to re-apply for new HDB flats increased from 5 to 10 years to shorten queue. (May 1997) • Resale levy simplified to graded resale levy only based on the sale value of the old flat. Buyers of new flats and ECs pay: 20% for 3 rms; 22.5 % for 4 rms; 25% for 5 rm & executive flats (May 1997) <p>Housing loans tightened:</p> <ul style="list-style-type: none"> • Each person can get a maximum of 2 subsidized housing loans (April 1997) • Age ceiling of 65 years and maximum term of 30 years. (April 1997) • Maximum income of \$8,000 • Non-owner of private property • Borrowers subject to credit assessment <p>Applicants for New HDB Flats</p> <ul style="list-style-type: none"> • New applicants under the Fiancee/Fiancee scheme required to pay \$5,000 registration deposit. The deposit will be forfeited if the application is subsequently withdrawn or cancelled. (June 1997) 		<p>GLS Residential Quantum for private residential units was to be increased by 1000 to 7000 units. However, this was subsequently reduced to 5000 units in view of the economic situation (Nov 1997)</p> <p>The quantum for ECs increased from 2100 units to 4000 units</p> <ul style="list-style-type: none"> • Project completion period for projects where units have not been launched for sale was extended to 8 years subject to the payment of a premium of 5% of the land price per year of extension (Nov 1997) <p>OTHER POLICIES</p> <ul style="list-style-type: none"> • Vendor of a private housing unit no longer needs to pay stamp duty surcharge (Nov 1997)
1998		<p>CPF HOUSING GRANT</p> <ul style="list-style-type: none"> • Housing grants extended to singles: \$15000 under the Single Singapore Citizen Scheme (June 1998) 	<p>GLS Residential</p> <ul style="list-style-type: none"> • GLS was suspended. • The 5% premium for extensions of PCP is suspended for applications for extensions of PCP made between 1Jul 98 to 31 Dec 99 • PCP extensions can also be granted for cases where some units have been sold. However, the PCP of such projects can only be extended up to the date of vacant possession as stated in

<i>Year</i>	HDB Policies	CPF	Others
			the sales and purchase agreements OFF BUDGET MEASURES • Stamp duty payable only when the project obtains T.O.P.
1999	<u>Housing loans tightened:</u> • Only upgraders who purchase a larger flat than their existing unit are entitled to a second subsidized housing loan (Oct 1999)	CPF HOUSING GRANT • Amount of grant gradually reduced to \$40000 (near parents), \$30000 for other resale flat buyers and \$11000 (singles). EC 1 st time buyers get \$30,000. (Grant was reduced by \$1,000 per month from Jan to Oct 1999)	
2000			GLS Residential • GLS resumed with a quantum of 6000 units for private residential developments and 3000 units for EC developments.
2001	Wef 28 Aug 2001, single citizens aged 35 or above can buy 3 rm or smaller resale flats in any location.		GLS Residential • Quantum for private residential reduced to 4000 units (including ECs) • Reserve list introduced with potential supply of 2,300 units

Note: Years where there was no significant property related events are not shown. Source: Various

Appendix B:

Eligibility and related criteria for Public Housing:

Households can either own or rent publicly provisioned apartments. New units are sold or rented at a heavy discount and the HDB has strict eligibility rules. The buyers of public housing have to be citizens or permanent residents of Singapore. Demand is also regulated by eligibility rules such as household income and non-ownership of private properties at the time of application. Only very high-income families are ineligible for public housing. Qualifying citizens who purchase a HDB flat are granted a 99-year leasehold interest. Housing is allocated to first time buyers through non-market mechanisms (Lum, 1997). After owning a HDB unit for two and a half years, the owner is permitted to sell the flat to anyone eligible for public housing at the market price. Sellers can then upgrade their housing by either applying for a larger flat from the HDB or buy private units, or move to similar or smaller apartments and keep their capital gains. Each eligible household can only buy subsidized flats directly from the HDB twice, after which the household can only buy from the resale market or private

developers. Since 1971, a mature resale market for these flats has been established, although the HDB continues to regulate eligibility and credit conditions. The table below very briefly outlines the eligibility criteria for purchasing new and resale public sector units.

In 1989, the income ceiling restriction was removed for HDB resale flats and the resale market was opened to permanent residents and private property owners who had to owner-occupy their HDB flats. The eligibility criteria were further relaxed when single citizens above the age of 35 were allowed to buy HDB 3-room or smaller resale flats outside the central area for owner-occupancy.

Appendix Table I. Eligibility Conditions for Purchase of HDB Flats. Source: Housing and Development Board (HDB) website at www.hdb.gov.sg

Flat Type	Floor area (sq m)	Eligibility Conditions	
		Buying a Flat Direct from HDB	Buying a Resale Flat on the Open Market
3-Room	69	Singapore Citizen; At least 21 years of age; Have a nucleus family; Total household income not more than \$2000 per month for 3-room flat / \$8000 per month for 4 & 5-room flats. Must not own any private residential property.	Singapore Citizen or Singapore Permanent Resident; At least 21 years old; Have a nucleus family; No income ceiling (Housing Grant Scheme for Family). Private property owners have to owner-occupy their flats. Single citizens over 35 allowed to buy, post 1991 (Housing Grant Scheme for singles).
4-Room	100		
5-Room	120		

