



# The political economy of housing prices: Hedonic pricing with regression discontinuity

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## ABSTRACT

This paper uses hedonic pricing to empirically estimate the value of publicly provided local goods and services in the constituencies of the ruling party relative to those of the opposition parties. To improve control for omitted variables that change smoothly over space, we use a regression discontinuity design to restrict the sample to houses that are near the electoral boundaries. Using resale market prices of public flats in Singapore, in some cases we find a moderate but highly statistically significant difference in housing prices across the electoral boundaries that separate the constituencies of the ruling party and the opposition parties.

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## 1. Introduction

Because the ruling party tends to have more control over resources and their allocation, it can provide more benefits – in the form of more publicly provided goods and services – in its constituencies. This paper empirically investigates the political economy of housing prices in Singapore: it estimates the value of goods and services provided in the constituencies of the ruling party (relative to those of the opposition parties) through its public housing program. The People Action's Party (PAP) that has ruled Singapore since independence started a public housing program that achieved near universal home ownership.<sup>1</sup> The program is so successful that it has been used to generate legitimacy for the ruling government in election campaigns. More importantly, the ruling party has promised

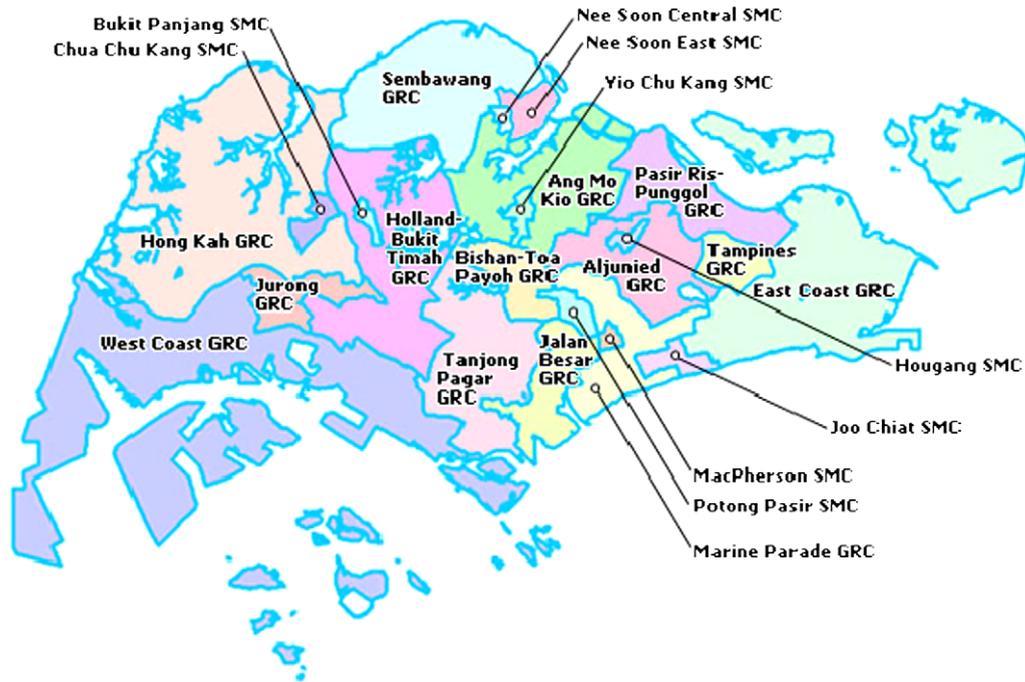
priority for public housing upgrading and higher quality estate management services in its constituencies. Some argued that “the cost in material life within the residential environment was raised so high that to vote against the PAP was tantamount to voting against one’s own material interests” (Chua, 2000, p. 57).

Because an individual is unlikely to be the pivotal voter in an election and because the ruling party cannot distinguish between supporters and non-supporters in its constituencies, these benefits can be regarded as a set of pre-determined locational characteristics for individual home buyers and they can be valued using the standard hedonic price model. However, the hedonic price estimate may be biased if the model fails to fully control for some unobserved characteristics. To better control for the omitted variable bias, we use a regression discontinuity (RD) design: by restricting our sample to apartment blocks that are close to the electoral boundaries, we effectively control for any unobserved variations in neighborhood and housing characteristics that change smoothly across the electoral boundaries. Because eligibility to these benefits changes discontinuously at the electoral boundaries, we can

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<sup>1</sup> According to the Census of Population 2000 (Statistical Release 5 – Households and Housing), 92.3% of the households owned the dwelling units they occupied in year 2000.



**Fig. 1.** The electoral map of all constituencies in Singapore. *Source:* Elections Department of the Prime Minister's Office, Republic of Singapore [http://www.elections.gov.sg/elections\\_map\\_electoral.html](http://www.elections.gov.sg/elections_map_electoral.html). For more information on the different types of electoral constituencies in Singapore, see [http://www.elections.gov.sg/elections\\_type\\_electoral.html](http://www.elections.gov.sg/elections_type_electoral.html).

attribute any remaining difference in mean housing prices across the electoral boundaries to the valuation of these benefits. If housing prices have a political economic component, then they should be higher in the PAP constituencies than the adjacent opposition constituencies, *ceteris paribus*.

There are two long-standing opposition constituencies in Singapore: Hougang and Potong Pasir. They were also the only two opposition constituencies during our sample period. Fig. 1 shows an electoral map with all constituencies in Singapore. Using resale market prices of flats built by the government – commonly known as the Housing and Development Board (HDB) flats, we find a statistically significant price premium for flats located in the PAP constituency over those in the opposition constituency in Hougang, where the observable characteristics corroborate the validity of an RD design: they become more similar as we move closer to the electoral boundaries. In addition, flats that have been selected for the Main Upgrading Program were also priced higher. In contrast, we do not find any price effects in Potong Pasir, where flats on opposite sides of the electoral boundaries remain quite different in their observable locational and physical flat characteristics.

Before proceeding, it is worth emphasizing that this paper is primarily interested in the positive analysis of the valuation of these benefits. The normative questions are beyond the scope of this paper.

### 1.1. The benefits enjoyed by residents in the PAP constituencies

The public housing program in Singapore is unique: over 80% of the Singaporeans live in the HDB flats that they own. This widespread ownership of public flats is the re-

sult of deliberate government policy to promote social stability, by giving citizens a stake in the economy. These public flats are commonly known as the HDB flats because they were built by the HDB, the public housing authority in Singapore and a statutory board under the Ministry of National Development.

In 1990, the PAP government initiated a number of programs to upgrade old public housing estates to the standard of new estates to keep these older estates desirable and the residents' investment in their flats intact. Among these programs, the Main Upgrading Program (MUP) is the most important and most comprehensive: it makes improvements to residents' precincts, blocks and even individual flats (HDB, 2006).<sup>2</sup> The ruling party had been sending a clear message to the voters: the government would give priority for upgrading to PAP constituencies over the opposition constituencies.<sup>3</sup> In the 1997 election campaign, the ruling party delivered this message in an open letter to the voters

<sup>2</sup> These upgrading programs are undertaken by HDB on a cost-sharing basis with the residents. On 9 August 1995, *Straits Times* reported that the Minister of Finance saw the upgrading program as "a means of redistributing government 'budget surpluses in ways which would increase the assets of Singaporeans, and the HDB upgrading programme was a tangible way of doing so" (quoted in Chua, 1997, p. 146). There is anecdotal evidence that some voters are attracted by the priority in upgrading (*Today*, 5 May 2006b).

<sup>3</sup> The upgrading programs are never completely denied to an opposition constituency. Rather, priority is given to the constituencies of the ruling party (*Straits Times*, 11 June 2006). The government's stand has been to place the opposition constituencies "at the end of the queue" for the upgrading programs. It was only until July 2009 that the government finally selected HDB flats in these two opposition constituencies for the Lift Upgrading Program (LUP) for the first time (*Straits Times*, 14 July 2009, "Opposition Wards in LUP").

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