



Has SARS infected the property market? Evidence from Hong Kong [☆]

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Abstract

This paper uses the 2003 Hong Kong Severe Acute Respiratory Syndrome (SARS) epidemic as a natural experiment to investigate how housing markets react to extreme events. A panel data set of large-scale housing complexes (estates) is used to exploit the cross-sectional variation in the spread of SARS to estimate the effect of the disease on real estate prices and sales. SARS risk is measured by: (1) the estate-level SARS infection rate, (2) news reports, and (3) government announcements of infections. The average price declines by 1–3 percent if an estate is directly affected by SARS, and by 1.6 percent for all estates as a result of the outbreak of the disease. A back-of-the-envelope calculation of the expected price fall under the rational asset-pricing model implies that the economic value of life consistent with the SARS-related price movement was less than \$1 million. This low figure contrasts with the predictions of overreaction from psychological and behavioral economics theories. An analysis of transaction volume suggests that the absence of price overreaction is likely to be related to housing market characteristics, including transaction costs, credit constraints and loss aversion.

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[☆] This is an update of the first chapter of my PhD thesis at Princeton University.

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1. Introduction

Severe Acute Respiratory Syndrome (SARS) is the first new, serious and contagious illness of the 21st century. Three hundred Hong Kong residents died during the 2003 SARS epidemic (March–June), accounting for a third of all SARS deaths worldwide. The risk of contracting SARS in Hong Kong during the epidemic was 0.026 percent. This apparent vulnerability raises the possibility that Hong Kong has since been perceived as a less desirable place in which to work and live.¹ Coincident with the unanticipated epidemic, housing prices in Hong Kong fell by 8 percent. Is this dramatic price decline—representing a total value of \$28 billion, equal to about \$16 million per SARS case—a continuation of the pre-SARS downward trend, or a response to the epidemic?^{2,3}

This paper attempts to answer this question. Firstly, the extent to which the drop in housing prices can be attributed to the SARS epidemic is estimated. A unique panel data set of weekly transaction prices of 44 housing complexes (estates) is used to estimate the effect of SARS on the housing market, exploiting the cross-sectional variation in the timing and spread of SARS within Hong Kong. The perceived location-specific risk is measured by analyzing all major sources of public information related to the 44 estates. A best estimate of the estate-level SARS infection rates is also created.⁴ Next, we investigate whether the drop in prices can be characterized as an overreaction, as compared with the predictions of the standard asset pricing model [12]. To better understand the price movements, a similar analysis is performed for turnover rates in the housing market.

While the epidemic is unlikely to have any significant impact on the supply of the housing stock, it is likely to reduce demand for housing in Hong Kong. If only a small part of the population believes that Hong Kong is more susceptible to another outbreak and subsequently moves away, it can translate to lower agglomeration benefits for all residents, translating to territory-wide price declines. Cross-sectional differences in price changes come from variations in the spread of SARS, but this misses the Hong Kong-wide effect. To estimate the Hong Kong-wide effect of SARS on the housing market, I use a territory-wide onset-of-epidemic indicator controlling for historical time trends at both the territory and estate levels.

Because of its exogenous nature and severe health consequences, the SARS epidemic provides a unique setting to measure market reactions to extreme events. Unlike other exogenous extreme events that have previously been studied (e.g., flooding), the 2003 epidemic involves a clear change in risk level. A growing body of research points to social amplification of risks when they

¹ Hong Kong was the most severely hit city in the world in the 2003 SARS epidemic, accounting for 21 percent of all SARS cases and 33 percent of SARS deaths.

² The value of private housing stock is evaluated using year-end 2002 prices. Source: Hong Kong Housing Authority <http://www.housingauthority.gov.hk/hdw/ihc/pdf/bhfs.pdf>.

³ Many related the housing price decline in the second quarter of 2003 to the SARS epidemic. David Carse, the Deputy Chief Executive of the Hong Kong Monetary Authority, attributed the sharp increase in negative equity loans (by HKD 30 billion, or 22 percent) to the acceleration of the housing price decline due to SARS (<http://www.info.gov.hk/hkma/eng/press/2003/20030814e4.htm>). DTZ Debenham Tie Leung, a prominent property consultancy, claimed that SARS had a “devastating impact” on the Hong Kong housing market shortly after the outbreak started.

⁴ The main information sources include the daily Department of Health SARS-building list (the only form of government announcement related to SARS cases in specific buildings), and local newspaper reports. There is no record of the SARS infection rate in different parts of Hong Kong below the district level. (Hong Kong consists of 18 districts. See Section 4 for details.)

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