

# Essays on Durable Goods Oligopolies: The Case of the Japanese Condominium Market in the 1990s

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My dissertation studies the Tokyo condominium market starting in the 1990s, which is characterized by a surge of output and a persistent price decline throughout the decade. As land is the most expensive factor in the production of condominiums, a major cause of the deflationary price trend is thought to be the decline in land prices resulting from the bursting of the asset price bubble. Indeed, two price series show a high correlation. However, since 1995, the speed of deflation in these two price indices have been diverging: land prices have depreciated significantly more rapidly than condominium prices.

These observations motivate the first essay which has as its objective to identify the primary factors determining the relative decline in condominium prices. The factors considered are changes in competition among condominium developers and changes in the cost of construction cost relative to the cost of land. As condominiums are durable goods, demand will be driven by consumers' expectations as to prices and the possibility of engaging in intertemporal substitution. It is well-known since Coase (1972) that this substitution can erode the market power of a durable good producer. In addition, the presence of a secondary market means that a producer can influence the current and future value of the product through its current production decision on the future stock. However, this effect will depend on the presence of competing suppliers as one firm's current production will impact the secondary market that affects all firms. The observed increase in condominium production in the Tokyo market may then be a consequence of strategic interaction among firms rather than solely due to forces on the demand side.

In order to address those questions, I employ a dynamic oligopoly model of durable goods market. Using market level supply data, the structural parameters are recovered. Estimation is performed through the use of a nested GMM procedure that solves each oligopolist's dynamic optimization problem. The study finds that there is evidence of market power in this industry though there is no strong evidence that changes in market power contributed to the spike in production. Instead, the movements in condominium prices seems to be best explained by increased competition coming from the entry of small fringe developers.

The second essay casts light on the demand side of the Tokyo condominium market. For durable assets like housing, the consumers' response to a price decline is ambiguous as durability creates the possibility of intertemporal substitution and future resale: If the lower price today makes consumers expect lower price tomorrow, they might postpone their purchase. The response of consumers to the persistent price deflation and unprecedented low mortgage rates in the 1990s is examined. In contrast to the first essay, it includes consumers' transaction cost and has a more developed model of consumer expectations. The model's parameters will be recovered with consumer panel data and the effects of the tax preferential system for housing purchase implemented in 1999 are evaluated with counterfactual experiments.