Shrinking Housing Market, Long-Term Vacancy, and Withdrawal from Housing Market

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Abstract

Although a substantial number of houses in shrinking societies face long-term vacancy and ownership abandonment, previous literature on housing market structures implicitly assumes that all potential sellers try to sell in the market, which becomes illiquid due to the temporary demand decline. This paper proposes a conceptual framework for the process of housing market shrinkage, in which a long-term vacancy emerges followed by market withdrawal. Our model shows that the market can look "liquid" even though demand is actually small: only forced sellers who need to dispose of their properties quickly will try to sell at low prices, whereas the buyer–seller ratio in the market becomes sizeable in equilibrium. This implies that further analysis is required to understand how sellers' exits affect the microstructure of the remaining housing markets.

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Introduction and Literature Review

Although the current population of the world is growing, some parts of East Asia, Europe and the US are facing population shrinkages. One reason is interregional migration from cities/regions transforming their industrial structures and/or political systems (Haase et al., 2016; Wiechmann and Pallagst, 2012). Another reason for population shrinkage is a "structural" problem whereby urbanization reduces the fertility rate (Sato and Yamamoto, 2005). Since urbanization is a growing phenomenon globally, in the future, countries/regions are increasingly expected to face nationwide population shrinkage (United Nations, 2017). This means that the shrinking society problem will be a worldwide phenomenon in the near future.

In shrinking societies like Japan, where the nationwide population has already started to shrink (e.g., Hirayama and Izuhara, 2018), the supply of houses does not adjust proportionally to the shrinking demand because of the "durability" of houses (Glaeser and Gyourko, 2005). The excess supply of houses causes some houses to be vacant over the long term and finally withdrawn from the market. Indeed, Figure 1 shows the vacancy rate and withdrawal rate of housing stock in Japan. First, the "vacancy rate" is the ratio of the number of "vacant properties" (i.e., properties currently without any residents) to the number of "all the existing properties" (i.e., properties currently without any residents and those with some residents). The nationwide vacancy rate increases over time; and rural areas exhibit a rapid increase of the vacancy rate over time, compared to that in urban areas. This suggests that, in shrinking societies, significant numbers of vacant houses emerge and some houses are left vacant over the long term. Second, the "withdrawal rate" is the ratio of the number of vacant dwellings that are not being utilized in any way (i.e., not in use as second dwellings, for rent, or for sale), to the number of "vacant properties" (i.e., properties currently without any residents). The nationwide withdrawal rate increases over time, and recently the trend has been more pronounced in rural areas. This implies that the withdrawal of houses from the housing market is becoming common in shrinking societies.
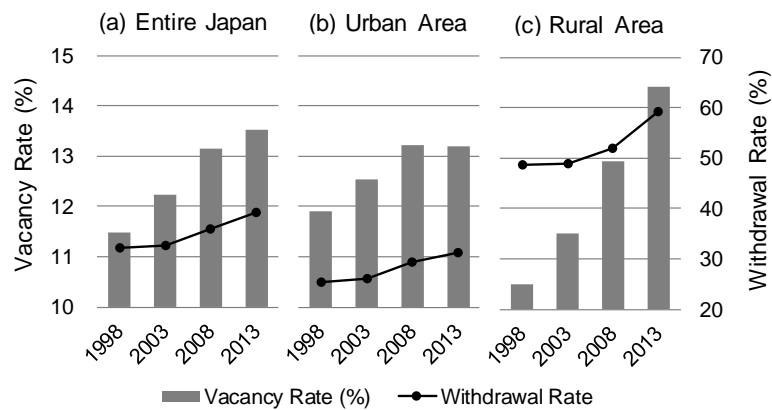
Figure 1. Increasing vacancy rate and withdrawal rate of housing stock in Japan

The distinction of "vacancy" inside and outside the housing market and the relationship between the two vacant statuses play crucial roles in better understanding the housing market structure in shrinking societies and their housing policies. Most of the previous literature, however, has discussed *independently* (i) the temporary demand-shrinking process within the housing market and (ii) ownership abandonment of houses that have already been withdrawn from the housing market, or has not clearly distinguished between the above two types of vacant statuses. The first line of the literature investigates changes in liquidity under the temporal decline in demand within a search and matching framework (seasonality and/or long-run market cycle) and falling housing prices under excess supply, restricting samples to those participating in the market. In this context, "vacancy" still implies a temporal friction *within the market*, which steadily becomes illiquid (with lower prices) as demand declines. The second line of the literature investigates the ownership abandonment process within shrinking cities in the US and in Western countries, which are characterized by the geographical segregation of residents and filtering of houses. Low-income households occupy old houses of poor quality in districts developed long ago, and such owners are likely to abandon their ownership rights from their financial distress. In this context, "vacancy" has served as an indicator of neighborhood distress. Although these houses just before ownership abandonment have already been withdrawn from the housing market, most of the literature does not clearly distinguish between vacancy inside and outside the market.

This paper proposes a conceptual framework on the shrinking process of housing markets in which long-term vacancy, which lasts for unusually long periods beyond the "natural" level, first emerges and then is followed withdrawal from the market (some of the withdrawn houses are finally abandoned their ownership). The distinction of these "vacant" statuses inside and outside the housing market and the relationship between them strengthen the linkage of the above literature, compared to the previous attempts to

connect the housing market with long-term vacancy (Molloy, 2016) or to connect the housing market with housing abandonment (Goodman, 2013). Similar to the labor market, where there is population not in labor force, the housing market has properties that are withdrawn from the market, which have been much ignored in the previous literature.

Given the strong heterogeneity among potential sellers in shrinking societies, our model also shows the possibility that the market looks "liquid" even though the demand is actually small. That is, only forced sellers who need to quickly dispose of their properties try to sell with low prices, whereas the buyer–seller ratio in the market becomes sizeable in equilibrium. This implies that the existence of withdrawn houses outside the market affects the housing market structure, including liquidity, in addition to the negative externality that channels on house prices. In other words, the withdrawn rate has important implications, and should be used as a third index of the housing market condition, besides price and the time on the market (TOM). If the withdrawn rate is ignored, we may not get a full picture of the housing market condition, and may even get misleading conclusions.

The "Screening" Process

Focusing on the durability of houses, Glaeser and Gyourko (2005) propose the "kinked supply curve', a concept on the shape of the supply curve. The initial equilibrium quantity of (occupied) houses in the market is Q_0. When the demand increases, housing prices are stable around the level reflecting construction cost because new houses are constructed ($D > D_0$).

When the demand (not necessarily a temporal one) decreases, on the other hand, housing prices drop significantly because the housing supply does not adjust to the decreasing demand, as all the "durable" houses still participate in the market ($D_1 < D < D_0$). This is well explained by the steep supply curve (i.e. vertical at quantity Q_0) during demand-decreasing phases. The prices decrease while the vacancy is around its "natural" level, since no demand exists for sellers who set the price above that set by other sellers. When demand further shrinks and the market value of houses has dropped significantly to the level reflecting maintenance costs, two shrinking phases follow, which we are the first to investigate. First, market vacancy period gets quite long while all the potential properties are put on the housing market. The process is explained by the kinked supply curve at the bottom (blue solid line), that is, the number of occupied units gets smaller ($D_2 < D < D_1$). As in the temporal decline in demand in the search and matching framework, the buyer–seller ratio in the market gradually declines. Since the market price has already dropped to the reservation price of sellers, the vacancy deviates from its "natural" level to become a "long-term vacancy." On average, the properties take a very

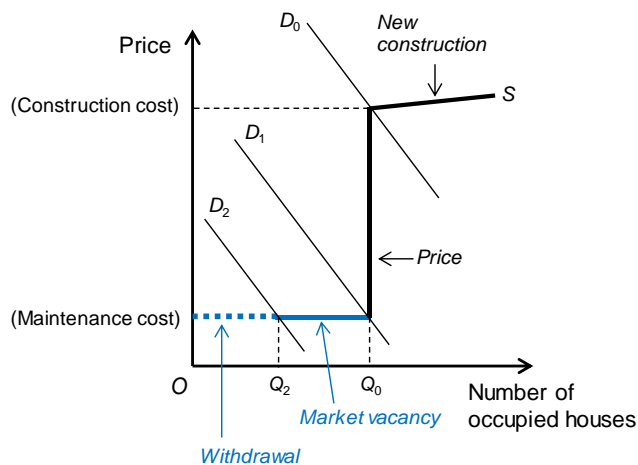long time to sell, meaning that the market demand is very low for them.

Figure 2. The "screening" process

Then withdrawal from the housing market proceeds after the degree of vacancy has become sufficiently large, that is, the number of occupied houses in the market becomes less than Q_2 ($D < D_2$). The process is explained by the kinked supply curve at the bottom (blue dashed line). Since keeping the home for living or for rental income may not be worth the necessary maintenance cost, long-term vacancies are gradually withdrawn from the housing market.

Houses withdrawn from the market are analogous to the "population not in labor force," who do not participate in the labor market. In the labor economics literature, "structural unemployment" within the market refers to potential workers who do not attract any demand (or just have very small demand) from the other side because of their "mismatched" characteristics; this corresponds to the long-term vacancy in the housing market. Such a potential worker in a structural unemployment status may finally be screened out from the labor market. So far, however, the housing literature does not explicitly distinguish between the "population in the market" and "those not in the market," possibly because houses are durable, and thus, it is automatically assumed that the owners wish to put their properties on markets. The reality may be, however, that even participating in the market requires a cost such as renovation and margins for brokers, and houses also depreciate over time. As the demand shrinks, houses may initially be put on the market but gradually a mismatched state emerges when the houses are on the market for a long time. Owners of such houses in a mismatched state will finally give up putting them on the market. It also implies that even habitable houses with sufficient structural quality may first be categorized as long-term vacancies, and finally screened out from the market.

The Model and Equilibrium

There are two types of sellers with respect to their motivation to sell. The "forced" type-L sellers are highly motivated to dispose of their properties quickly and try to sell at (normalized) price 0, which is a minimum price to put them on the market, to escape from paying maintenance costs every period to keep their properties. The "unforced" type-H sellers are not primarily cost-conscious and are motivated to sell at fundamental value p (> 0), which is a cumulative level of the maintenance expenditures to maintain the units. As buyers observe these prices, the sellers' type is public information. The discontinuity of the reserve prices (and exogenous number of potential sellers) yield the non-monotonic relationship between the demand level and the market liquidity.

We investigate the housing market facing excess supply:

- The reasonable house price is the minimum level in Figure 2, that is, at the cumulative of the "average variable cost" to maintain the units, p.
- Houses of type-L sellers are sold quickly, while those of type-H sellers take longer to sell. Type-L sellers always put their properties on the market, while whether type-H sellers put their properties on the market is determined endogenously (however, at least some of the type-H sellers enter the market).

Implication

During a demand shrinkage, long-term vacancy first emerges and then withdrawal from the market takes place. To see this, we focus on type-H sellers, which are the majority of "unforced" sellers. As in the solid line in Figure 3, the overall vacancy rate (for type-H sellers) monotonically increases as the demand shrinks, showing that the overall vacancy rate captures the degree of excess supply. Like the red dashed line in Figure 4, as the demand shrinks, the overall average TOM first increases (that is, the long-term vacancy emerges) and then remains at the most illiquid level. The reason for this is that, as in the dashed line in Figure 3, the withdrawal rate for type-H sellers first remains flat and then increases as the demand declines. The "screening" process in Figure 2 links the shrinking housing market, long-term vacancy, and withdrawal from the housing market.

- **Proposition 1**. For type-H sellers, as the demand shrinks, or in other words, as the overall vacancy rate increases, long-term vacancies first emerge (that is, average TOM increases), and then the withdrawal rate rises.

When the overall vacancy rate is high, however, the overall average TOM may become "liquid" with a relatively high withdrawal rate. As the black line in Figure 4 shows, the overall average TOM first monotonically gets longer as the demand falls until

$D = kl + \frac{f}{p}(1 - l)$ because the type-H houses become illiquid (the red dashed line in

Figure 4). When the demand falls further, however, the overall average TOM gradually decreases because now the withdrawal of type-H sellers takes place (the dashed line in Figure 3). The demand $D = kl$ represents (one of) the shortest overall average TOM of the submarket because almost all the type-H sellers give up trying to sell their properties and thus the withdrawal rate becomes 1. Intuitively, the demand is concentrated in the very cheap properties sold by forced sellers, and the transactions do not take place in line with their fundamental value. For profit-seeking unforced sellers, the market price is too low to try to sell on the market and they would rather keep their properties themselves.

- **Proposition 2**. As the demand shrinks, type-H houses start to be withdrawn from the market, which reduces the average TOM observed within the market. The reasons are that the percentage of type-H sellers among market participants becomes low and the market liquidity mainly reflects the behavior of type-L sellers under the forced sales.

Proposition 2 implies that, under excessive competition, it may be necessary to understand such a market with an index such as "withdrawal rate from housing market", which connects being inside/outside the housing market, in addition to the within-market liquidity (and price) indices. The overall average TOM reaches its minimum (i) when the demand is actually small, $D = kl$, with a large withdrawal rate, 1, where the number of type-L sellers is lower than the demand while none of the type-H sellers enter the market; and (ii) when the demand is sufficiently large, $D = kl + (1 - l)$, with a small withdrawal rate, 0, where the numbers of type-L and type-H sellers in the market are both lower than the corresponding demand.
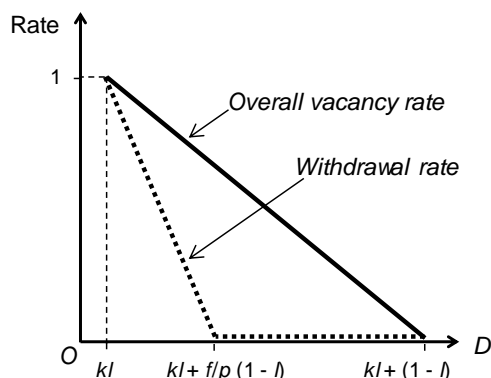

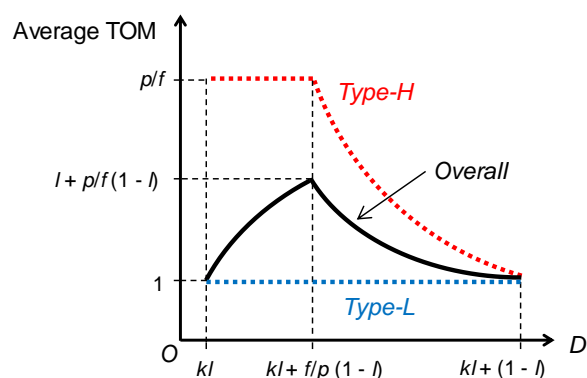**Figure 3**. Overall vacancy rate and withdrawal rate with respect to demand

Figure 4. Market liquidity index with respect to demand