

How Do Homes Transfer Across the Income Distribution? The Role of Local Supply Constraints

Alicia N. Rambaldi
The University of Queensland
a.rambaldi@uq.edu.au

James Hansen
The University of Queensland

Do sellers have higher income than buyers, buyers higher incomes than sellers, or is there little difference between the two? Whether sales of existing and new homes can be purchased by households at all income levels is central to debates on housing affordability. However, there is still only limited evidence on how homes transfer across the income distribution, also known as filtering. This paper provides new evidence on filtering through private home sales using data on buyer and seller's income, and quantifies how local housing supply constraints affect the rate at which homes transfer across the income distribution.

Concerns over the supply of affordable housing is a recurring theme for policymakers globally. Simple measures present a mixed picture. Commonly cited measures such as housing price to annual income ratios, and time required to save for a deposit as fraction of annual household income, have risen suggesting housing is now less affordable when compared with previous decades. Other measures based on the cost of servicing debt (e.g. mortgage interest repayments as a fraction of annual income), have fallen, suggesting affordability may have improved. Filtering, is a well known theoretical mechanism, and a natural measure of whether homes are becoming more or less affordable. Standard theoretical models, Sweeney (1974), Ohls (1975), Braid (1984), and Nathanson et al. (2019) predict that homes should filter down the income distribution. As existing homes age and depreciate in their quality, they should be transferred from high-income households to low-income households. Given enough time, homes fully depreciate and are then demolished and rebuilt, whereby the filtering process begins again.

Empirical evidence on the importance of this mechanism is sparse, and often indirect. International estimates of price depreciation with age imply that homes only filter very slowly, with price decreasing by about 0.5% on average per year (Rosenthal, 2014). However, as Rosenthal shows, depreciation rates alone are not sufficient to infer the rate at which homes filter across the income distribution. Household income, at the point that homes are bought and sold, is also required.

This paper provides new evidence on filtering rates through private home sales for Australia. We use a new matched dataset linking housing transactions, recorded in state-level administrative data, to buyer and seller income recorded through tax filings in federal administrative data. The matched data cover the State of Victoria. The linking and de-identification is undertaken by the Australian Bureau of Statistics. The data are developed under an Australian Research Council Linkage Project involving the Universities of Queensland and Melbourne, and the Victorian

Department of Treasury and Finance. The newly matched data provide a granular picture of filtering. We construct quantitative estimates of filtering rates by the location, age, size and type of home sold using the difference between (log) buyer and seller income at the time of sale. This is a direct measure of homes transfers across the income distribution, and housing affordability.

A novel contribution of our work is that we use measured income for all parties listed on the transaction (i.e. all buyers and all sellers on the property title), where income is measured in the same tax year as the year in which a property was sold. This allows to directly estimate filtering rates using total buyer and seller income without assuming that either home attributes are constant over long periods of time or that repeat-sales transactions are entirely random, as required by the repeat-income models, as proposed by Rosenthal (2014) and subsequently Liu et al.(2021). Motivated by the extensive cross-section of data that we have access to, we difference across the log income of buyers and sellers (as opposed to the log income of repeat-buyers). Estimates of filtering rates from sellers to buyers, as opposed to across buyers over time, may also be of interest in their own right.

Our second contribution is to quantify the effects of local housing supply constraints on filtering. Local supply constraints can affect filtering by altering the equilibrium distribution of home prices and home quality, and alter the rates that homes filter down (or up) the income distribution. To quantify how local supply constraints affect filtering rates, we use an IV approach, drawing on the sources of identification proposed by Hilber and Vermeulen (2015)-HV. Like HV, we measure local supply constraints using the fraction of residential planning permit applications that are refused by the locally responsible planning authority (the refusal rate). The refusal rate measures the level of restrictiveness of different locally responsible authorities --willingness to approve increases in the local housing supply. In Australia, responsible authorities are known as Local Governments (LGs) and the area for which each LG is responsible is a Local Government Area (LGA). Refusal rates across different LGAs are likely correlated with buyer and seller income, and are therefore endogenous. To account for this, we instrument using information from a statewide planning provision change introduced before our main estimation sample. To check the validity of our results, we also use separate instruments based on voting shares at historical federal elections.

References

Braid, R. M., 1984. The effects of government housing policies in a vintage filtering model. *Journal of Urban Economics* 16 (3), 272-296.

Hilber, C. A. L., Vermeulen, W., 2015. The Impact of Supply Constraints on House Prices in England. *The Economic Journal* 126 (591), 358-405.

Liu, L., McManus, D., Yannopoulos, E., 2021. Geographic and temporal variation in housing filtering rates. *Regional Science and Urban Economics*, 103758.

Nathanson, C., et al., 2019. Trickle-down housing economics. In: 2019 Meeting Papers. No. 537. Society for Economic Dynamics.

Ohls, J. C., 1975. Public policy toward low income housing and filtering in housing markets. *Journal of Urban Economics* 2 (2), 144-171.

Rosenthal, S. S., 2014. Are Private Markets and Filtering a Viable Source of Low-Income Housing? Estimates from a "Repeat Income" Model. *American Economic Review* 104 (2), 687-706.

Sweeney, J. L., 1974. A commodity hierarchy model of the rental housing market. *Journal of Urban Economics* 1 (3), 288-323.