The impacts of housing prices on household wealth accumulation and reallocation

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Aims and Background

Aim: To quantify the impacts of regional housing prices on household wealth accumulation and reallocation – to provide evidence for housing-related policy changes.

Most of the literature on the determinants of household portfolios focus on household-level socio-economic factors (e.g., age, education and income). Few studies in Australia and overseas look at how regional housing prices influence the ways that households accumulate and diversify their wealth even though properties account for a significant share of total household net worth and housing prices experience significant changes over the last two decades.

From both theoretical and empirical perspectives, it is not clear if increases in housing prices deliver large effects on household wealth accumulation and diversification [(1)]. With other things equal, a higher house price leads to an increase in a homeowner's housing wealth. However, different from other assets, housing is both consumption and investment goods; a higher housing price simply compensates for a higher implicit rental cost of living in the house, thus however large housing prices might have no real wealth effects [(1, 2)]. Housing might not be fungible with other assets, so households might not offset capital gains from housing with reductions in holdings of other assets [(3, 4)]. The ways that households respond to housing prices might depend on whether they are house owners or renters and young or old [(1, 5, 6)]. The correlation between housing prices and portfolios can be driven by some unobserved macroeconomic factors.

The purpose of this study is thus to examine the impacts of regional housing prices on household wealth accumulation and reallocation using the household wealth modules from the Household Income Labour Dynamics Survey (HILDA) in Australia linking with the regional housing prices. The study attempts to answer the two main research questions: (i) Do increases in housing prices escalate household wealth accumulation?; and (ii) Do households reallocate their wealth in response to a change in housing prices? We also explore which assets are most responsive to housing prices and examine if wealth-accumulating and reallocating responses are conditional on other socio-economic factors (e.g., ethnicity, education, risk taking and life courses).

Australia provides an interesting case study for this research. Over the last two decades, housing prices grew at a much higher rate than real household income, especially during the mining boom. The Reserve Bank of Australia estimates that the average house price rose from 2.5 times the average disposable household income in 1985 to 4.5 times the average disposable household income in 2012[(7)]. This delivered a large increase in wealth to the roughly 70 per cent of households fortunate enough to own at the start of this period. This also makes housing less affordable. Housing ownership rates have fallen over the same period for all groups, except the oldest households[(8)].

Understanding how changes in housing prices affect household saving behaviors is beneficial to current housing-related policy debates. It will provide evidence to address policy makers' concerns if increases in housing prices encourage households to take risky assets which potentially cause macro imbalances. Policy makers will also be more informed about the consequences of housing price changes which may be caused by current policy proposals to reform tax and transfer settings, including removing or limiting tax breaks for residential investments; removing or reducing tax concessions on capital gains earned from residential investments; and including the main residence in the asset test for age pension eligibility[(9)].

Data

The research will draw on two Australian datasets, HILDA for household wealth and socio-economic characteristics and the CoreLogic Property Data for housing prices. The HILDA is a nationally representative longitudinal survey of Australian households commencing in 2001 with a sample of 7,682 households and approximately 13,000 individuals. HILDA data provide the only micro-level, longitudinal data on household wealth holding in Australia. As the wealth model was first introduced in wave 2 (2002) with a four-year collection basis, our analyses base on four data points (waves 2, 6, 10 and 14). We then merge the selected HILDA data with the median housing prices in corresponding years at postcode level.

We restrict our sample to all single and couple families with full response because of difficulty in conceptualizing and measuring household wealth in such households. We consider six sub-populations by family type and life-course of household's head[1], specifically: (i) pre-retirement single-headed families; (ii) pre-retirement couple-headed families; (iii) transitional retirement single-headed families; (iv) transitional retirement couple-headed families; (v) post-retirement single-headed families; and (vi) post-retirement couple-headed families.

Asset portfolios. We use five broad asset types as dependent variables to capture the possible incentives to accumulate and reallocate assets. These assets include net financial wealth, net business equity, net equity in one's own home, lifestyle assets, and the total value of pension assets. These classified assets are embedded in the current asset test for pension eligibility. Net financial wealth is calculated as the total value of interest-bearing assets held in banks and other institutions, stocks and mutual funds, life insurance funds, trust funds, and collectibles minus the total value of unsecured debts (which also include car loans). Net home equity captures households' equity (net value) in their principal residences. Net business equity includes the net value of all business shares owned by all household members. Lifestyle assets include all non-liquid assets which do not necessarily generate a steady income stream, including all transport and recreational vehicles (such as boats or caravans) and all other real estate (such as holiday homes and other properties) owned by household members. The pension component of net worth includes the total amount of pension capital owned by all household members.

Statistical approach

For the purposes of the study, we estimate a system of five reduced-formed equations of household asset portfolio with housing prices as the key predictor. This system allows the propensity of investing in one asset to be dependent of other assets types held. We run the following system, separately for each sub-population:

$$sinh^{-1}(A_{ikt}) = \propto_{0k} + \alpha_{0ik} + \alpha_{1kt} D_t + \beta_k p_{jt} + PC_{ikt}\theta_{0k} + HC_{ikt}\theta_{1k} + RC_{jkt}\theta_{2k} + \varepsilon_{ikt}$$

Where $A_{ikt}$is the dollar value of asset k (financial wealth, business equity, home equity, lifestyle assets, and pension funds) that household i holds at time t. Our system controls for *individual-level characteristics* (PC_{ikt}) of the household head – gender, age, health status, education, country of birth, English proficiency, being a house owner/renter, employment status (employed, self-employed, unemployed or not in the labour force), working in the finance industry (yes/no), employment type (casual, fixed-term, ongoing), number of weekly work hours in all jobs, satisfaction of job security, job tenure, the possibility of losing the current job within the next year, share of household income. We also add their past married status (for single families), and length of current marriage (for couple families); *household-level characteristics* (HC_{ikt})- number of children, household equivalised income, number of earners in the family, household's ability to raise $2000/$3000 at short notice, savings as the difference between disposable household income and total expenditures on goods and services; and *region-level characteristics* (RC_{jkt}) - post-code level unemployment rate – this variable is used to capture the exogenous variation of housing prices. The system also controls for individual-specific time-invariant and time-specific effects ($\propto_{0ik}$ and $\propto_{1kt}$)

Following Cobb-Clark and Hildebrand (10), we adopt an inverse hyperbolic sine transformation of assets and income to account for the potentially non-positive and highly skewed nature of the distribution of these variables. We also add total net worth in all equations of the above system to examine how household reallocate their wealth across asset types while keeping their total wealth unchanged. Specifically, we require that the estimated marginal effects of an additional dollar of wealth sum to one across asset types, while the marginal effect of a change in any other independent variable is restricted to zero. We will stratify the above analyses by sub-population to test if household responses are different across family types.

[1] The household head is defined as the one with the highest income or male otherwise.

References

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2. Sinai T, Souleles NS. Owner-Occupied Housing as a Hedge against Rent Risk. The Quarterly Journal of Economics. 2005;120(2):763-89.
3. Thaler RH. Anomalies: Saving, fungibility, and mental accounts. The Journal of Economic Perspectives. 1990;4(1):193-205.
4. Engelhardt GV. House prices and home owner saving behavior. Regional Science and Urban Economics. 1996;26(3):313-36.
5. Flavin M, Yamashita T. Owner-occupied housing and the composition of the household portfolio. The American Economic Review. 2002;92(1):345-62.
6. Sheiner L. Housing Prices and the Savings of Renters. Journal of Urban Economics. 1995;38(1):94-125.
7. Kelly J-F, Hunter J, Harrison C, Donegan P. Renovating housing policy. Grattan Institute, Melbourne, 2013.
8. Daley J, Wood D, Weidmann B, Harrison C. The wealth of generations. Melbourne: Grattan Institute, 2014.
9. Wood G, Ong R, McMurray C. The impacts of the Henry Review recommendations on the private rental market: Savings income discount and rent assistance. Australian Housing and Urban Research Institute Final Report Series, 2011.
10. Cobb-Clark DA, Hildebrand VA. Portfolio Allocation in the Face of a Means-Tested Public Pension. Review of Income and Wealth. 2011;57(3):536-60.

Budget request

Description	Funding request ($)
Conference travel	5000
Stata/SE	1100
Research assistance	
Literature review (15 days, $350 per day)	5250
Data preparation (24 days, $350 per day)	8400
Total	**19750**

HUONG DINH

Research Fellow
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SUMMARY

Huong Dinh is a Research Fellow at the Tax and Transfer Policy Institute, The Australian National University. She completed her PhD in economics and possesses strong analytical, econometric and computable general equilibrium modelling skills. Dinh has published peer-reviewed articles in Social Science and Medicine, Social Indicators Research, BMC Journal of Public Health and Australasian Journal of Regional Studies. Her research seeks to reveal how structural factors (e.g., international trade, climate change, the personal income taxation and transfer system, and labour markets) have socio-economic impacts on communities, industries, households and individuals.

FORMAL QUALIFICATIONS

2011 PhD in Economics, Australian National University (ANU).
Thesis title: On Regulatory Barriers to Trade in Banking Services.
Committee: Associate Professor Philippa Dee and Professor Trevor Breusch (ANU), and Professor Christopher Findlay (University of Adelaide).

2002 MA in Development Economics, International Institute of Social Studies in The Hague and National Economics University (NEU).
Thesis title: Fighting Poverty with Microfinance. The Case of Cam Xuyen, Ha Tinh, Vietnam.

1999 BA in Finance and Banking (with Distinction), National Economics University, Hanoi, Vietnam.
Thesis title: Recommended Resolutions for Mobilizing Medium and Long-term Capital in the Vietnamese Banking System.

APPOINTMENTS

2017-Current Research Fellow (part-time)
Tax and Transfer Policy Institute
Australian National University

2015-2016 Research Fellow (full-time)
Research School of Economics
College of Business and Economics
Australian National University

2013-2015 Research Fellow (part-time)
National Centre for Epidemiology and Population Health
Research School of Population Health
College of Biology and Medical Sciences
Australian National University

2012-07/2015 Research Fellow (part-time)
Murray-Darling Basin Futures Collaborative Research Network
Faculty of Business, Government and Law
University of Canberra

2011-2012 Research Assistant (part-time)
National Centre for Epidemiology and Population Health
Research School of Population Health
College of Biology and Medical Sciences
Australian National University

2007-2011 Research assistant (during PhD program, part-time)

ARC Linkage Project 'Setting Priorities for Services Trade Reform'
Crawford School of Public Policy
Australian National University

2007-2011 Economist and Statistician
Mekong Economics Ltd. (www.mekongecnomics.com)
Hanoi, Vietnam

PUBLICATIONS

Book chapters

1. Dinh, H and Racionero, M. Which to trade off for market time, primary or secondary parental childcare? Evidence from Australian mothers and fathers (contribute as a refereed book chapter to the book on 'Gender Equality in Australia's Tax and Transfer System', ANU Press upcoming)
2. Dinh, H. Employment effects of removal of restrictions on the movement of natural persons in the ASEAN's banking sector, Japan Fund for Poverty Reduction, Asian Development Bank (forth coming).
3. Dinh, H. (2013) 'Impact of Regulatory Barriers to Trade in Banking Services', in Philippa Dee (Eds.), Priorities and Pathways in Services Trade Reform: Part 1 - Modeling and Quantitative Studies, World Scientific Studies in International Economics, Volume 23, World Scientific Publishing Co Pte Ltd. Paper Metrics: 3 Citations (GS)
4. Dee, P and Dinh, H. (2013) 'Impact of Regulatory Barriers to Trade in Insurance Services', in Philippa Dee (Eds.), Priorities and Pathways in Services Trade Reform: Part 1 - Modeling and Quantitative Studies, World Scientific Studies In International Economics, Series Volume 23, World Scientific Publishing Co Pte Ltd. Paper Metrics: 1 Citations (GS)
5. Dinh, H. (2011) 'Economy-wide impacts of liberalisation in the Vietnamese banking sector', in Pierre Sauvé, Gloria Pasadilla and Mia Mikic (Eds.), Service Sectors Reform: Asia-Pacific Perspectives, ADB Institute and ArTNET. The electronic version is available at http://www.adbi.org/files/2012.03.01.book.service.sector.reforms.asia.pacific.perspectives.pdf. Paper Metrics: 1 Citation (GS)

Refereed journal articles

6. Dinh, H, Strazdins, L and Welsh, J (2017). Hour-glass ceilings: Work-hour thresholds, gendered health inequities. Social Science and Medicine, 176, March, 42-51, http://dx.doi.org/10.1016/j.socscimed.2017.01.024 Paper Metrics: 0 Citations (GS) (Q1 SSCI) (Q1SCIE)
7. Mann, S, Freyens, B, and Dinh, H. "Crises and structural change in Australian agriculture." Review of Social Economy (2016): 1-12. Paper Metrics: 0 Citations (GS)
8. Dinh, H, Daly, A and Freyens, B (2016). Farm adjustment strategies to water-related challenges in the Murray-Darling Basin, Policy Studies, 1-20. DOI: 10.1080/01442872.2016.1194386. Paper Metrics: 0 Citations (GS) (Q1 SCIMAGOJR)
9. Dinh, H, Freyens, B, Daly, A, & Vidyattama, Y. (2016). Measuring Community Economic Resilience in Australia: Estimates of Recent Levels and Trends. Social Indicators Research, 1-20. Paper Metrics: 0 Citations (GS) (Q1 SSCI)
10. Cooklin, A, Dinh, H, Strazdins, L, Westrupp, E, Leach, L & Nicholson, J (2016) Change and stability in work-family conflict and mothers' and fathers' mental health: longitudinal evidence from an Australian cohort Social Science and Medicine available online: 155, (April), 24-34. doi: 10.1016/j.socscimed.2016.02.036 Paper Metrics: 3 citations (GS) (Q1 SSCI) (Q1SCIE)
11. Dinh, H., & Pearson, L. (2015). Specifying community economic resilience-a framework for measurement. Australasian Journal of Regional Studies, 21, (3), 278. Paper Metrics: 1 citation (GS)
12. Friel, S, Berry, H, Dinh, H, O'Brien, L and Walls, H (2014) The impact of drought on the association between food security and mental health in a nationally representative Australian sample, BMC Journal of Public Health BMC Public Health, 14:1102. Paper Metrics: 4 citations (GS) (Q1 SCIMAGOJR)

Refereed conferenced papers

13. Dinh, H. (2016) Employment effects of trade reform in the Vietnamese banking sector, Global Trade Analysis Project, Purdue University, the 19th Annual Conference on Global Economic Analysis, Washington DC, USA. Paper Metrics: 0 Citations (GS)

Other research outputs

14. Dinh, H. and Dee, P., 2010. Sector impacts of barriers to trade in banking sectors: a cost and profit-based approach. Memo. Crawford School of Economics and Government. Paper Metrics: 5 Citations (GS)
15. Dee, P and Dinh, H (2009) "Barriers to Trade in Health and Financial Services in ASEAN". Economics Research Institute for ASEAN and East Asia (ERIA), ERIA Discussion Paper, ERIA DP-2009-11. Paper Metrics: 8 Citations (GS)
16. Dee, P. and Dinh, H., 2008. The Sectoral Impact of Barriers to Trade in Insurance: A Cost-and Profit-based Approach '. In Setting Priorities for Services Trade Reform conference, Australian National University, November (pp. 17-18). Paper Metrics: 9 Citations (GS)
17. Mekong Economics (2006) Timor-Leste Base-Line Study – Poverty Profiling & Monitoring for Community Activation Projects, United Nations.
18. Mekong Economics (2005) Project Impact Evaluation Design and Baseline Survey, Northern Mountains Project, WB/DFID funded project No 3571-VN.
19. McCarty, A, Burke, P, Tran, D T N and Dinh, H (2005) Consulting Rate Study: Report for the Royal Danish Embassy in Hanoi, Mekong Economics.
20. Mekong Economics (2004) Poverty Reduction Impact of Public Spending on Large-scale Irrigation Systems, Asian Development Bank – World Bank Joint-Research Project.
21. Dinh, H (2003) Socio-economic Base-line Survey in Ngoc Son Commune, Quynh Luu District, Nghe An Province, Catholic Relief Services Vietnam.
22. McCarty, A, (Team Leader of Mekong Economics) (2001) Microfinance in Vietnam: A Survey of Schemes and Issues, British Department for International Development and State Bank of Vietnam. Paper Metrics: 63 Citations (GS)

BEN PHILLIPS

Associate Professor

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Academic qualifications	1996 Bachelor of Economics (Hons Class 1 in Economic Statistics) University of Queensland

Recent professional history

2016 -	Associate Professor, ANU Centre for Social Research and Methods
2010 - 2015	Principal Research Fellow, NATSEM, University of Canberra
2007 - 2010	Senior Economist, Housing Industry Association
2001-2007	Senior Research Officer/Senior Research Fellow, NATSEM, University of Canberra
2000	Economist, Bureau of Tourism Forecasting (Secondment from ABS)
1997-2000	Economic Analyst, Methodology Division, Australian Bureau of Statistics
1996	Econometrics Cadet, Australian Bureau of Statistics

Relevant experience

I have 19 years of experience as a professional economist and analyst within Government, the private sector and academia. I currently lead the ANU Centre for Social Research and Methods Microsimulation research team and am responsible for the development and management of the centre's tax and transfers model, which is beign developed for use in costing and distributional policy modelling of Australian households. I am also responsible for managing a small team of economic researchers which involves supervising consultancy research and staff development and management.

Over just the past six years I have been the principal researcher and author for a number of important NATSEM and now ANU reports and projects including:

- Phillips, B Distributional Modelling of Proposed Childcare Reforms in Australia, ANU Centre for Social Research and Methods, 2016
- Phillips, B, *Analysis of the 2015-16 Federal Budget*, NATSEM Research Report, 2015
- Phillips, B *SAS-NATSEM Household Budget Report*, Online interactive report, 2015
- Phillips, B Regional Impact of Federal Budget 2014-15, NATSEM Research Report, 2014

- Chief researcher and developer of the Housemod online housing model for Australia
- Phillips, B, *Child Care Affordability in Australia*, AMP.NATSEM Report;
- Phillips, B, *Cost of Kids*, AMP.NATSEM Report 2013;
- Tanton, Phillips, 2013, *A Measure of the Depth of Housing Stress and its Application in Australia*, Economic Papers
- Phillips, Li, Taylor, AMP.NATSEM reports: *Prices These Days – Cost of living in Australia* 2012;
- Phillips, Vidyattama, Taylor, *The Great Australian Dream – Just a dream* 2011 – a report on housing affordability in Australia (AMP.NATSEM);
- Phillips, B, Household modelling of the Federal Government's Clean Energy Package;
- Phillips, Toohey, *Working Australia: What the Government Gives and Takes Away*, NATSEM research note;
- Phillips, B, *Going Without: Financial Hardship in Australia*, Report for Anglicare and Major Churches Group;
- Phillips, B, *Distributional Impacts of Taxation Reform in the ACT* – consultant report to ACT taxation review for the ACT Treasurer (report not publically available);
- Phillips, Tanton, *Reviewing Australia's Tax and Transfer Model Microsimulation Model*, NATSEM Working Paper;