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Research Note: Living Standards and Cost of Living Indexes for Australian Households

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Introduction

This is a short note describing the methodology employed to estimate quarterly living standards and cost of living indexes for a range of Australian household types. Results of these indexes are also presented.

In this research we consider standard of living from an income based financial perspective. This measure compares income growth for Australian households with their cost of living. The ratio of income to costs being their standard of living. Where incomes are increasing at a faster rate than the cost of living the standard of living index shows an increase in living standards. Where those costs are rising more quickly than incomes living standards decline.

There are a number of other measures in Australia currently available that are often used as a proxy for household living standards, such as the ABS' Gross National Income measure but this is not a measure that is defined for households, rather the entire economy. The ABS also publishes a household version of the national accounts, however, this version has an expanded version of household income, including not-for-profit firms and imputed rents for owner occupier housing and does not account for population change or cost of living changes.

These aggregate measures don't allow us to calculate living standards indexes for a range of households. The ANU estimate calculates living standards based on a range of household income and expenditure surveys between 1988 and 2015-16. Using a survey based approach allows us to not only calculate living standards for Australia but to also calculate living standards for a wide range of household types – allowing a much more detailed understanding of which groups are affected by movements in living standards.

Methodology

The approach adopted in this paper extends earlier work by Phillips (2013) on the cost of living and living standards for Australia. On the income measure we incorporate several income surveys not included previously. We also account for differences in income definitions between surveys that are known to impact income growth rates for different household types, in particular, high income households have higher income growth rates using more recent ABS income definitions (ABS 2009).

On the cost of living estimation the use of a Fisher index is used to attempt to overcome the problem of substitution bias that exists when only using a fixed base index such as that used in the previous work or by the ABS Consumer Price Index.

1. Income Measure

The ANU measure is based on disposable income in the ABS survey of income and housing from 2003-04 to 2015-16 and also the ABS Household Expenditure Survey between 1988 and 1998-99. There were a number of conceptual changes to the income definitions in the 2005-06 and 2007-08 surveys that mean that comparison of incomes through this period is complicated. As both of these surveys include disposable income estimates calculated using both old and new definitions we can derive an income series in index form using 'chaining' that overcomes this issue and retains consistency.

Beyond 2015-16 (December quarter) we base our estimates on a continuation of trends between the 2013-14 income survey and the 2015-16 survey. For each state we then calibrate incomes with per capita household incomes from the state ABS national accounts to June 2017. For periods beyond December 2015 we rely on a simple change in disposable income per capita for each state based on the State National Accounts for all Australian households (June 2017). For the two quarters beyond June 2017 we predict growth in disposable income based on historical relationships between ABS Wage Price Index data and state national accounts disposable income.

As a result, beyond December 2015, we can only have confidence in the overall growth numbers for income for the overall national and state figures. For other detailed household types our estimates beyond December 2015 are limited in their accuracy.

2. Cost of Living Measurement

The ANU measure of the cost of living is an attempt to estimate a ‘true’ cost of living measure. The ABS CPI is a fixed base laspeyres price index with a base from the previous Household Expenditure Survey. As relative prices change consumers alter their economic behaviour and alter their consumption patterns. A fixed basket approach does not take this into account and tends to overstate the cost of living through the ‘substitution bias’. There are a range of other forms of bias in the calculation of cost of living indexes such as ‘store’ bias where people respond to higher prices by shifting to another store. We only deal here with the substitution bias.

We calculate an ‘ideal’ index called the Fisher Index. The Fisher Index calculates the cost of living index with reference to both a base set of weights and current period set of weights. The Fisher Index is a geometric average of both the base weighted index (Laspeyres) and the current period index (Paasche). The cost of living index consists of a ‘chain linked’ index for the periods between the six HES data sets¹.

$$F_t = \sqrt{\sum_{i,t} \frac{P_{it} Q_{i0}}{P_{i0} Q_{i0}} * \sum_{i,t} \frac{P_{it} Q_{i1}}{P_{i0} Q_{i1}}}$$

Where Q_{i0} is the quantity purchased of the i th expenditure class from the previous expenditure survey, P_{it} is the price index for the i th expenditure class for period t and P_{i0} is the price index for the i th expenditure class for the base period. Q_{i1} is the quantity purchased of the i th expenditure class from the future expenditure survey. For the December quarter 2017 the latest available expenditure survey is from 2015-16 so the index beyond that point is simply a laspeyres.

The ABS Consumer Price Index (CPI) is a fixed weight index based on the weights of the most recent Household Expenditure Survey (HES) and is therefore a laspeyres type of index. It is difficult for the ABS to create an ‘ideal’ index for the most recent price movement estimates as the HES is only published every 6 years. The ABS is now moving to using National Accounts information to update their HES based weights on an annual basis. This does not remove the substitution bias but the ABS research suggests that this will reduce the extent of bias (ABS 2017).

For a given point in time the Laspeyres Index is calculated using the base weights from the previous expenditure survey. The Paasche Index is calculated using the expenditure survey subsequent to this

¹ 1988-89, 1993-94, 1998-99, 2003-04, 2009-10, 2015-16.

point in time. The indexes are calculated based on inflating (deflating) the base (subsequent) expenditure survey to the relevant point in time by the price indexes for the 87 expenditure classes published by the ABS consumer price index. As the ABS only publishes the expenditure survey every 6 years it is not possible to calculate the Fisher Index for periods beyond 2015-16 in this way.

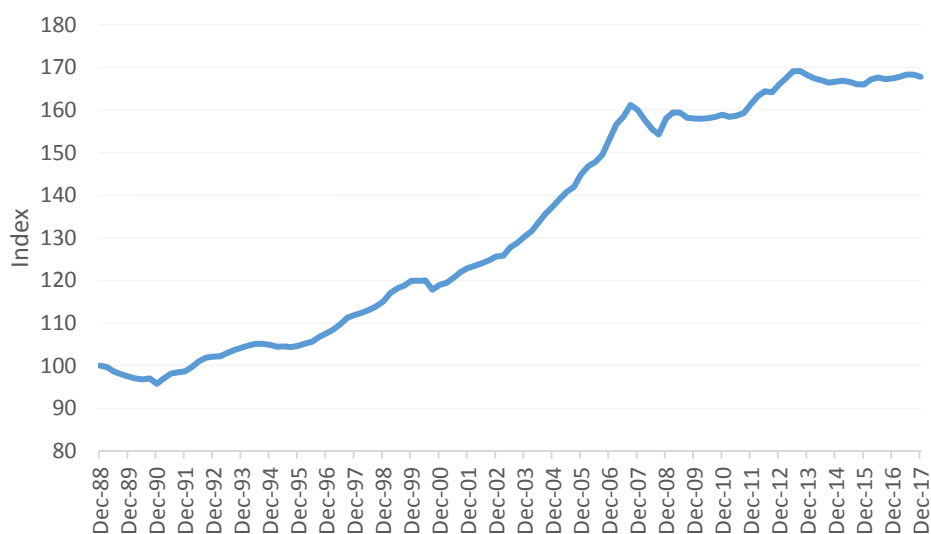
The cost of living index we calculate is based on the 'outlays' approach to calculating living cost indexes. The ABS CPI is based on the 'acquisitions' approach. In practice there is not a great deal of difference between the two approaches with regard to the long term but over short-term movements there can be modest differences. The outlays approach here measures the change in the prices of goods and services for which payments were made to gain access to goods and services. The acquisitions approach is based on the prices of goods and services actually acquired. The principal area of difference is for housing. The outlays approach uses mortgage interest payments whereas the acquisitions approach uses the upfront cost of the building component of a new dwelling. Our approach from this perspective is also that taken by the ABS Selected Living Cost series (ABS 2018).

Results

1. Living Standards

The standard of living for all Australian households has increased since 1988 by around 68 per cent at an average of 1.8 per cent per annum (Figure 1). Living standards peaked in June 2013 and have since fallen by around 0.8 per cent. Over the past 12 months to December 2017 living standards increased by 0.2 per cent. The living standards story in Australia has been one of very strong gains post the 1990 recession up until the GFC at the end of 2007. Since 2007 living standards have been largely unchanged, adding just 4.1 since September 2007 for an annual growth rate of just 0.4 per cent per year.

Figure 1: Household Living Standards, Australia (Index 1988 = 100)



An important contribution of this paper is the estimation of how these significant gains have been shared between household types. We find that the gains since 1988 have not been shared equally with higher income groups achieving larger gains than lower income groups. Between 1988 and 2017 the highest 20 per cent of incomes household living standards grew by 84.2 per cent compared to 59.1 per cent for the lowest income group. Since 2013 this gap did narrow modestly (Figure 2)².

Figure 2: Living Standards, Income Quintiles (Index 1988 = 100)

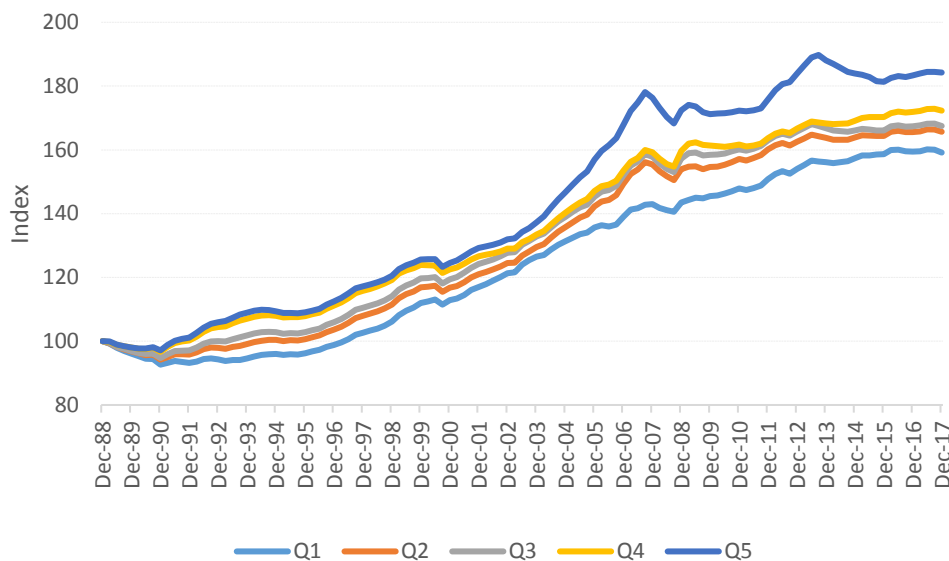
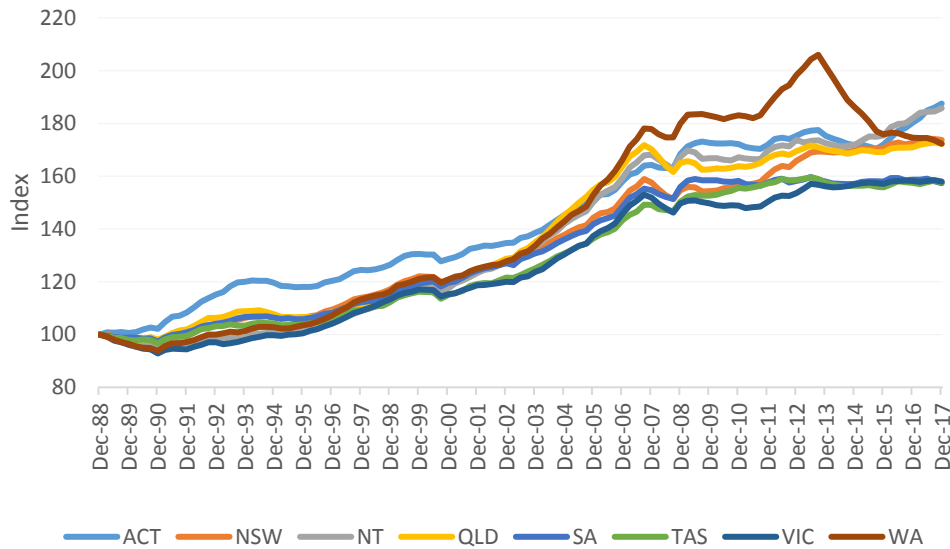


Figure 3 shows the living standard changes by state. Until 2013 Western Australia clearly achieved the largest gains but with lower terms of trades those gains are being retraced. Overall, the largest gains went to ACT and NT with ACT living standard gains of 87 per cent compared to South Australia with the weakest growth at 57.4 per cent gain since 1988. Tasmania and Victoria living standard gains were similar to that of South Australia while New South Wales enjoyed the largest gains of the major states with gains of 73.7 per cent since 1988.

² Households are split into income quintiles based on equivalised disposable income. Households with zero or negative incomes were removed from the quintile calculation but are included in the quintile households.

Figure 3: Living Standards, States (Index 1988 = 100)



In spite of housing affordability concerns living standards of all tenure types have increased. The largest gains went to purchaser households with gains of 75 per cent since 1988. These households have gained significant income increases and lower cost of living increases with record low interest rates more than compensating for larger mortgages. Renter households have fared relatively poorly with gains of just 45.7 per cent since 1988.

Figure 4: Living Standards, Tenure Type (Index 1988 = 100)

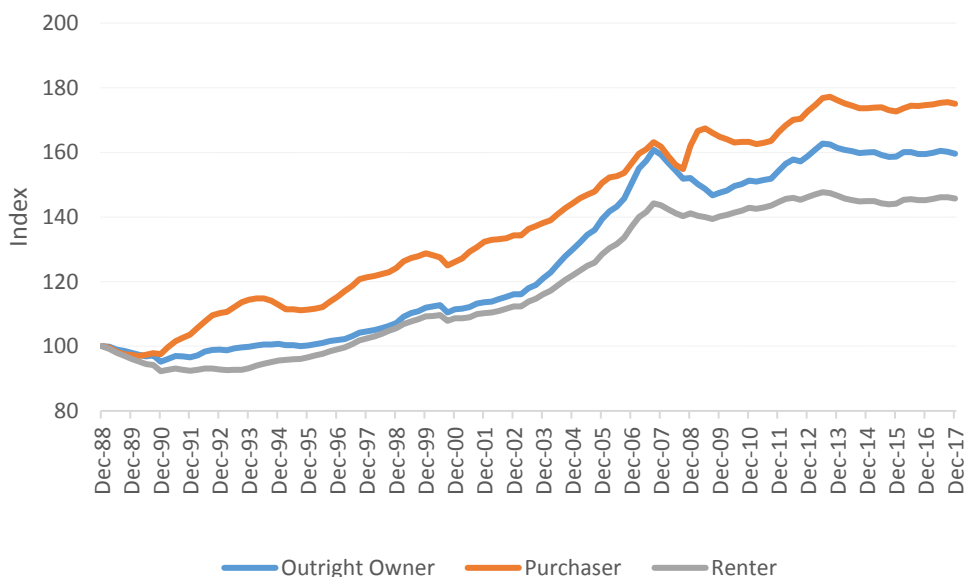


Figure 5 shows the gains of different family types. Couples with children have achieved the largest gains at 80 per cent. Single parent families achieved mixed results with low income (bottom 20 per cent of incomes) living standards growing by only 58.1 per cent while other single parent families gained more significantly at 75 per cent driven by higher participation rates in employment and some gains in the earlier years with more generous child payments. Low income single parents achieved lower gains due to a higher proportion on allowances, such as New Start Allowance following the reforms of successive governments between 2005 and 2013. Lone persons achieved the lowest growth of the major family types at 54.4 per cent.

Figure 5: Living Standards, Family Type (Index 1988 = 100)

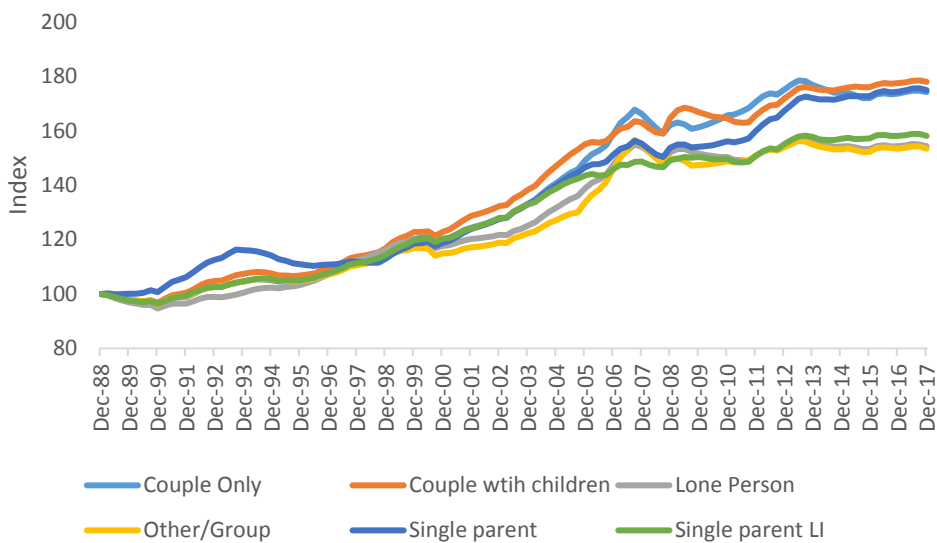
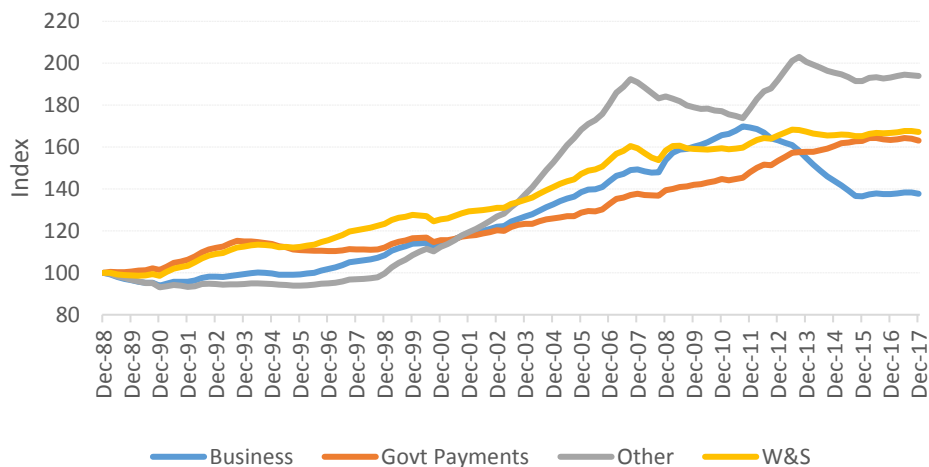


Figure 6: Living Standards, Main Source of Income (Index 1988 = 100)



Income growth did vary significantly by the type of income source households mostly rely upon. The largest gain was for 'other' source of income which includes capital income such as superannuation, shares and property. Growth for 'other' income households was 94 per cent – higher than any other category in our research. Following strong gains up until the GFC households reporting business income as their largest income source had significant reductions in income such that overall their income grew by just 37.8 per cent – lowest of all groups considered. Households with either wages or government payments achieved similar gains of 67 and 63 per cent respectively.

2. Cost of Living

Our Fisher based cost of living index grew by 107 per cent between 1988 and 2017 for an annual growth rate of 2.5 per cent. Over the same period the ABS CPI grew by 118.9 per cent or 2.7 per cent per annum. There are conceptual differences between our cost of living index and the ABS CPI. As part of our Fisher Index calculation we do calculate a Laspeyres type index (fixed weights as per the ABS CPI) which grew by 118.9 per cent – identical to the ABS CPI over the same period since December 1988.

Since 1988 the Fisher cost of living index has increased by around 107 per cent which is about 5.7 per cent lower than the ABS CPI. Compared to our Laspeyres type cost of living index the bias is about 5.7 per cent since 1988 or about 0.21 percentage points each year³.

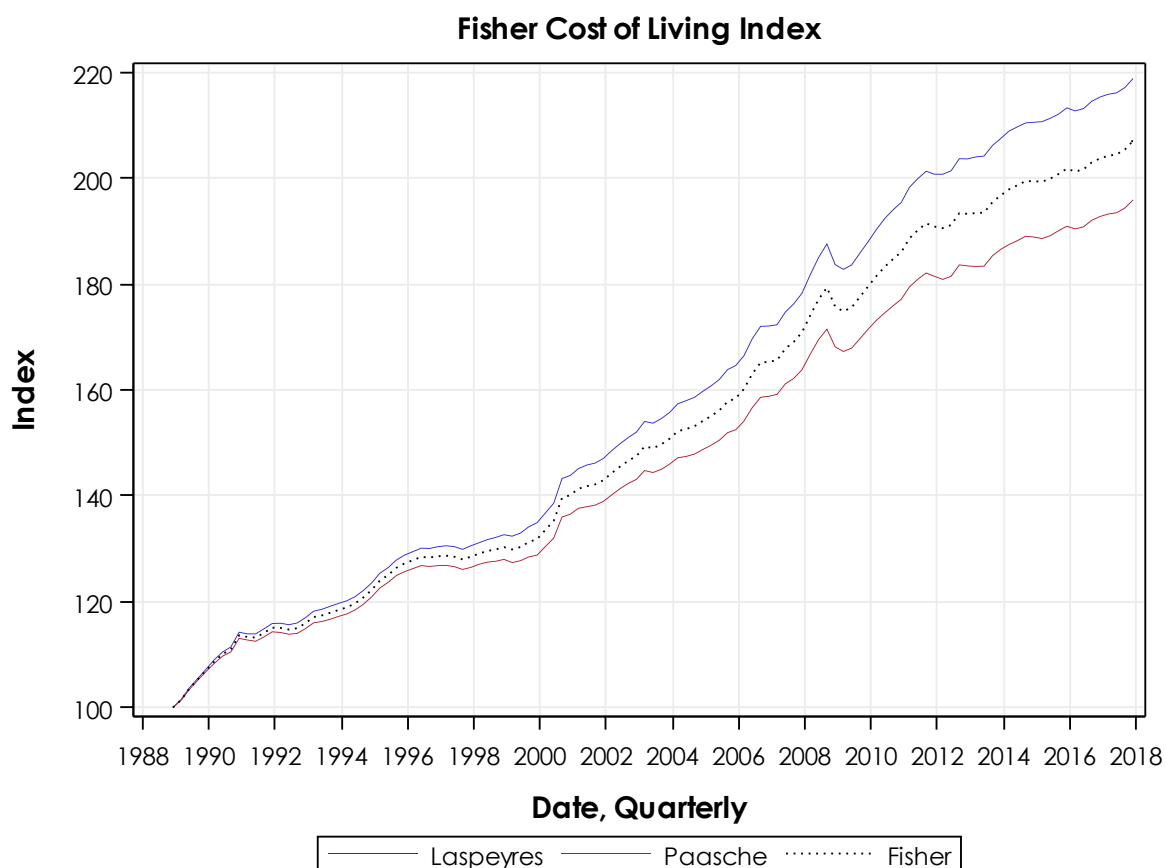
From 1998 to 2015 the bias between our Fisher and Laspeyres indexes is estimated to be 0.21. This is similar to that estimated for the bias in the ABS CPI by the ABS between 1998 and 2015⁴. The chart below shows the index used in our analysis of living standards (Fisher) compared to the fixed base Laspeyres and fixed base Paasche. As expected the Fisher is lower than the Laspeyres but higher than the Paasche indexes.

³ This calculation only applies between December 1988 and December 2015 where the Fisher Index can be calculated. The index beyond December 2015 is only a Laspeyres index as current period weights are not available.

⁴

<http://www.abs.gov.au/ausstats/abs@.nsf/Latestproducts/6470.0.55.001Main%20Features62017?opendocument&tabname=Summary&prodno=6470.0.55.001&issue=2017&num=&view=>

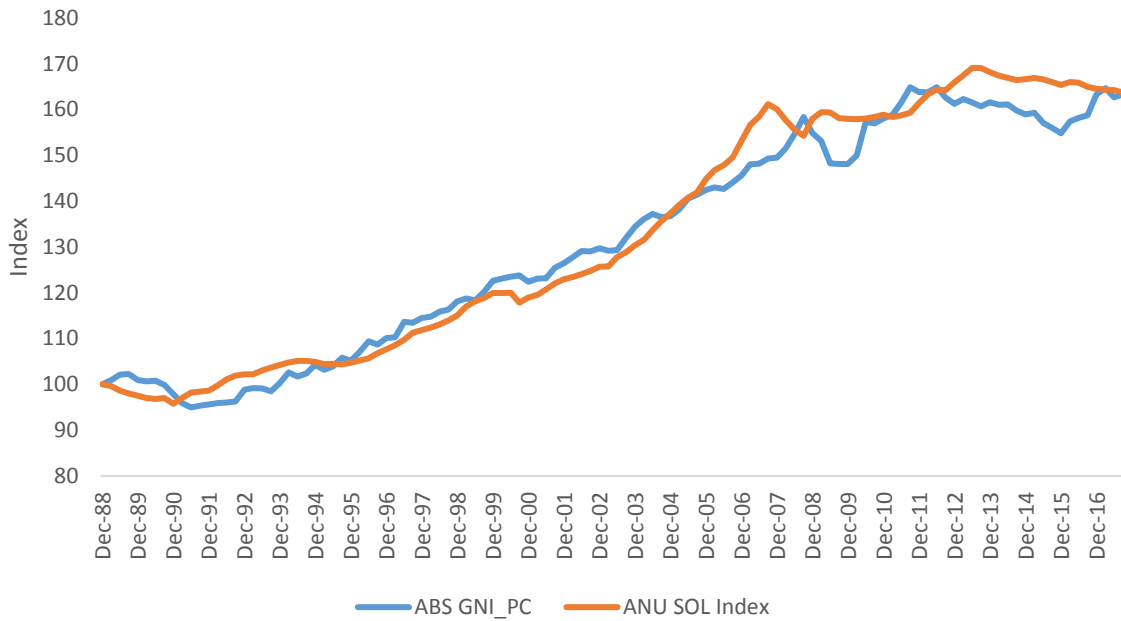
Figure 7: Fisher, Laspayres, Paasche Price indexes (Index 1988 = 100)



An often cited measure of living standards is the ABS's national accounts estimate of Gross National Income per capita. Compared to this GNI measure our version of living standards over the long run is almost identical with respect to growth. Over shorter periods there are clearly some periods of diversion. The ABS GNI measure is more likely to be impacted by large swings in terms of trade whereas our the ANU living standards measure is more impacted by large interest rate movement through the cost of living index component⁵.

⁵ The ANU cost of living index accounts for 'price change' in mortgage interest payments by using average loan repayments consistent with the ABS Housing Finance publication. Average loan repayments are calculated over a 10 year period recognising that housing finance data relates to 'new' loans whereas most loans were entered into in previous years. We also split between fixed and variable rates using ABS housing finance data.

Figure 8: ANU Fisher Index and ABS GNI Per Capita (Index 1988 = 100)



As part of our calculation for the living standards indexes we calculated cost of living (Fisher) indexes for a range of household types. Figure 9 shows a clear relationship between income level and changes in cost of living. Higher income groups have lower cost of living increases. The lowest income group’s cost of living grew by about 7.7 per cent more than the highest income group over the period between 1998 and 2017.

Figure 9: Cost of Living, Income Levels

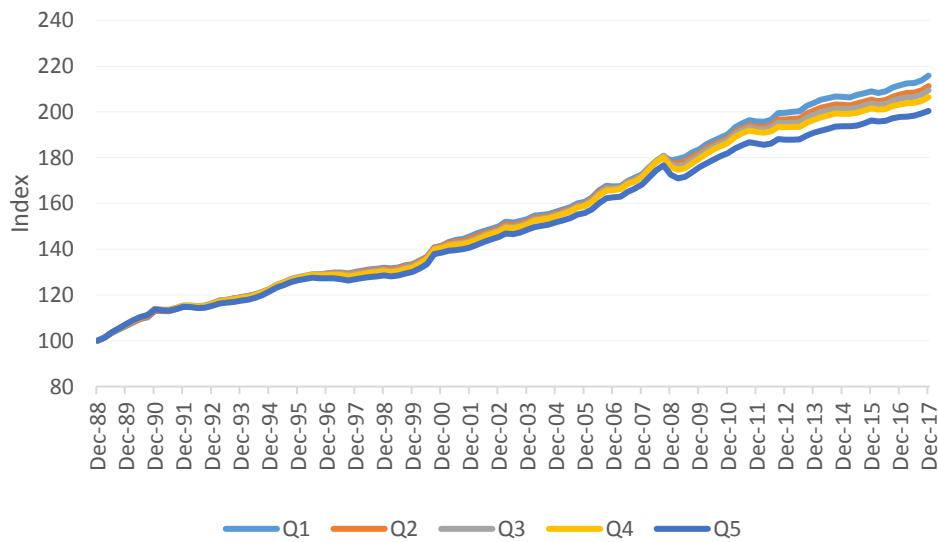
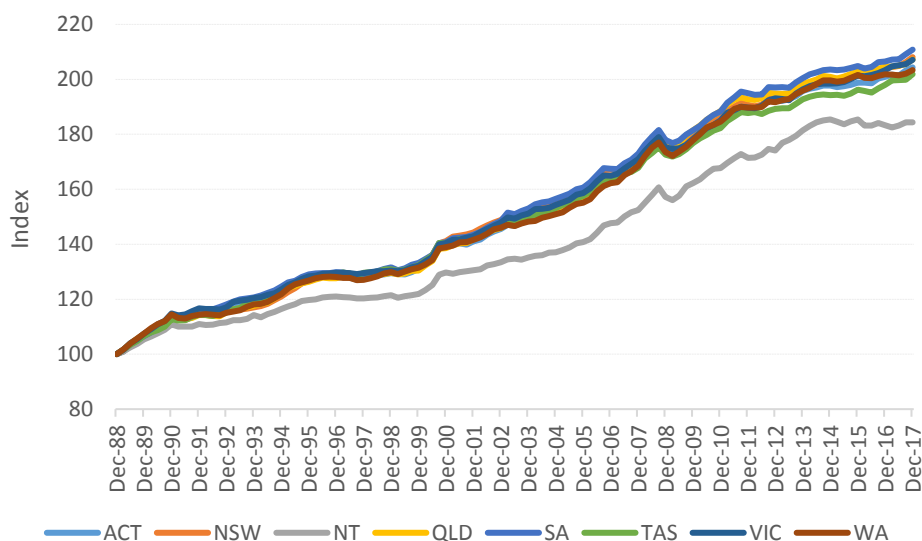
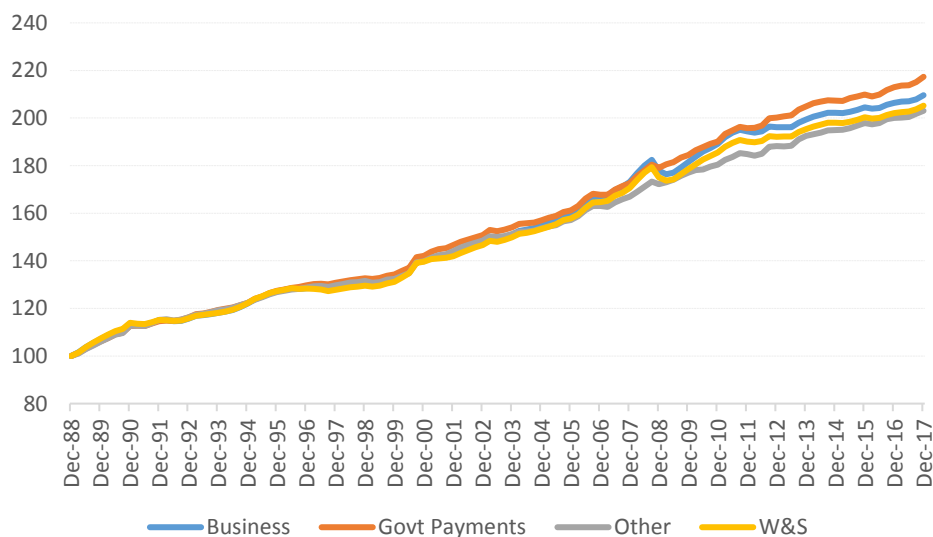


Figure 10: Cost of Living, States (Index 1988 = 100)



Overall there has been little difference since 1988 in cost of living changes between the major states (Figure 10). The highest growth state in terms of cost of living was South Australia just 3 per cent ahead of Tasmania, the lowest state. The Northern Territory’s increases were substantially lower than other states or territories.

Figure 11: Cost of Living, Main Source of Income (Index 1988 = 100)



Cost of living increases were largest for government payment recipients with growth of 117.3 per cent compared to 103.1 per cent for ‘other’ households.

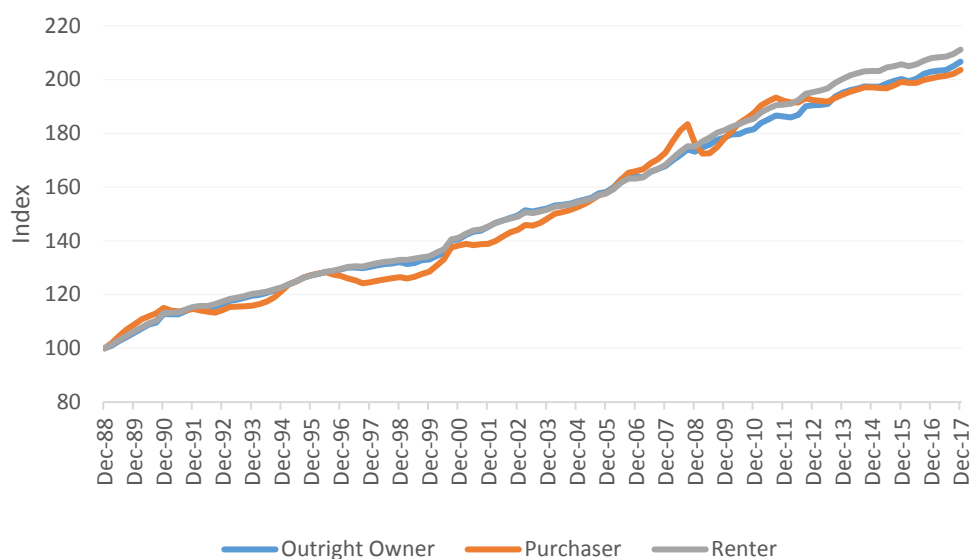
Figure 12: Cost of Living, Tenure Type (Index 1988 = 100)

Figure 12 shows that cost of living grew more strongly for renters than other tenure types. Renter households experienced growth of 111.2 per cent since 1988 compared to those purchasing a home at 103.6 per cent. This is driven mostly by rents increasing at a faster rate than mortgage repayments and renter households tending to be lower income households.

Conclusion

The standard of living index calculated here provides a comprehensive measure of financial living standards for Australian households and provides a very flexible approach from which greater detail on living standards can be derived – enabling living standards indexes to be derived for a range of household types and income levels.

This paper explains the calculation of a living standards index that incorporates, for the first time in Australia a cost of living index that accounts for changes in household consumption patterns in response to changes in relative prices. Overall, we find that living standards increased dramatically in Australian households between the early 1990s and 2013 but have not increased since. Living standards increased by around 69 per cent between 1988 and 2013 and have declined by around 1 per cent. Since the global financial crisis in 2008 living standards in Australia have barely moved beyond the peak prior to the crisis.

We find that higher income families have outperformed lower income families which implies an increase in inequality in Australia since 1988. There has been some moderation of this trend over the last 5 years. The territories and New South Wales have outperformed all other states. Those purchasing a home did better than renter households. Couples with children and single parents who are not low income single parents outperformed lone persons, group households and single parent low income households.

Overall, cost of living has been remarkably similar between different household types but we also find some differences, particularly between high and low income households with high income household enjoying modestly lower cost increases. Renter households have experienced higher cost

increases that households with a mortgage or those who own their house outright. Government payment recipient households experienced stronger cost pressures than wages or business income households.

In summary, living standards have increased dramatically in Australia since 1988, although most of those gains were achieved more than 10 years ago with little gains since the GFC. For the research we developed a cost of living index that accounts for substitution between goods and services and this index shows that the cost of living has doubled over the past 29 years but that the rate of growth has been modest at just 2.5 per cent on an annual basis but significantly lower over the last decade at just 1.7per cent per year.

References

- Australian Bureau of Statistics (2000), 1998 Household Expenditure Survey Australia: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (1995), 1993 Household Expenditure Survey Australia: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2000), 1998 Household Expenditure Survey Australia: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2005), 2003 Household Expenditure Survey Australia: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2007), 2005-06 Survey of Income and Housing: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2007), Information Paper: Survey of Income and Housing, User Guide, Australia, ABS Canberra
- Australian Bureau of Statistics (2009), 2007-08 Survey of Income and Housing: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2011), 2009-10 Household Expenditure Survey and Survey of Income and Housing: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2013), 2011-12 Survey of Income and Housing: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2015), 2013-14 Survey of Income and Housing: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2017), 2015-16 Household Expenditure Survey and Survey of Income and Housing: Confidentialised Unit Record File (CURF), ABS Canberra
- Australian Bureau of Statistics (2017) 2016-17 State National Accounts, 5220.0, ABS Canberra
- Australian Bureau of Statistics (2017) Information Paper: Introduction of the 17th Series Australian Consumer Price Index
- Australian Bureau of Statistics (2018) Dec 2017 Wage Price Index, 6345.0, ABS Canberra
- Australian Bureau of Statistics (2018) Dec 2017 Selected Living Cost Indexes, 6345.0, ABS Canberra
- Phillips, B (2013) NATSEM Household Budget Report: Cost of Living and Standard of Living Indexes for Australia June 2013.

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