

Research Note: Living Standards and Cost of Living Indexes

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Introduction

There is significant academic, policy and media interest in living standards and how they are changing. Australia does not have a measure of living standards with a specific focus on households and this index remedies this. The ANU Centre for Social Research and Methods has developed a new living standard index (the ANU Living Standards Index) and this Research Note provides an overview of the methodology and analyses how it compares to other measures often used as a proxy for living standards.

The ANU Living Standards Index conceptualises living standards using a narrow financial measure based on the disposable income of households. The index is derived from official Australian Bureau of Statistics (ABS) data sources. The specific data sets used are Household Expenditure Surveys (HES) since 1988, the Survey of Income and Housing (SIH) since 2000-01, detailed capital city based Consumer Price Index (CPI) data, National Accounts and housing finance statistics.

There are a number of other measures that are sometimes used as a proxy for living standards. These include the Real Net National Disposable Income (RNNDI) and Gross Domestic Product Per Capita (GDPPC). RNNDI adjusts the volume measure of GDP for the terms of trade effects, real net incomes from overseas and consumption of fixed capital. Relative to the GDP measure the terms of trade is mostly where differences in *growth* rates occur. The measure is an economy-wide measure and so includes incomes received by companies in addition to the households sector. RNNDI is often thought of as a superior measure of *well-being* compared to GDP.

The ANU living standards measure relates only to the households sector. Being based on ABS income surveys it excludes the not-for-profit sector which the national accounts household sectoral accounts include. We attempt to derive a measure of living standards that best matches the lived experience of Australian households rather than that of the entire economy – as is the case for RNNDI. We would expect that all three measures over the long-run would be quite similar in terms of overall growth in living standards, however, divergences in growth rates are likely in the short to medium term.

Methodology

To develop a living standard index we require both an income measure and a cost measure. For income we use the ABS income surveys' (HES and SIH) equivalised income measures after adjusting for some definitional changes to income measures that occurred last decade. On the cost side we develop a

Living Cost Index (LCI) that is similar to the living cost indexes developed by the ABS using consumer price data.

Incomes used to construct the index in this report are based on ABS income and expenditure surveys combined with household income data from the ABS national accounts for the most up-to-date income data. An issue with the ABS income surveys is that income definitions changed in the 2005-06 and 2007-08 surveys to a broader concept of income. To maintain a common definition of income through time this report 'chain links' growth between 2003-04 and the 2005-06 on the same income definition and likewise between the 2005-06 and 2007-08 surveys. Since the 2005-06 and the 2007-08 surveys provide income variables with both the old and the new definitions we are able to calculate an index of income on a consistent basis. Using these surveys we calculate the average household disposable income after equivalising for household size and type using the OECD modified scale. The ABS disposable income measure includes most forms of income, including wages and salaries, business income and investment superannuation income. The income measure also includes social security income and deducts personal income taxation. The measure does not include imputed rents for owner occupiers or other imputed incomes for in-kind government expenditure such as education or health.

The latest ABS survey is for 2015-16 so for quarters beyond December 2015 (mid-point in time of the survey) changes in the index are based on changes in the national accounts disposable income measure for Australia on a per capita basis.¹

To derive our living standards measure we deflate household equivalised income by our cost of living index. Methodologically, the cost of living index is based on the ABS Living Cost Index but expands the scope of the index to *all* households, provides a longer time series, and much greater detail on different types of households². Our living cost index, unlike the ABS LCI, is based on the Fisher Index rather than the fixed based Laspeyres index. The Laspeyres index is known to overstate the cost of living as it does not take into account substitutions between goods and services as relative prices change. The Fisher index overcomes this issue. The ABS estimates that the 'substitution bias' in their consumer price index is 0.22 per year compared to our estimate of 0.2. By comparing changes in the cost of living with changes in incomes we derive how the Australian household financial standard of living changes

¹ Since the index is built using state level national accounts data is only available up to June 2018. A simple trend is used to December 2018. With the most recent national accounts at the national level deteriorating slightly in the second half of 2018 this estimate slightly overstates income growth for Australia.

² Technically, the calculation of a true cost of living index is not feasible, however, the index provided here should be considered a close approximation. Theoretically, living cost indexes such as the one presented in this paper, are an over-estimate of the true cost of living due to the well-known 'CPI bias'. For a full explanation see Diewert (1998).

through time for a range of household types. In this note we only focus on the broad Australia results for living standards.

The index uses the same base data as that used by the ABS to compile their various measures of consumer inflation and living costs. We use ABS price information from their Consumer Price Index publication at the detailed expenditure class level (87 classes) and weights together the observed price movements by their relative expenditure share. The expenditure shares are based on the latest available ABS Household Expenditure Survey (HES). We take the same approach as the ABS and update the weights according to the latest HES publication to ensure that the 'basket of goods' is appropriate to the time point and therefore minimise any related bias from changes in consumption patterns³.

The cost of living index consists of a 'chain linked' index for the periods between the five HES data sets ⁴. Each linked series is a Fisher price index, F_t , as the price movements are weighted based on the expenditure shares from the previous HES.

The main point of difference between the ABS consumer price index and both the cost of living index estimated here and the ABS Living Cost Index is that the expenditure classes or 'basket of goods and services' are different. The latter indexes treat housing differently by using mortgage interest paid on the principal place of residence in place of the CPI's home purchase expenditure class which is largely based on the purchase of new owner occupier dwellings (not the land component), which means that inflation in the cost of land is not reflected in the ABS CPI. The latter indexes also remove financial services as they are based on the *outlays* approach rather than the *acquisitions* approach adopted by the CPI. The latter indexes also include a separate methodology for developing 'price' change for mortgage interest. This paper's approach applies the Reserve Bank's standard variable loan estimate to average housing loans data from the ABS to calculate average quarterly loan interest repayments for owner occupier housing. An annual one per cent reduction is applied to this inflation measure to account for quality change (see Abelson 2004). To account for the known under-reporting of alcohol and tobacco expenditure by survey respondents the expenditure weights have been increased by around 66 per cent to match with known weights in the ABS CPI for alcohol and tobacco.

Results

In this paper we present the Australia-wide estimate for living standards. The ANU index is presented for the period between December 1988 and December 2018. We find that living standards increased by

³ The ABS recently updated their reweighting to include information from the National Accounts. This annual re-basing reduces the extent of bias, however the index remains a laspeyres type index.

⁴ 1988-89, 1993-94, 1998-99, 2003-04 and 2009-10.

66.3 per cent over this period. Over the period December 2017 and December 2018 living standards went backwards by 0.3 per cent and have not grown since the June quarter of 2017. The majority of growth over the past 30 years was between 1998 and 2008 where living standards grew 41.2 per cent.

Figure 1 shows a comparison of the ANU living standards index with per capita GDP and per capita GNNDI. As can be seen there are some differences over short periods of time but the three series are very similar over the long term.

Figure 1. ABS National Accounts Real Net Disposable Income per capita, GDP per capita and ANU Households Living Standards Index (Index 1988=100)



Figure 2 shows a comparison of annual growth rates between the three series. The GDP per capita series has less variation when compared to the two income-based measures. There is modest correlation between the three series but there are often long periods where the three series all grow at very different rates.





Conclusion

The ANU living standards index shows that over the long term Australian households have, on average, improved their financial living standards by around 66 per cent. Most of this growth occurred last decade while the current decade growth in living standards has been close to zero.

The living standards measure attempts to be a measure of living standards for Australian households by considering changes in real income for the household sector. The results suggest that the index pretty closely resembles the overall growth of GDP and Gross National Disposable Income in per capita terms.

The living standards index accounts for inflation using a special living costs index which attempts to overcome the issue of upward bias in the Consumer Price Index. The living standards index and the living cost index are both available for detailed household types such as the income distribution and family type.

The ANU living standards index is the only index in Australia with a specific focus on households and should be a useful complement to the other economy-wide measures of living standards in Australia.

References

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Date	Income	Cost Of Living	Standard Of Living
Dec-88	100.0	100.0	100.0
Mar-89	101.1	101.4	99.6
Jun-89	102.1	103.6	98.6
Sep-89	103.2	105.3	98.0
Dec-89	104.3	107.0	97.5
Mar-90	105.4	108.7	97.0
Jun-90	106.5	110.1	96.8
Sep-90	107.7	111.0	97.0
Dec-90	108.8	113.6	95.8
Mar-91	110.0	113.3	97.0
Jun-91	111.1	113.2	98.2
Sep-91	112.3	114.1	98.5
Dec-91	113.5	115.1	98.6
Mar-92	114.7	115.0	99.7
Jun-92	116.0	114.7	101.1
Sep-92	117.2	115.0	101.9
Dec-92	118.4	115.9	102.2
Mar-93	119.7	117.1	102.2
Jun-93	121.0	117.4	103.0
Sep-93	122.2	117.9	103.7
Dec-93	123.4	118.4	104.2
Mar-94	124.6	118.9	104.8
Jun-94	125.8	119.7	105.1
Sep-94	127.0	120.8	105.1
Dec-94	128.2	122.2	104.9
Mar-95	129.4	123.9	104.4
Jun-95	130.7	125.0	104.5

Appendix – ANU Standard of Living Estimates (Index: December 1988=100)

Sep-95	131.9	126.4	104.4
Dec-95	133.2	127.2	104.7
Mar-96	134.5	127.8	105.2
Jun-96	135.8	128.5	105.7
Sep-96	137.1	128.3	106.8
Dec-96	138.4	128.6	107.6
Mar-97	139.7	128.7	108.5
Jun-97	141.0	128.5	109.8
Sep-97	142.4	128.0	111.3
Dec-97	143.8	128.5	111.9
Mar-98	145.1	129.1	112.4
lun-98	146 5	129.6	113 1
Sen-98	147.9	129.9	113.9
Dec-98	149.9	130.3	115.0
Mar-99	151.9	129.9	117.0
lun-99	153.9	130.3	118 1
Sen-99	156.0	131.3	118.8
Dec-99	158.1	131.5	110.0
Mar-00	160.2	133.5	120.0
	162.2	125.2	120.0
Son 00	102.5 164 E	120.6	117.0
Sep-00	104.5	139.0	117.0
Dec-00	168.0	140.1	110.9
	100.9	141.5	119.5
Juli-01	171.2	141.0	120.7
Sep-01	173.5	142.2	122.0
Dec-01	175.8	142.9	123.0
Mar-02	1/8.1	144.3	123.5
Jun-02	180.5	145.5	124.1
Sep-02	182.9	146.6	124.8
Dec-02	185.4	147.5	125.7
Mar-03	187.8	149.3	125.8
Jun-03	190.3	149.0	127.8
Sep-03	192.9	149.7	128.8
Dec-03	196.5	150.8	130.3
Mar-04	200.2	152.2	131.5
Jun-04	204.0	152.6	133.6
Sep-04	207.8	153.2	135.7
Dec-04	211.7	154.1	137.4
Mar-05	215.7	155.0	139.1
Jun-05	219.8	156.1	140.8
Sep-05	223.9	157.8	141.9
Dec-05	229.5	158.4	144.8
Mar-06	235.2	160.2	146.8
Jun-06	241.0	163.1	147.8
Sep-06	247.0	165.2	149.5
Dec-06	253.1	165.3	153.1
Mar-07	259.4	165.6	156.6
Jun-07	265.9	167.8	158.4
Sep-07	272.5	169.1	161.1
Dec-07	273.5	170.9	160.0
Mar-08	274.6	174.1	157.7
Jun-08	275.6	177.1	155.6
Sep-08	276.6	179.4	154.2
Dec-08	277.7	175.8	158.0
Mar-09	278.7	174.9	159.4
Jun-09	279.8	175.6	159.3
Sep-09	280.9	177.6	158.1
Dec-09	283.8	179.6	158.0
Mar-10	286.7	181.5	157.9
Jun-10	289.7	183.3	158.0
Sep-10	292.7	184.8	158.4

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Dec-10	295.7	186.1	158.9
Mar-11	298.8	188.7	158.3
Jun-11	301.9	190.2	158.7
Sep-11	305.0	191.5	159.3
Dec-11	308.1	190.9	161.4
Mar-12	311.2	190.6	163.3
Jun-12	314.3	191.2	164.4
Sep-12	317.5	193.4	164.2
Dec-12	320.7	193.3	165.9
Mar-13	324.0	193.4	167.5
Jun-13	327.3	193.5	169.1
Sep-13	330.6	195.5	169.1
Dec-13	330.9	196.8	168.2
Mar-14	331.3	197.9	167.4
Jun-14	331.6	198.7	166.9
Sep-14	332.0	199.5	166.4
Dec-14	332.4	199.5	166.6
Mar-15	332.7	199.4	166.9
Jun-15	333.1	200.0	166.6
Sep-15	333.4	200.8	166.0
Dec-15	334.8	201.8	165.9
Mar-16	336.1	201.3	167.0
Jun-16	337.4	201.7	167.3
Sep-16	338.8	203.0	166.9
Dec-16	340.1	203.8	166.9
Mar-17	341.5	204.3	167.2
Jun-17	342.8	204.5	167.6
Sep-17	344.2	205.5	167.5
Dec-17	345.5	207.1	166.8
Mar-18	346.9	208.1	166.7
Jun-18	348.3	209.0	166.7
Sep-18	349.7	210.1	166.5
Dec-18	351.1	211.1	166.3