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Income, wealth  
and earnings inequality  
in Australia: Evidence from  
the HILDA survey

**Urban Sila,  
Valéry Dugain**

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ECONOMICS DEPARTMENT

**INCOME, WEALTH AND EARNINGS INEQUALITY IN AUSTRALIA:  
EVIDENCE FROM THE HILDA SURVEY**

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**By Urban Sila and Valéry Dugain**

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**Abstract / Résumé****Income, wealth and earnings inequality in Australia: evidence from the HILDA survey**

This paper analyses income, wealth and earnings inequality in Australia, using the Household, Income and Labour Dynamics in Australia (HILDA) Survey as the primary source of data. Income inequality in Australia has risen in the last two decades, but most of the rise occurred prior to the global financial crisis. HILDA data nevertheless show evidence of slower income growth in the middle of the income distribution compared with the top and the bottom. While Australia has experienced a rising inequality in wages – mostly through rapid earnings increases among top earners - this has been offset by increased participation and longer hours worked at the bottom of the distribution. According to HILDA data, relative pay across different levels of education groups has not recorded large shifts over the last 15 years. At the same time, we find evidence for job polarisation; notably, the share of high skilled jobs versus middle skilled jobs has increased. With respect to concerns about the casualisation of the labour force and less stable nature of jobs amid technological change and globalisation, the incidence of casual employment – where workers receive no paid sick leave or holiday leave - in Australia has been reported to have risen since the 1980s, especially for females. According to HILDA data however, the incidence of casual employment has fallen since early 2000s. Furthermore, we find no evidence that contract duration has shortened over time.

JEL Codes: D31, E24, J2, J3

Keywords: Australia, HILDA, household panel, income distribution, inequality, wealth inequality, income mobility, earnings inequality, job polarisation

This Working Paper relates to the 2018 OECD Economic Survey of Australia <http://www.oecd.org/eco/surveys/economic-survey-australia.htm>.

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**Inégalités de revenu, de patrimoine et de rémunération en Australie : enseignements de l'enquête HILDA**

Nous analysons dans ce document les inégalités de revenu, de patrimoine et de rémunération en Australie, en utilisant comme source primaire de données l'enquête sur les ménages, les revenus et la dynamique du marché du travail en Australie (HILDA, *Household, Income and Labour Dynamics in Australia*). Les inégalités de revenu se sont creusées dans ce pays au cours des deux dernières décennies, mais cette évolution a eu lieu essentiellement avant la crise financière mondiale. Les données de l'enquête HILDA montrent cependant que la croissance des revenus s'est ralentie au milieu de la distribution des revenus par rapport à ses parties supérieure et inférieure. L'Australie a connu une augmentation des inégalités salariales (essentiellement due à la progression rapide des rémunérations les plus élevées), mais celle-ci a été compensée par une hausse du taux d'activité et un allongement du temps de travail dans la partie inférieure de la distribution. D'après les données de l'enquête HILDA, les niveaux de rémunération relatifs des différentes catégories de la population ventilée en fonction du niveau d'études n'ont pas sensiblement changé au cours des 15 dernières années. Par ailleurs, certains éléments mettent en évidence une polarisation des emplois ; la proportion d'emplois hautement qualifiés a notamment augmenté par rapport à celle des emplois moyennement qualifiés. S'agissant des préoccupations relatives à la précarisation de la main-d'œuvre et à la remise

en cause de la stabilité des emplois sur fond d'évolutions technologiques et de mondialisation, l'incidence de l'emploi occasionnel (caractérisé par l'absence de congés de maladie payés et de congés payés annuels) a apparemment augmenté en Australie depuis les années 1980, en particulier parmi les femmes. Néanmoins, d'après les données de l'enquête HILDA, l'incidence du travail occasionnel a diminué depuis le début des années 2000. En outre, aucun élément n'indique que la durée des contrats s'est raccourcie au fil du temps.

Codes JEL : D31, E24, J2, J3

Mots clés : Australie ; HILDA ; Panel de ménages ; distribution de revenus ; inégalité ; inégalité de richesse ; mobilité de revenu ; inégalité de revenu ; polarisation du travail

Ce document de travail est lié à l'*Étude économique de l'OCDE* de 2018 consacrée à l'Australie <http://www.oecd.org/fr/eco/etudes/etude-economique-australie.htm>.

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## Income, wealth and earnings inequality in Australia: evidence from the HILDA survey

By Urban Sila & Valéry Dugain<sup>1</sup>

### Introduction

1. Inequality has been rising over the last 30 years in many OECD countries (OECD, 2015). By lowering employment opportunities, the financial crisis of 2008-9 and its aftermath accelerated this trend in many countries, and social issues have come to the forefront of public and political debates. A widening gap between rich and the poor can have detrimental effects not only on social cohesion but also on economic growth (OECD, 2015).

2. Two other developments - globalisation and technological progress - have strongly influenced the structure of OECD economies and the nature of their labour markets. First, under globalisation, much of the world manufacturing production has shifted to emerging markets with often detrimental impact on local labour markets in developed economies. Second, technological progress has favoured certain jobs and skills. With the automation of routine tasks, technological progress has reduced demand for medium-skill workers, while increasing demand particularly for high-skilled, but also for low-skilled jobs (Autor et al., 2006; Goos and Manning, 2007; and Goos et al., 2009; OECD, 2017). Indisputably, both globalisation and technological progress have brought considerable prosperity, but nevertheless certain groups have been - at least temporarily - stripped of jobs and opportunities. This evolution in labour demand looks set to continue and in absence of effective policy action more workers may struggle to secure quality jobs.

3. In this paper we focus on describing the trends in Australia's inequality, using the Household, Income and Labour Dynamics in Australia (HILDA) Survey as the main source of data. The HILDA Survey is a household-based panel study that collects information about economic and family life across Australia. It has been conducted annually since 2001 (see Box 1). The data can be used to compute various measures of inequality and the panel structure of the data allows for assessment over time. The findings in this paper are largely consistent with the work by other researchers on Australia (Wilkins, 2013, 2015 and 2017; Fletcher and Guttman, 2013; Dollman et al. 2015, Greenville et al., 2013, Borland and Coelli, 2016, and Productivity Commission, 2018).

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<sup>1</sup> Urban Sila is an economist in the Country Studies Branch of the OECD Economics Department. Valéry Dugain served as a consultant in the OECD Economics Department when research for the paper was done. For valuable comments and suggestions the authors would like to thank Philip Hemmings and Patrick Lenain (both from OECD Economics Department), Michael Förster, Andrea Salvatori, Maxime Ladaique and Alexandre Georgieff (all from OECD Employment, Labour and Social Affairs Directorate), Jonathan Coppel and Josh Craig (both Productivity Commission). Editorial assistance from Stephanie Henry was also greatly appreciated.

## Income inequality based on the OECD Income Inequality database

4. According to the OECD Income Inequality database, income inequality (measured with the Gini coefficient or 90/10 percentile ratio) in disposable income (after taxes and transfers) in Australia increased from 1995 up to the global financial crisis, but appears to have stabilised since then (Figure 1, panels A and B). Inequality in disposable income is slightly above the OECD average (panel C). In Australia the contribution from transfers and taxes to reducing inequality (for the working-age population) is close to the OECD average (panel D). The impact of transfers and taxes on inequality reduction has however gone down since 1995 (not shown), as in many OECD countries. In Australia, unemployment benefits are means-tested and have strict eligibility criteria, and up to half of displaced workers are in effect ineligible to receive them (OECD, 2016a). This reflects a highly targeted welfare system; more than 40% of cash transfers go to low income households compared to just below 25% on average in the OECD (Causa and Hermansen, 2017).

## Income inequality based on the HILDA Survey

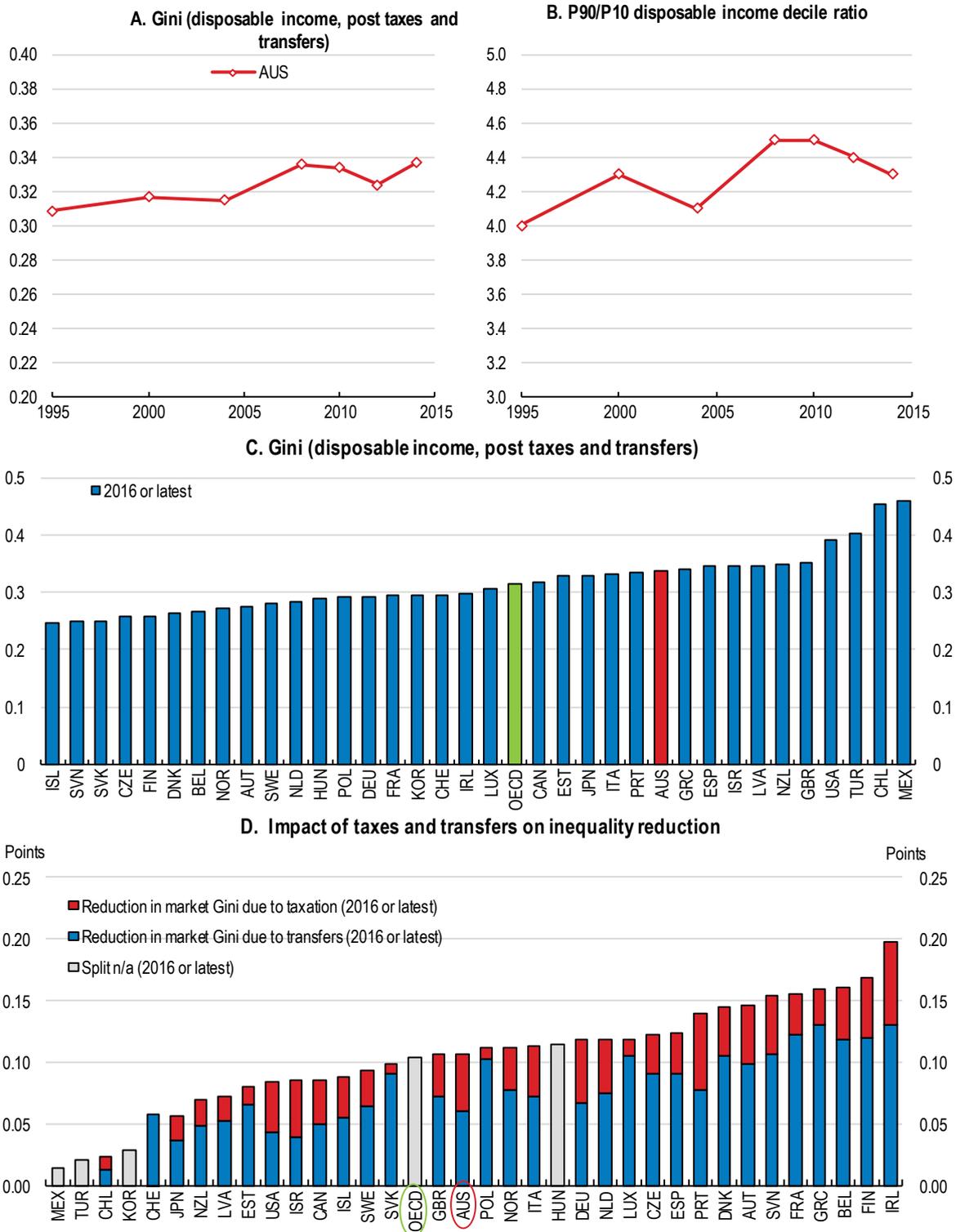
5. We now turn to income inequality data based on the HILDA Survey. Studies that look at income inequality mostly base their findings on household income. The rationale being that even if a person has low personal income they may still live in high-income households, as for example young students or non-earning spouses of high-earning partners, and they should therefore not be counted as "poor". In addition, the household perspective is the most appropriate as this is the key economic and social unit where resources are pooled and where economic, family and other decisions are taken. Following the methodology in the OECD Income Distribution Database (see Box 1 in OECD, 2016b) we keep the individual as a unit of observation, but we assign each individual an income that is equal to the total household income divided by the square root of the number of individuals (of all ages) in the household. In this way we obtain an equivalised household income.

6. As this measure is based on household-level income, individuals of all ages should be included. For the purposes of putting the income on equivalence scale (dividing by the square root of the number of people in the household) everybody is counted. However, for computing the distribution of equivalised income, the age limit is 15 and above, because HILDA database does not provide full information and sample weights for individuals of less than 15 years of age.

### *Inequality in disposable household income*

7. Inequality of disposable income measured by HILDA-based Gini coefficients has remained roughly constant over the past 15 years (Figure 2). Inequality of gross income is significantly larger than inequality of disposable income, confirming the dampening impact of taxes and transfers on income inequality.

**Figure 1. Income inequality in Australia has risen and remains above the OECD average**



Note: Panels A.-C. refer to whole population. Panel D. is for working age population and indicates the difference between the Gini before and after taxes and transfers.

Source: OECD, Income Inequality database.

### Box 1. HILDA Survey

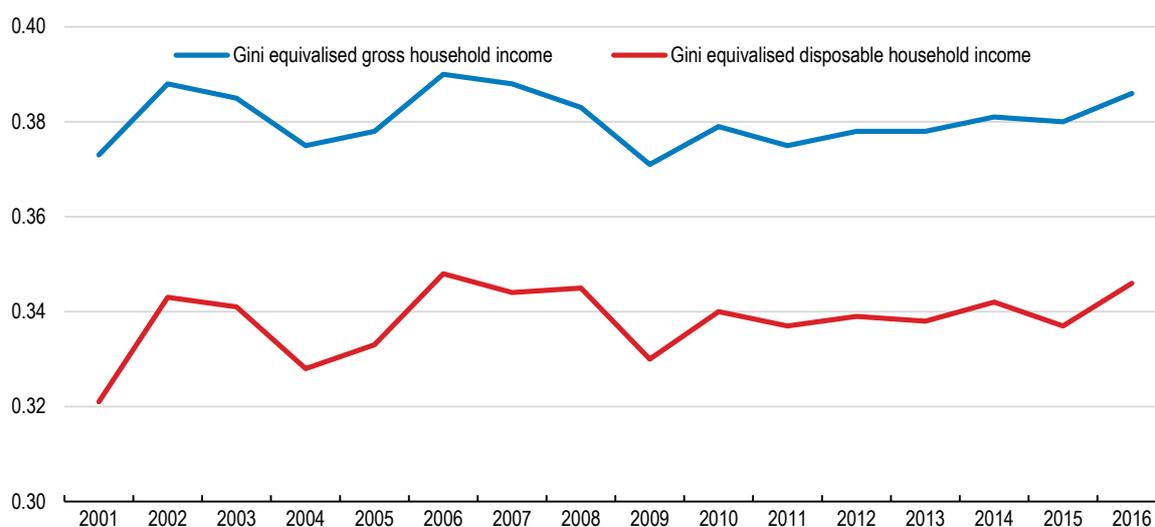
The Household, Income and Labour Dynamics in Australia (HILDA) Survey is a household-based panel study, that started in 2001 and collects data on about 17,000 Australians each year. The data cover many aspects of life, including household and family relationships, child care, income and employment, education, expenditure, health and wellbeing, and other life events. At less frequent intervals the survey collects additional information on various topics, as for example on household wealth, which has been conducted every four years since the second wave in 2002.

As this is a panel data set, participants are surveyed every year and population weights are provided so that statistics computed from the data can represent estimates for the Australian population. For wave 1 of the survey, households were selected such that representativeness of the reference population was ensured. Children born or adopted in these households also become members of the sample. All members of the selected households count as members of the sample, although individual interviews are only conducted with those aged 15 years and over.

Shifts in population composition (for instance due to immigration) and sample attrition (e.g. participants dropping out due to refusal to participate or problems in locating them) make a sample less representative of the whole population over time. To correct for immigration, in wave 11, a general sample top-up was conducted which allowed immigrants who had arrived between 2001 and 2011 to enter the HILDA Survey sample. To correct for attrition, sample weights are changed each year to adjust for differences between the characteristics of the panel sample and the characteristics of the Australian population.

The HILDA Survey is funded by the Australian Government through the Department of Social Services. The Melbourne Institute is responsible for the design and management of the Survey. For more information visit <http://melbourneinstitute.unimelb.edu.au/hilda>.

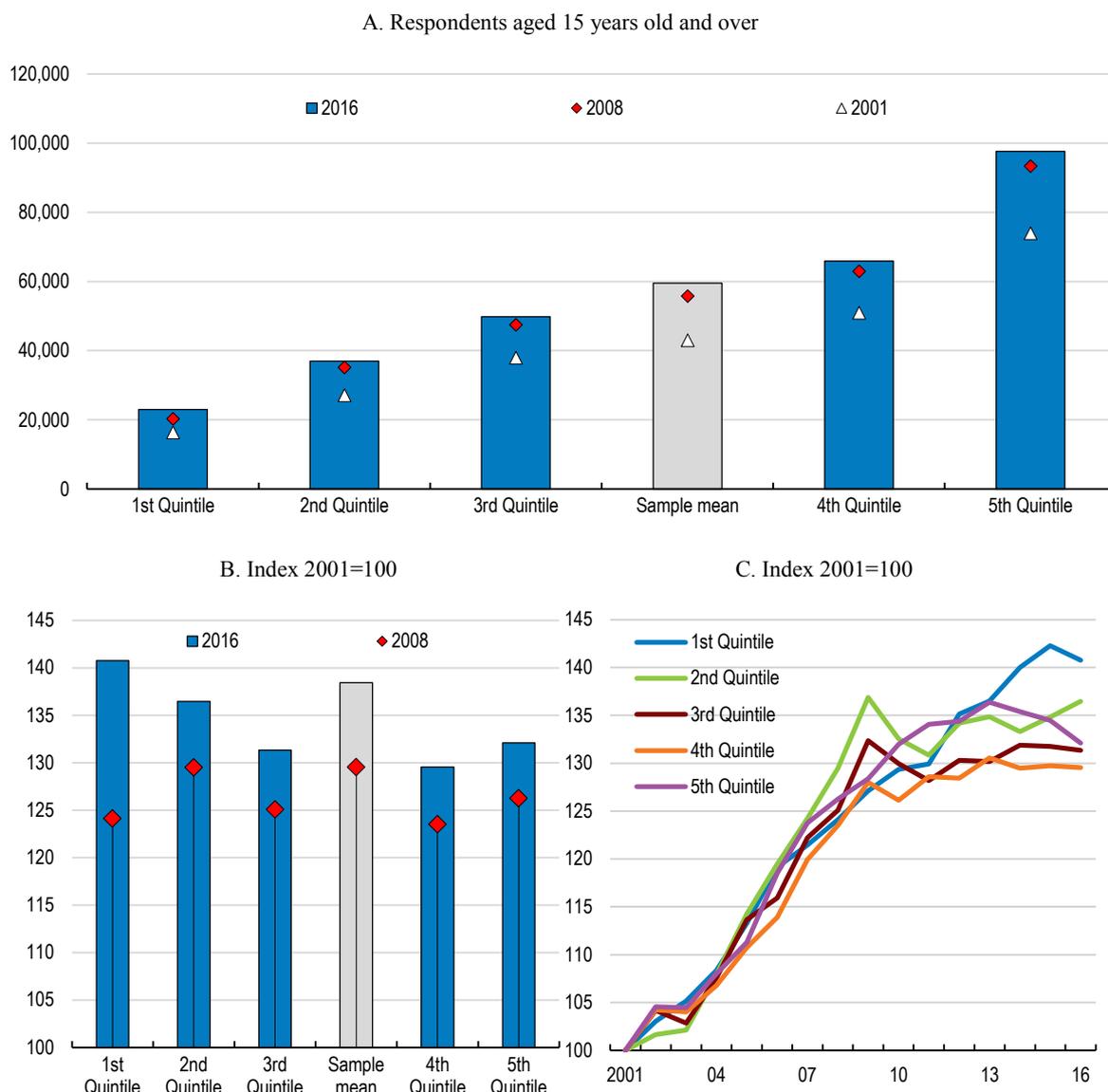
**Figure 2. Gini coefficient of equivalised household disposable income**



Source: OECD calculations based on HILDA database.

8. In Figure 3 we look at changes in incomes across the income distribution; it depicts median real disposable household income across quintiles (panel A) and the index of income across quintiles with the base year 2001 (panels B and C). Over the last 15 years, income has grown significantly in real terms across the whole of the income distribution, but it has grown the most - in percentage terms - for individuals in the bottom two quintiles. The third highest increase was in the top quintile. Incomes of the rich and the poor have therefore grown faster than that of the middle class. Interestingly, except for the bottom quintile, the growth of incomes for all groups slowed significantly following the global financial crisis.

**Figure 3. Equivalised median disposable household income**

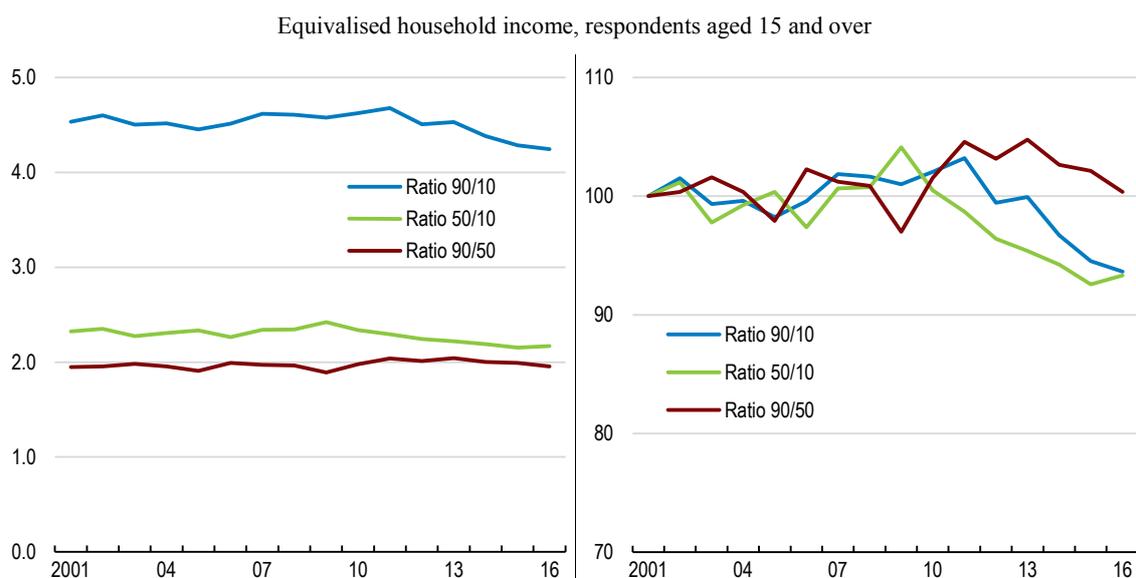


Source: OECD calculations based on HILDA database.

9. Next we consider various income decile ratios based on household income (90/10, 90/50 and 50/10 decile ratio), shown in Figure 4. Again, no big shifts in income inequality

are apparent over the 15 year period, with a slight decline, especially at the bottom, after the global financial crisis. We can observe a clear fall in 90/10 inequality post 2009, primarily driven by a recent drop in inequality at the bottom (50/10 ratio), while at the top (90/50 ratio) inequality has moved around but reached in 2016 a similar level it had in 2001. Such developments lend further evidence that the bottom and the top of the distribution have gained against the middle.

**Figure 4. Real disposable income inequality - decile ratios since 2001**

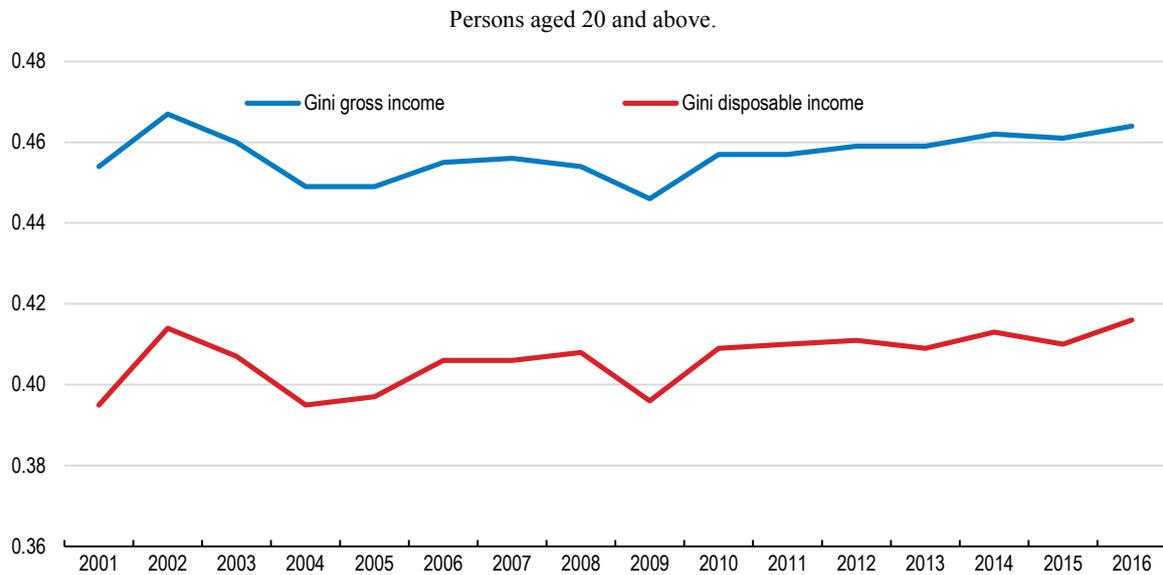


Source: OECD calculations based on HILDA database.

### *Inequality in personal income*

10. In this section we briefly look at inequality based on personal income rather than household income. This is done for comparison and also because later we move onto earnings inequality, which more closely corresponds to personal income inequality because earnings are based on individual level data. We analyse personal level inequality for individuals aged 20 years or more.

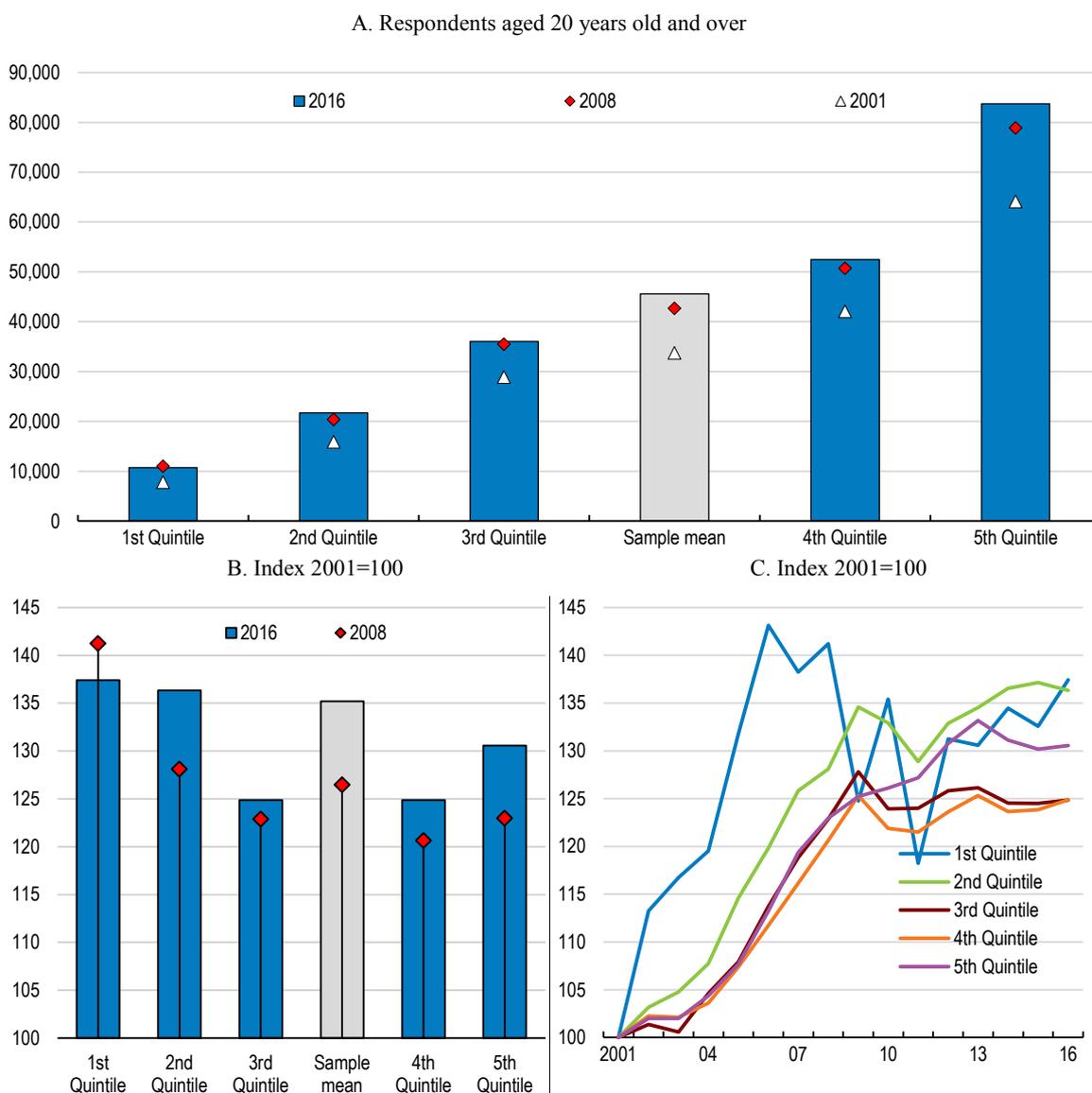
11. Gini coefficients over time show roughly constant inequality over the past 15 years (Figure 5). As expected, the level of the Gini coefficient at the personal level is higher than at the household level.

**Figure 5. Gini coefficient of personal disposable income**

Source: OECD calculations based on HILDA database.

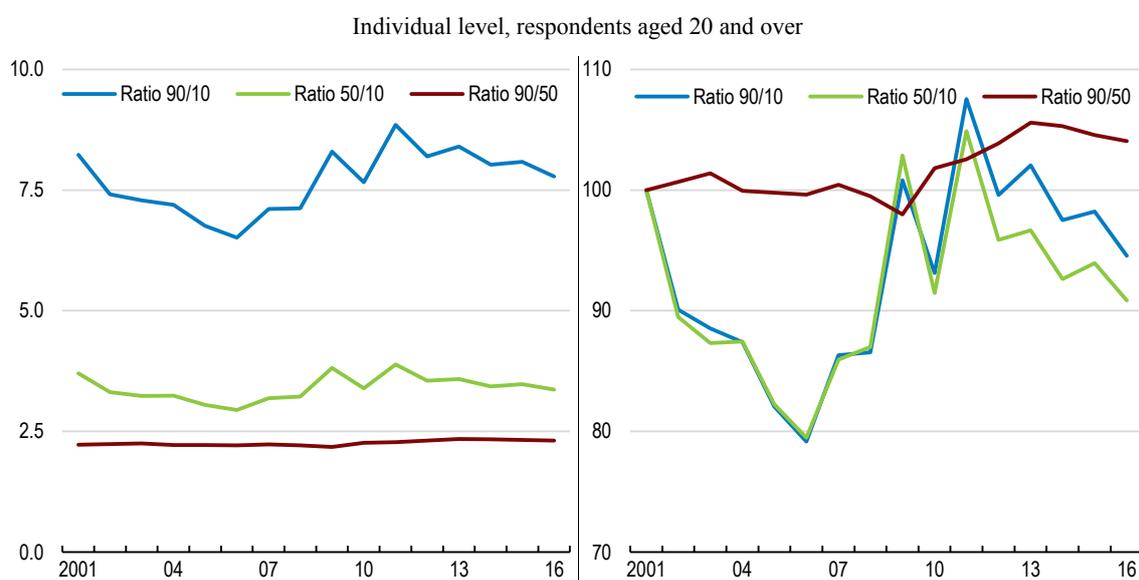
12. Inequality across personal income quintiles, as for household incomes, shows fastest growth for individuals in the bottom two quintiles (Figure 6). The third highest increase was in the top quintile. However, we can observe a peculiar evolution of personal income of the bottom quintile over time that is not apparent in household income.

**Figure 6. Median disposable income across quintiles (2001, 2008, 2016)**



Source: OECD calculations based on HILDA database.

13. Finally, examining decile ratios (Figure 7) reveals a similar picture of roughly unchanged overall income inequality (90/10 ratio) from the starting point to the ending point of the 15-year period, but quite some movement in between. The major driver of the fall in inequality since 2011 has been the bottom 50/10 decile ratio. On the other hand, based on personal income, top inequality (90/50 ratio) has risen since 2010.

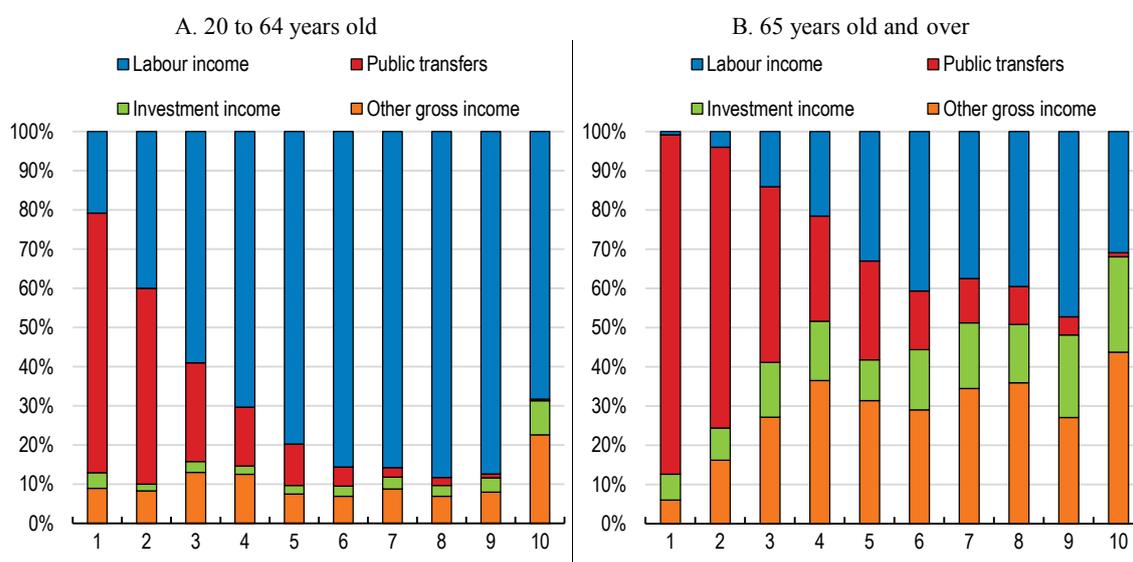
**Figure 7. Real disposable income decile ratios**

Source: OECD calculations based on HILDA database.

### *Composition of income across the income distribution*

14. Individuals at various points of the income distribution differ in their composition of gross income. Figure 8, panel A, depicts the composition of total gross income divided into labour income, public transfers, investment income and other income for the fiscal year 2015-16.

15. Households at the bottom receive a large share of their income from public transfers (mostly pensions and various allowances). Unsurprisingly, this is especially so for those aged 65 years and above. For working-age cohorts in particular, the higher we move up the income distribution, the higher is the share of labour market income; labour market income is generally strongly correlated with total gross income. For the top 10th decile, however, a large share of income comes from investment income and other income such as business and irregular income.

**Figure 8. Composition of gross household income by deciles**

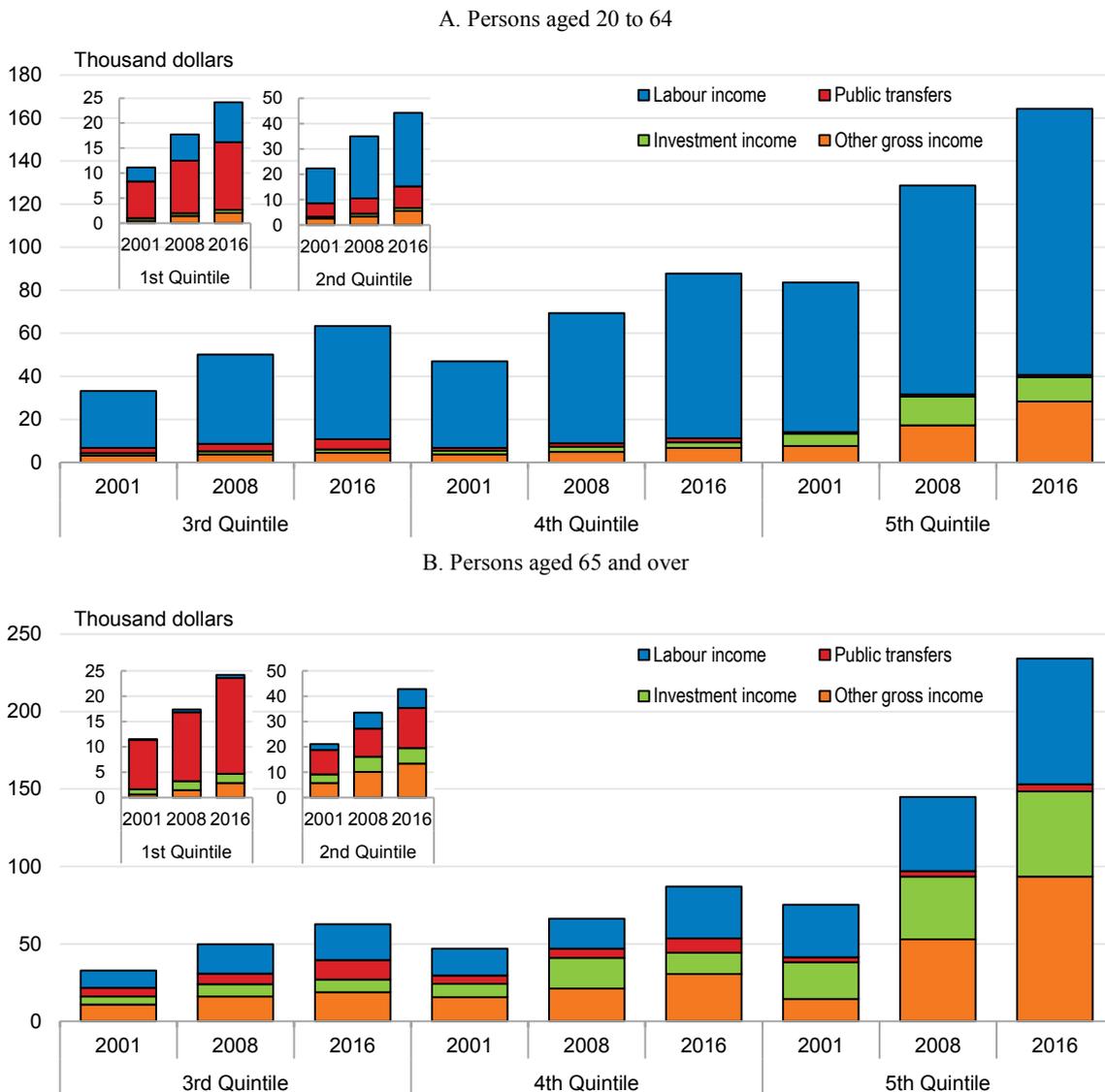
Source: OECD calculations based on HILDA database.

16. Over time, for all groups of working age, the growth in labour income was a major source in the rise of the dollar value of total income (Figure 9). The two bottom quintiles also experienced an important increase in public transfers, while the two top quintiles experienced important rises in other gross income (business income, private pensions and regular private transfers).

### Income inequality across regions

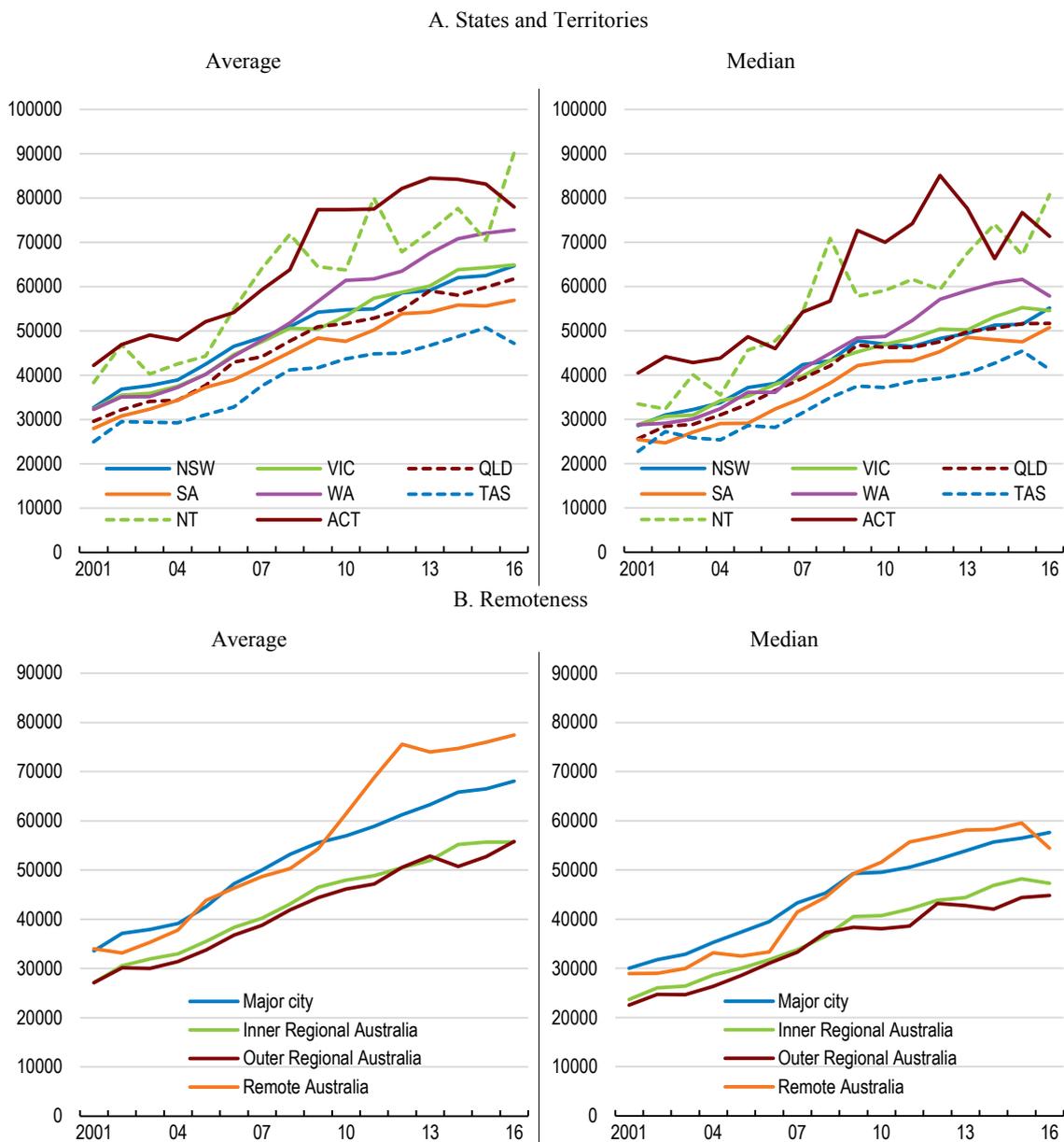
17. In this section we look at average household incomes across states and across different types of location, from major cities to remote areas. Figure 10 shows that differences across states can be quite significant. The median income in Australian Capital Territory is roughly twice the income in Tasmania, the poorest state. Generally speaking, differences across states in relative terms have not grown, but some states have recorded faster growth in income over the last 15 years, namely Western Australia, most likely in relation to the mining boom. The mining boom is also reflected in the fast rise in incomes in remote areas (Panel B). Nevertheless, one should keep in mind that remote areas have small populations, the majority of people live in major cities, and more than half live in the two most populous states New South Wales and Victoria.

**Figure 9. Gross household income components across quintiles over time**



Source: OECD calculations based on HILDA database.

**Figure 10. Equivalised disposable household income across states and remoteness**



Source: OECD calculations based on HILDA database.

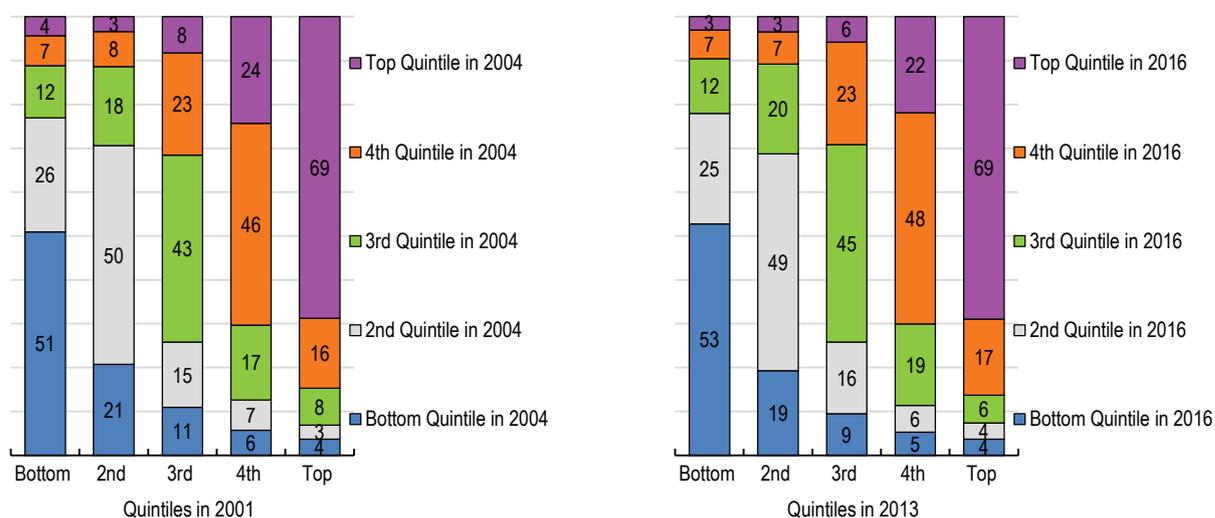
### Income mobility

18. Individuals or households can move from one quintile to another over time. For example, a new job or profitable investment can move a household from a lower quintile to a higher one; likewise, households experiencing income loss due to unemployment spell or retirement can move down the distributional ranks. Income mobility measures movement of individuals or households up or down the income distribution over time. As the HILDA data follows the same individuals and households over their life time it is particularly suitable for analysing this.

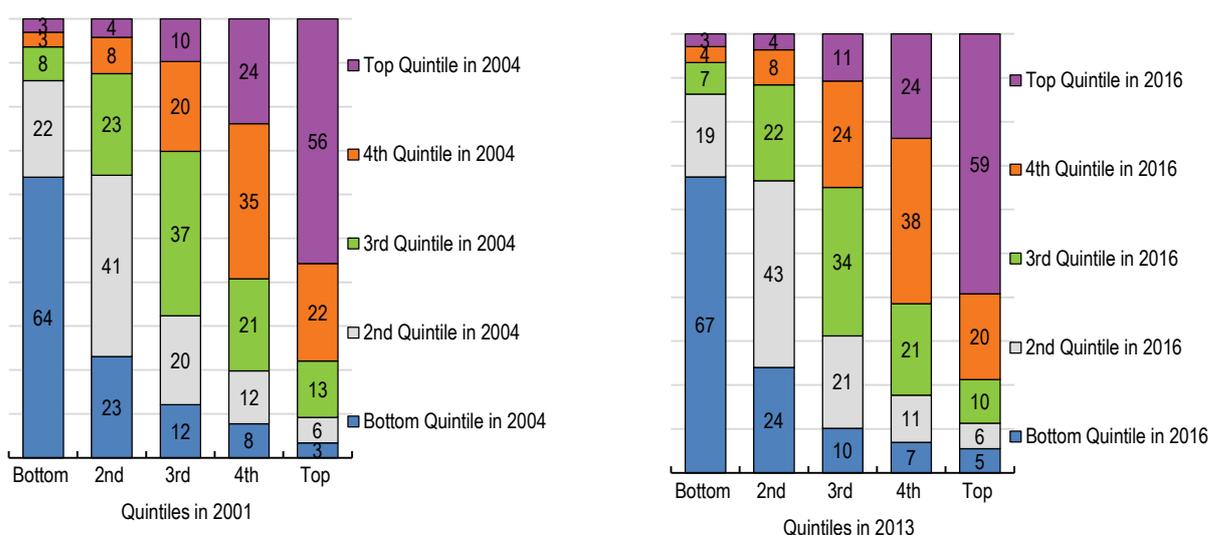
19. We report in Figure 11 income mobility over a three-year time span. As can be seen, income mobility has not changed much over the past 15 years. We report income mobility for the spells 2001-2004 and 2013-2016. As we can see, individuals and households primarily remain in the same quintile over a three-year period. For example, as measured by personal income for the 2013-2016 period, 53% of individuals remained in the bottom quintile. Interestingly, at the household level, inertia in the bottom quintile seems even more strongly cemented: measured by the equivalent household income, 67% of individuals remained in the bottom quintile in the period 2013-16. In contrast, for the rich, inertia at the household level is lower than at the individual level. 69% of those in the top quintile remained in the top quintile at the individual level, and only 59% at the household level.

**Figure 11. Income mobility - short-term**

A. Personal disposable income (20 and above)



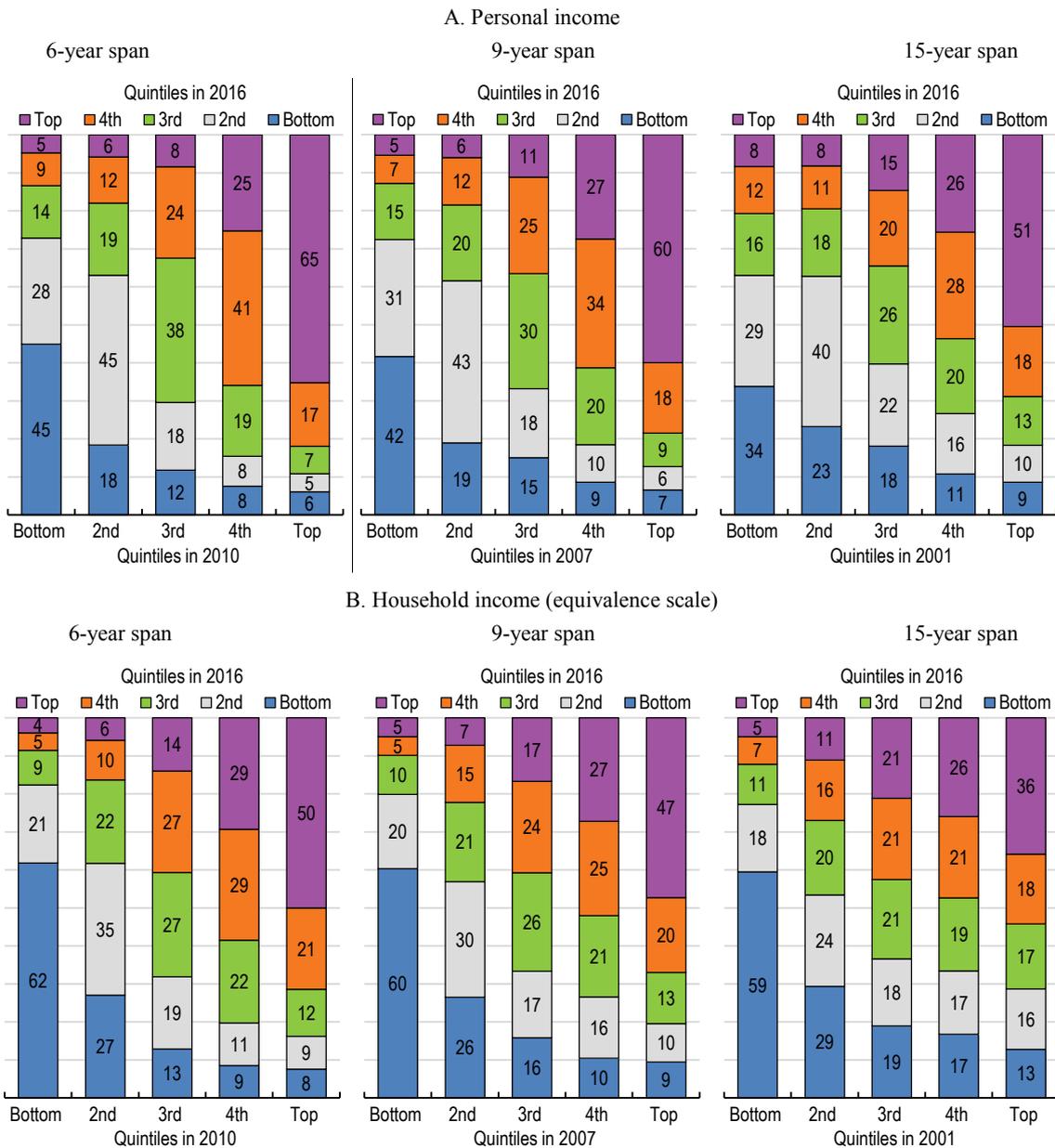
B. Household Income (equivalence scale)



Source: OECD calculations based on HILDA database.

20. Households in the middle of the distribution tend to be more mobile than at the bottom or at the top. The same result is reported also by Donovan et al. (2016) for US households. This result partly arises because households in the middle of the distribution can move up or down quintiles, while those in the end quintiles can only move in one direction. Nevertheless, from a policy perspective this finding is relevant as it suggests many poor households are stuck in their low income positions. Compared to the U.S. income mobility data reported in Donovan et al. (2016), Australia shows similar (low) degree of mobility for the bottom quintile, however, mobility of other quintiles seems a bit higher in Australia than in the United States.

**Figure 12. Income mobility - longer-term**



Source: OECD calculations based on HILDA database.

21. Mobility is likely to be higher over longer periods of time or across generations. Some of this mobility is to be expected, reflecting events in work and family life, such as promotions, having children, and retirement. Figure 12 depicts income mobility for a 6-year, 9-year and 15-year (the whole sample) time spans. As expected, the longer the time-span the higher the mobility is, and this holds for mobility upwards as well as downwards. Notably, with longer time-spans mobility at a personal level goes down much more dramatically than mobility at a household level. This reinforces the finding above that persistence of poor households in remaining poor is much higher at the household level. For other groups, on the other hand, mobility is significantly increased when increasing the time-span. OECD work on income mobility (OECD, 2018) finds that among eight OECD countries (including the US, Germany and France) where longer run data are available, Australia shows high income mobility. Furthermore, Australia has among the highest intergenerational earnings mobility across the sample of 24 OECD countries.

22. It is important to remember that (by definition) these results are based only on the households who are in the sample in both the first and last waves of the HILDA survey for the time-span covered. With respect to this, we can observe that the share of bottom quintile households that drop out of the sample over time is significantly higher than for other quintiles. This may be partly related to the higher share of older individuals in the bottom quintile who drop out of the sample due to death. Another possibility is that poor individuals, irrespective of age, have higher mortality due to worse health. If the way households drop out of the sample is endogenous to the question we are asking, then the results may be biased. Imagine an extreme case, when over a 15 year period all poor elderly households that remained in poverty drop out of the sample due to ill-health and death, while many of the poor young ones manage to climb the social ladder by getting jobs etc. The data would then point to higher social mobility than actually prevails.

## Wealth inequality

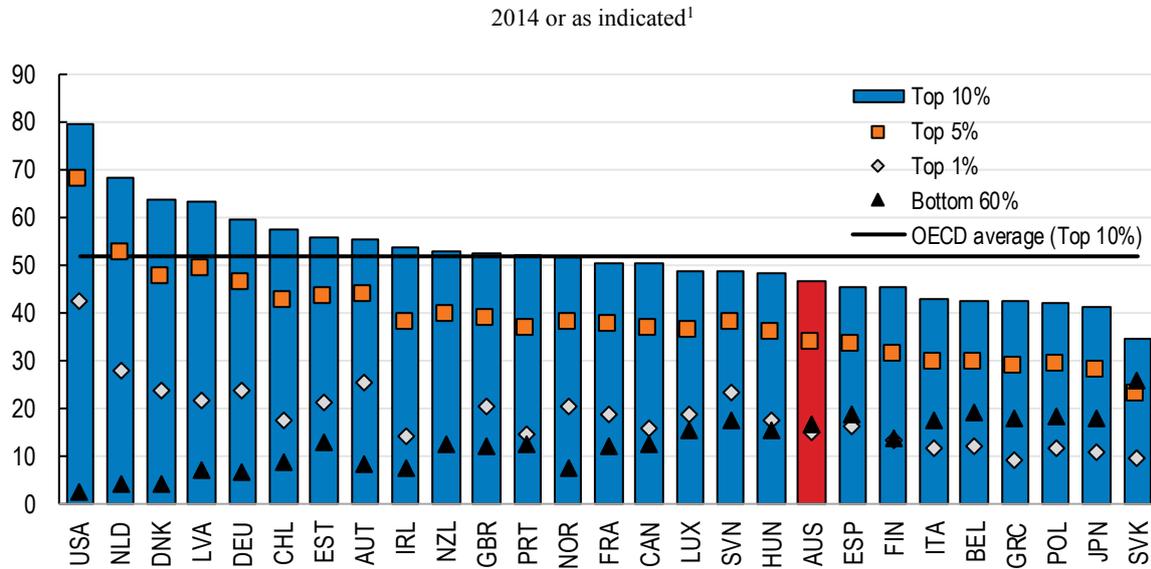
23. Among OECD countries, Australia appears to have relatively low wealth inequality, despite having above average income inequality (Figure 13), according to the OECD Wealth Distribution database. Measured by the share of wealth of the top 10% wealthiest households, Australia is in the bottom third of OECD countries. By the same token, Australia has a higher share of wealth that is held by the bottom three quintiles. These data includes real wealth (housing) and private financial assets, but it does not include any assets accrued through employer related pension schemes, or pension promises through public pensions schemes. The apparent disconnect between income inequality and wealth inequality is surprising. Generally, Murin and d'Ercole (2015) report that across OECD countries low-wealth households are typically low-income households while high-wealth households are typically high-income households. Nevertheless, they find that for Australia (and some other countries) this correlation is weaker, perhaps stemming from data difficulties and comparability issues when compiling wealth data across countries. Another possible explanatory factor for the lower correlation of wealth and income in Australia could be high incidence of home ownership.

24. In the HILDA Survey, data on wealth are collected every four years (starting in 2002, with the latest available year 2014) and are reported at the household level<sup>2</sup> only. We

<sup>2</sup> Questions to individuals about wealth cover housing, incorporated and unincorporated businesses, equity-type investments, cash-type investments, vehicles and collectibles. Respondents were also

compute wealth inequality in a similar way as income inequality, i.e. based on an equivalence scale: each individual is assigned a value of wealth equal to the household wealth divided by the square root of the number of household members (of all age).

**Figure 13. Wealth shares of top percentiles of the net wealth distribution in selected OECD countries**



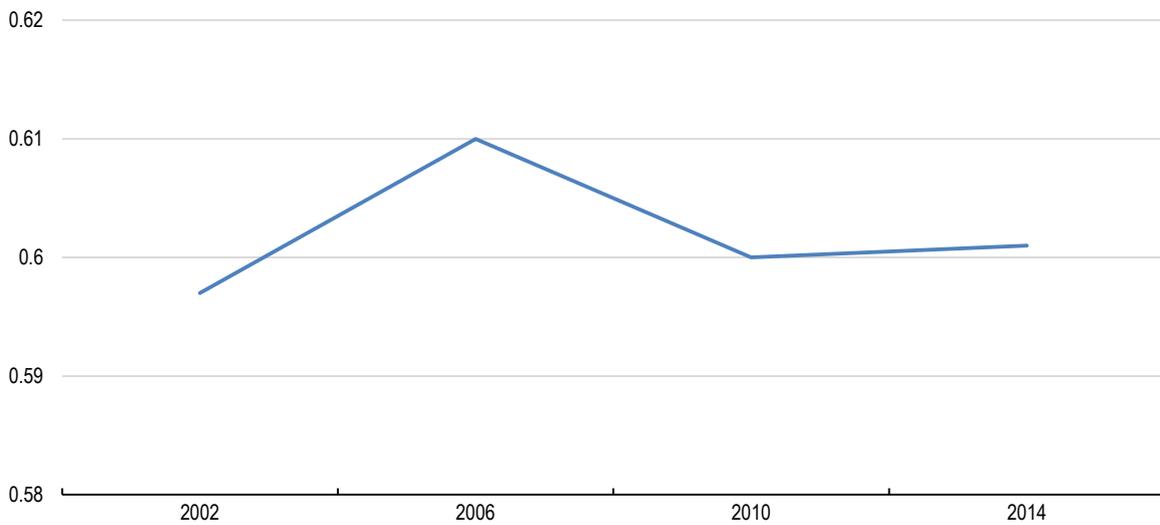
1. Data refers to 2012 for Canada and Spain; 2013 for Australia, Estonia, Ireland, Spain and Portugal; 2015 for Denmark, the Netherlands and the United Kingdom. 2016 for United States.  
 Source: OECD, Wealth Distribution database.

25. The Gini coefficient of net worth computed from HILDA does not indicate a sustained trend over the four available data points (Figure 14). In contrast, Dollman et al. (2015) report that wealth inequality in Australia has been on the rise over the last 15 years as measured by the Gini coefficient in net wealth or by the share of total wealth held by the richest households.

26. Figure 15, panel A, depicts real household net worth across quintiles for the years 2002, 2010 and 2014. Clearly, the data for the first quintile suggest that a substantial proportion of households have very small holdings of assets; the median net worth of the top quintile is almost 100 times higher than the median net worth of the bottom quintile. Net worth of the bottom quintile grew the fastest between 2002 and 2014, while from the second quintile upwards the growth was more similar across quintiles. The rapid rise of net worth for the bottom quintile is mostly due to a significant increase in superannuation over the last decade. Thanks to positive valuation effects and an increase in inflows, superannuation grew fast across the whole wealth distribution (Ryan and Stone, 2016), but because the share of superannuation in otherwise largely asset-free bottom quintile is much higher (see below), it contributed disproportionately to the growth of their wealth.

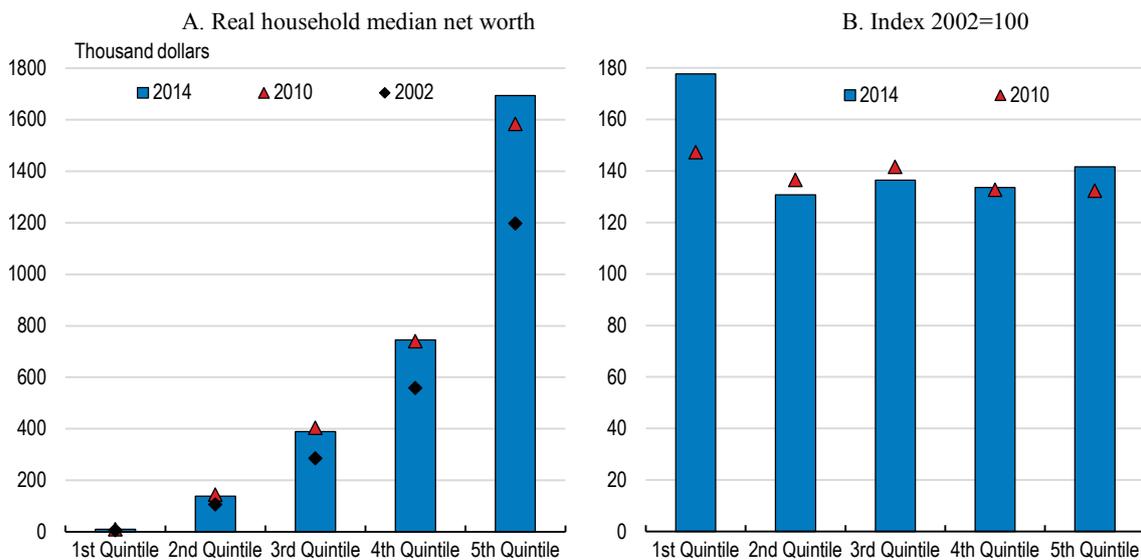
asked about superannuation, bank accounts, credit cards, student debt (Higher Education Contribution Scheme (HECS)) and other personal debt.

**Figure 14. Gini coefficient of net worth (HILDA)**



Source: OECD calculations based on HILDA database.

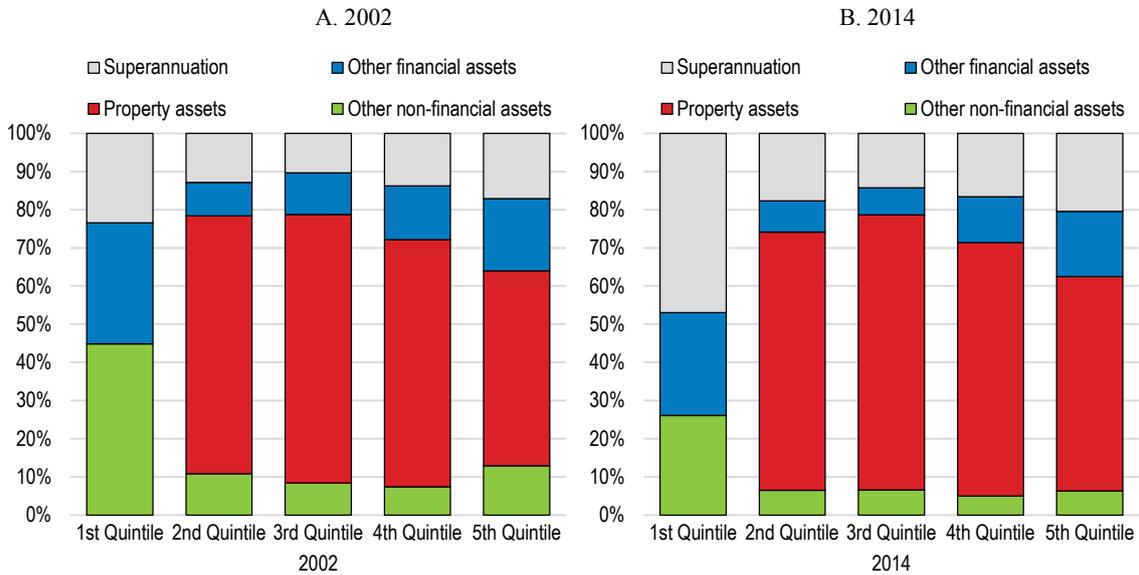
**Figure 15. Real household median net worth (equivalence scale)**



Source: OECD calculations based on HILDA database.

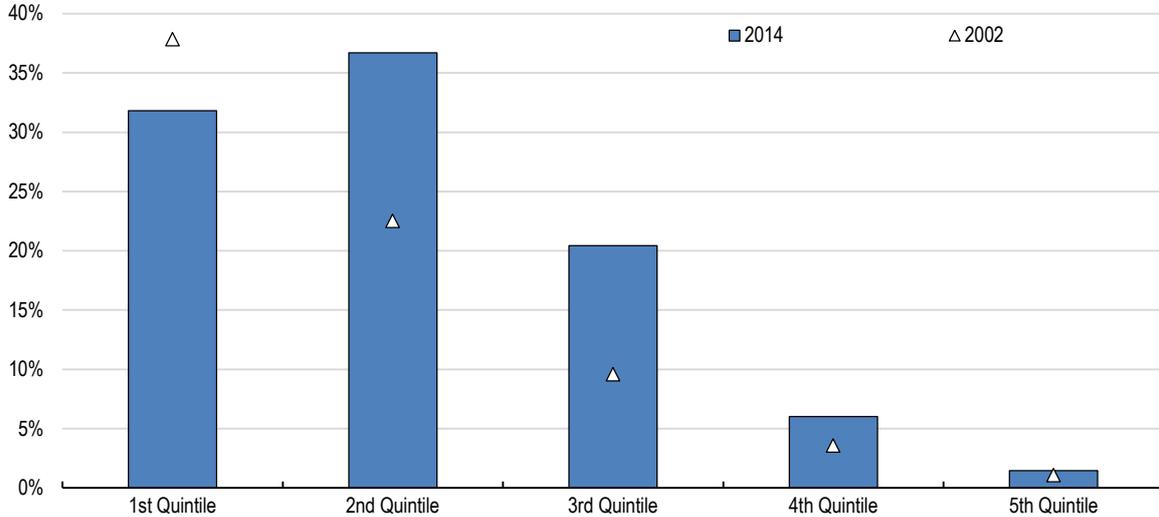
27. Figure 16 shows the composition of total assets across quintiles, where we can observe that households in the bottom quintile own no property assets. For households in other quintiles this is generally the largest component. For the top four quintiles superannuation and other financial assets gain in importance the higher we go on the wealth distribution. Furthermore, Figure 17 shows total household debt as a share of total assets. The bottom two quintiles have the highest share of debt in total assets. Overall, the share of debt in total assets increased significantly in the last 15 years (except for the bottom quintile), which probably reflects increasing mortgage debt.

**Figure 16. Composition of total household assets (2002 and 2014)**



*Note:* Financial assets include bank accounts, superannuation, cash investments, equity, trust funds and life insurance. Non-financial assets comprise property assets, business assets, collectibles and vehicles.  
*Source:* OECD calculations based on HILDA database.

**Figure 17. Total household debt as a share of total assets**

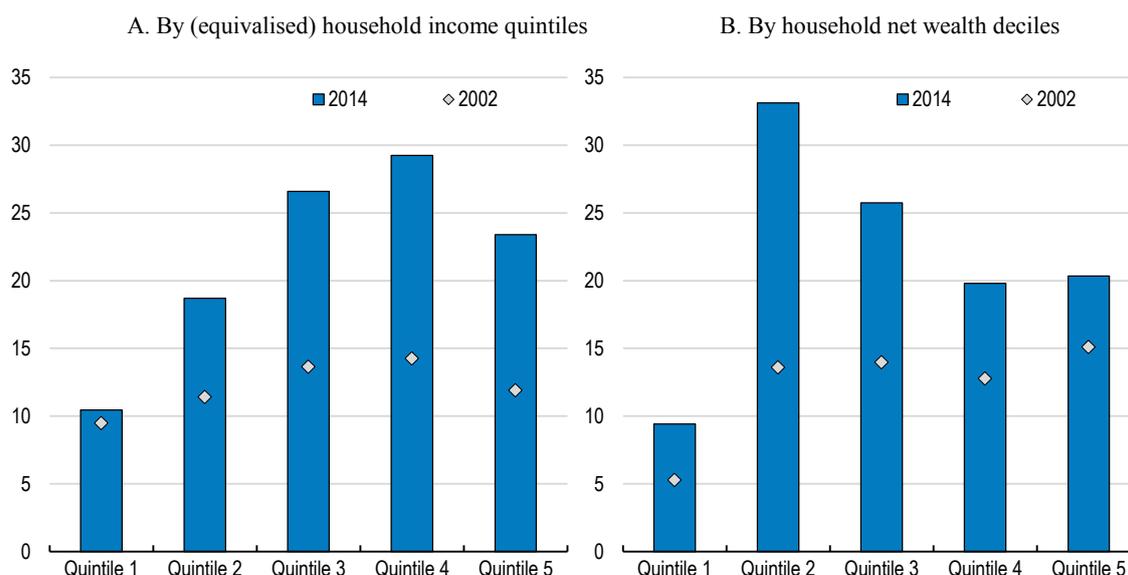


*Source:* OECD calculations based on HILDA database.

28. The incidence of high indebtedness – as measured by the incidence of total gross debt in excess of three times the annual household income (Figure 18) - has also been on the rise in Australia. It should nevertheless be stressed that increasing levels of high indebtedness do not necessarily indicate worrying developments. Increases in indebtedness without large shifts in net debt (as for example taking out a mortgage to buy a house) or when interest rates are low (and consequently debt servicing burden does not increase correspondingly with higher gross debt) need not create financial problems for households.

High indebtedness nevertheless shows certain level of exposure, in particular when there is a risk of large shifts in interest rates in the future. In Figure 18 we show high indebtedness across quintiles of both income and net wealth distribution. With respect to income distribution, households with higher incomes tend to be more highly indebted. Across net wealth quintiles, it is the second and third quintiles that have the highest incidence, the two quintiles that have also recorded the biggest increases over time. On both accounts, the bottom quintiles record the lowest share of households that are highly indebted.

**Figure 18. Share of highly indebted households**



*Note:* The “highly indebted” threshold has been set as household debt being three times the household disposable income.

*Source:* OECD calculations based on HILDA database.

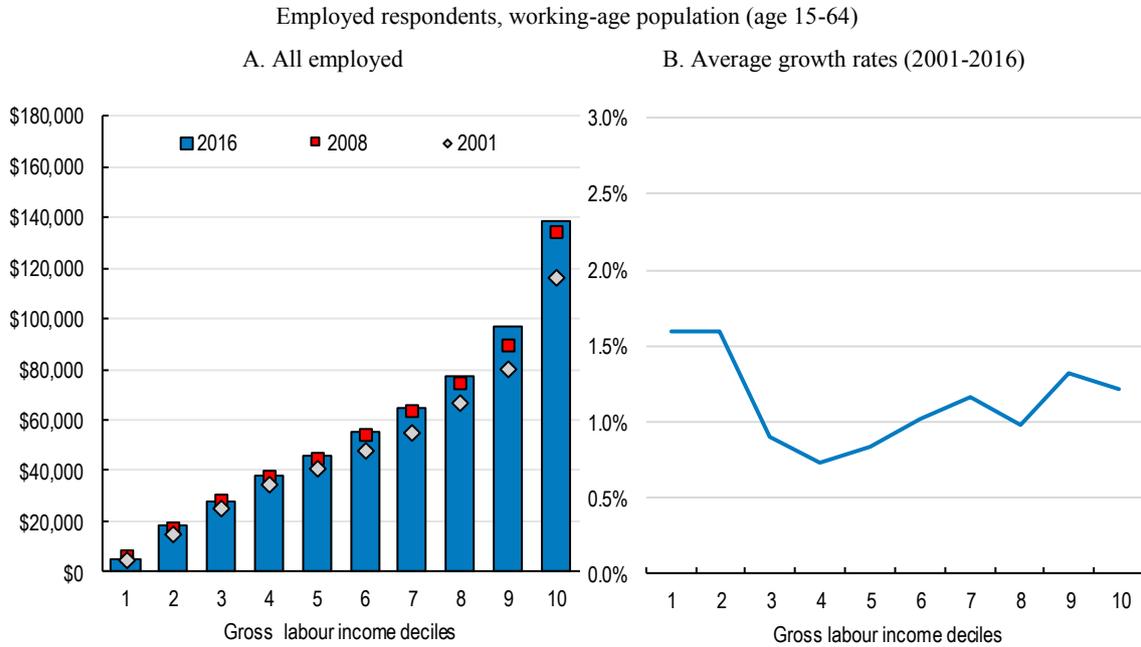
## Labour market income inequality

29. Now we turn to labour market income inequality. Labour earnings are the largest component of income for most Australians and thus the most important driver of income inequality. In general, labour market income is positively correlated with total gross income, as higher income individuals tend to be employed and work more hours on average. Greenville et al. (2013) report for Australia that at the household level, the impact of growing dispersion in hourly wages has been offset by increased employment and a decline in the share of jobless households. This greater participation in the workforce and longer hours worked had an especially strong impact at the low end of the labour income distribution (part-time workers). We analyse labour income inequality at a personal level, using HILDA data.

30. Figure 19 shows total annual labour income and average growth over time for all employed individuals (employees and self-employed) of working age (15-65 years) across deciles of labour income distribution. The chart in panel B clearly shows a U-shaped curve, where labour incomes at the bottom and at the top grew faster than in the middle. Figure 20 depicts decile ratios, and no strong trend in inequality over the observed period is apparent from the 90/10 earnings gap. Similar to overall income inequality, there seems to

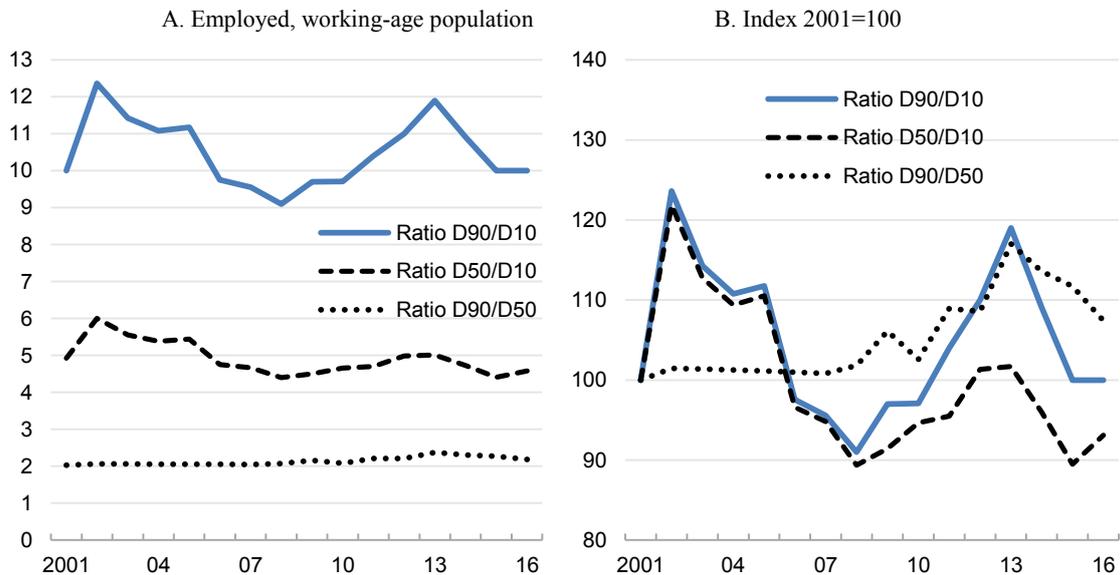
have been a general rise in top inequality (90/50 ratio) and a reduction in the bottom inequality (50/10) over the 15 year period.

**Figure 19. Median total annual pay across deciles of gross labour income**



Source: OECD calculations based on HILDA database.

**Figure 20. Real earnings percentile ratios (age 15-64)**



Source: OECD calculations based on HILDA database.

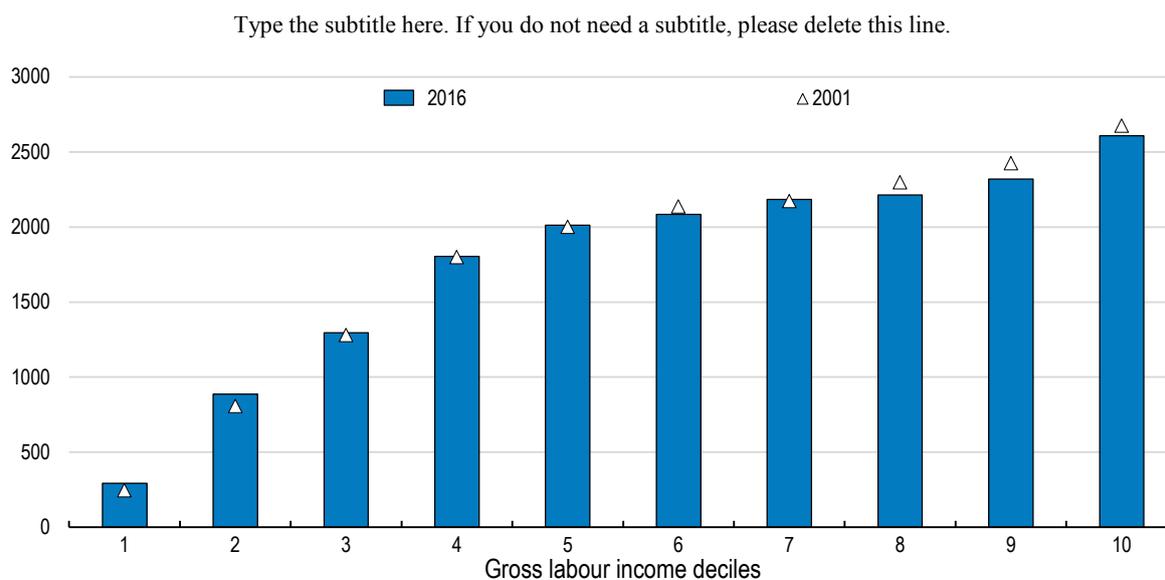
31. Inequality in labour market earnings stems from differences in the amount of work that individuals do and from differences in the rate of pay (wage) they receive. To shed

some light on the sources of labour income inequality, in the following two sections we look at the amount of work in Australia and earnings of full-time workers across the labour income distribution.

### *Earnings inequality and hours of work*

32. Figure 21 depicts the distribution of total annual hours worked for all employed individuals across the deciles of annual labour income. It is important to note that the total annual hours variable is an indirectly obtained variable and it hence contains a lot of noise. We derive it by first obtaining an estimate for hourly wage (by dividing HILDA weekly earnings by weekly hours) and then dividing total annual labour income with the estimated hourly wage. Nevertheless, the apparent evolution is consistent with the results reported in Greenville et al. (2013). Hours worked have been growing at the bottom of the distribution, while they have been falling or remained the same elsewhere. Greenville et al. (2013) assign much of the increase in hours worked to part-time workers who are predominantly concentrated at the lower end of the labour income distribution. We can observe in Figure 22 that the incidence of part-time work is indeed highest at lower deciles. Furthermore, the incidence of part-time work has been on the rise.

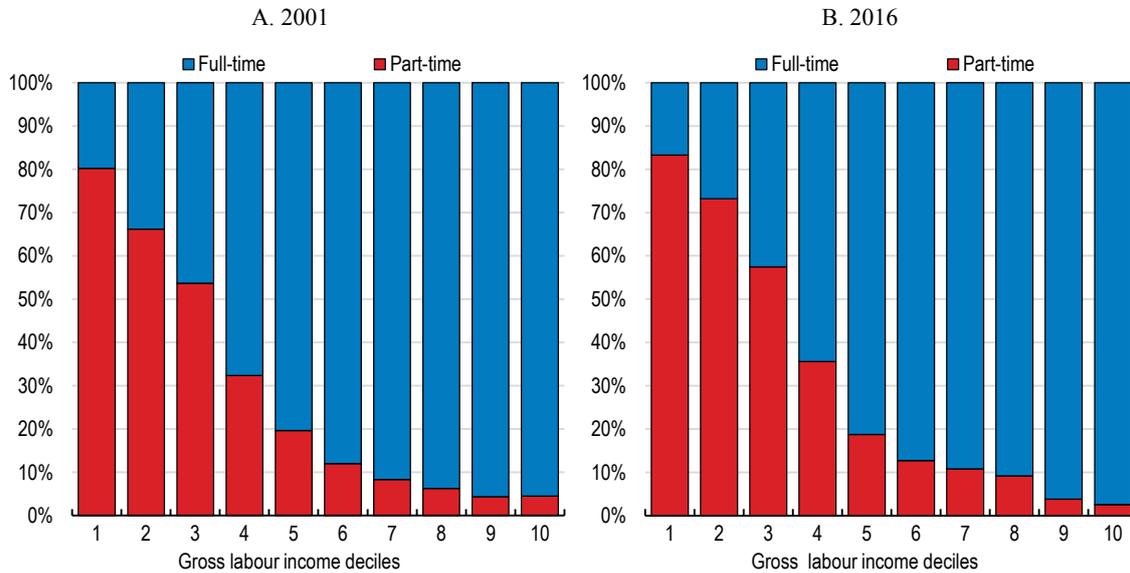
**Figure 21. Median annual hours of work across deciles of labour market income**



Source: OECD calculations based on HILDA database.

33. Longer working hours and higher participation are associated with structural changes in the Australian labour market over recent decades, whereby female participation and incidence of part-time work, for both sexes, have been on the rise (Borland and Coelli, 2016). Figure 23 shows these trends since 1980 based on the OECD data. Female employment ratio has risen from below 50% in the early 1980s to close to 70%. The employment ratio of men, on the other hand, has slightly declined. The incidence of part-time work has risen for both groups and even more strongly for men, albeit from a much lower base.

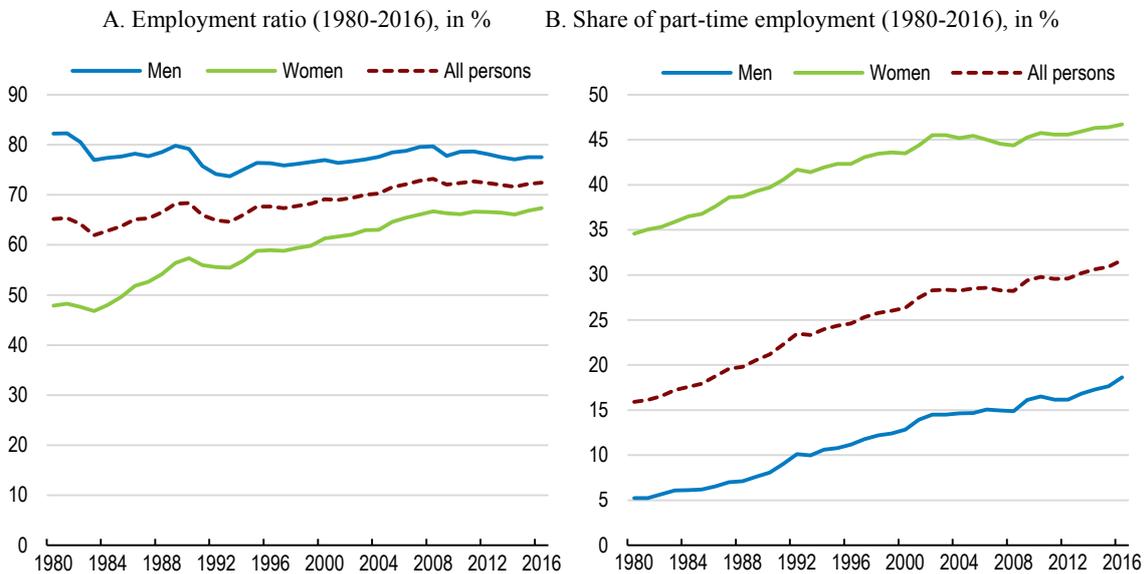
**Figure 22. Incidence of part-time work**



Note: Workers are defined as employed part-time if they usually work less than 35 hours a week (ABS definition).

Source: OECD calculations based on HILDA database.

**Figure 23. Female participation and the incidence of part-time work have risen**



Note: In panel A, the employment ratio, or the employment-to-population ratio, is defined as the proportion of the working-age population (15 to 64 years old) that is employed. Panel B shows the proportion of persons (total and by gender) employed part-time among all employed persons.

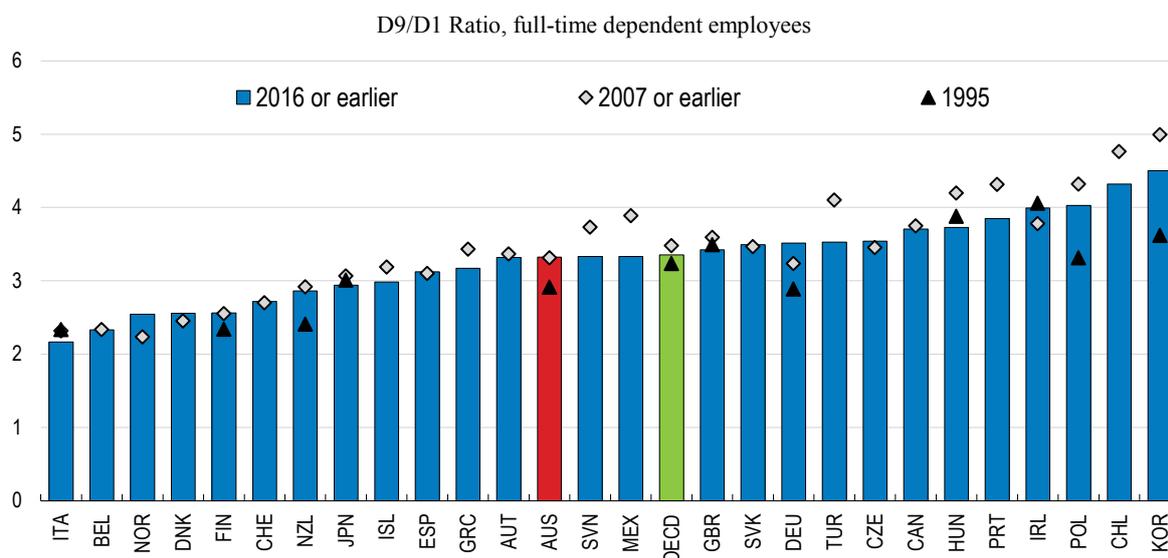
Source: OECD, Labour Force database.

**Earnings inequality and the rate of pay**

34. The rate of pay of those working is another important component of earnings inequality. Figure 24 shows OECD data on gross earnings inequality for full-time

employees across countries and over time, measured by the decile ratio (90/10). The data suggest that Australia ranks somewhere close to the middle among OECD countries with respect to the inequality in gross earnings of full-time employees. Over time, earnings dispersion increased, mostly in the period before the global financial crisis.

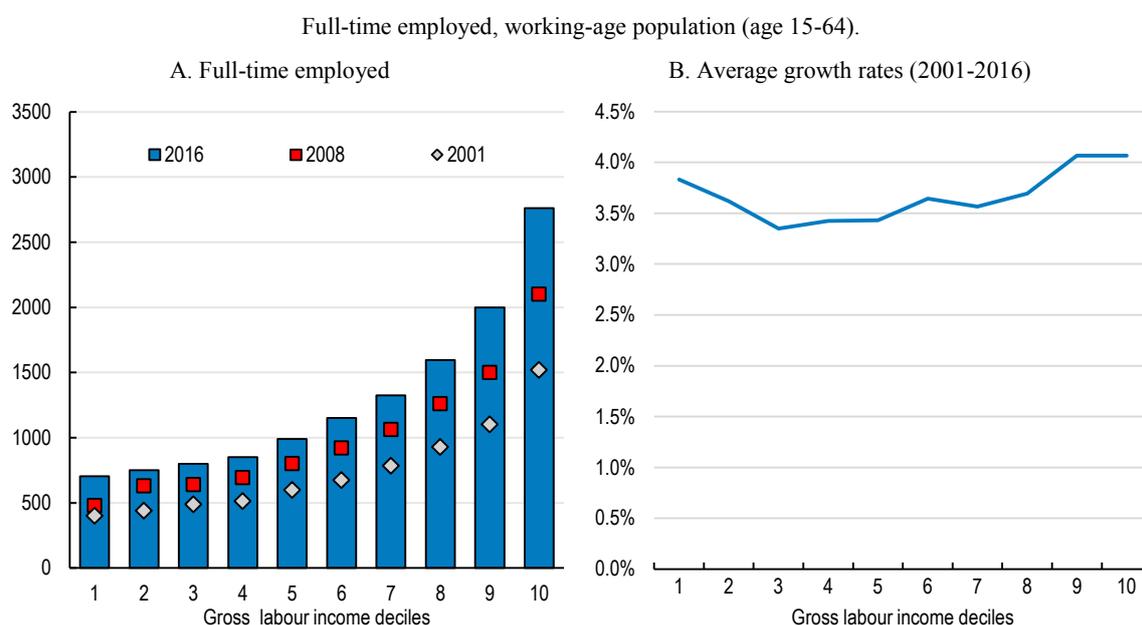
**Figure 24. Decile ratios of gross annual earnings (1995-2016)**



2014: Belgium, Estonia, France, Italy, Latvia, Luxembourg, the Netherland, Slovenia, Spain, Switzerland.  
 2015: Chile, Denmark, Finland, Germany, Ireland, Japan, Norway and Poland. 2006 for Slovenia, Spain, Poland, Italy and Chile.

Source: OECD Earnings database.

35. According to HILDA data, weekly earnings of full-time employees grew fastest at the top of the distribution over the last 15 years (Figure 25). Apart from the lowest two deciles, we can observe a roughly monotonic progression in the growth of weekly earnings across the labour income distribution. The higher is the labour income decile the higher the growth in the rate of pay, consistent with Borland & Coelli (2016) who report that, over the last four decades, weekly earnings for full-time employees grew significantly more for the top earners than for bottom earners. Evolution in the rate of pay has therefore contributed to rising income inequality in Australia.

**Figure 25. Median weekly pay across deciles of gross labour income**

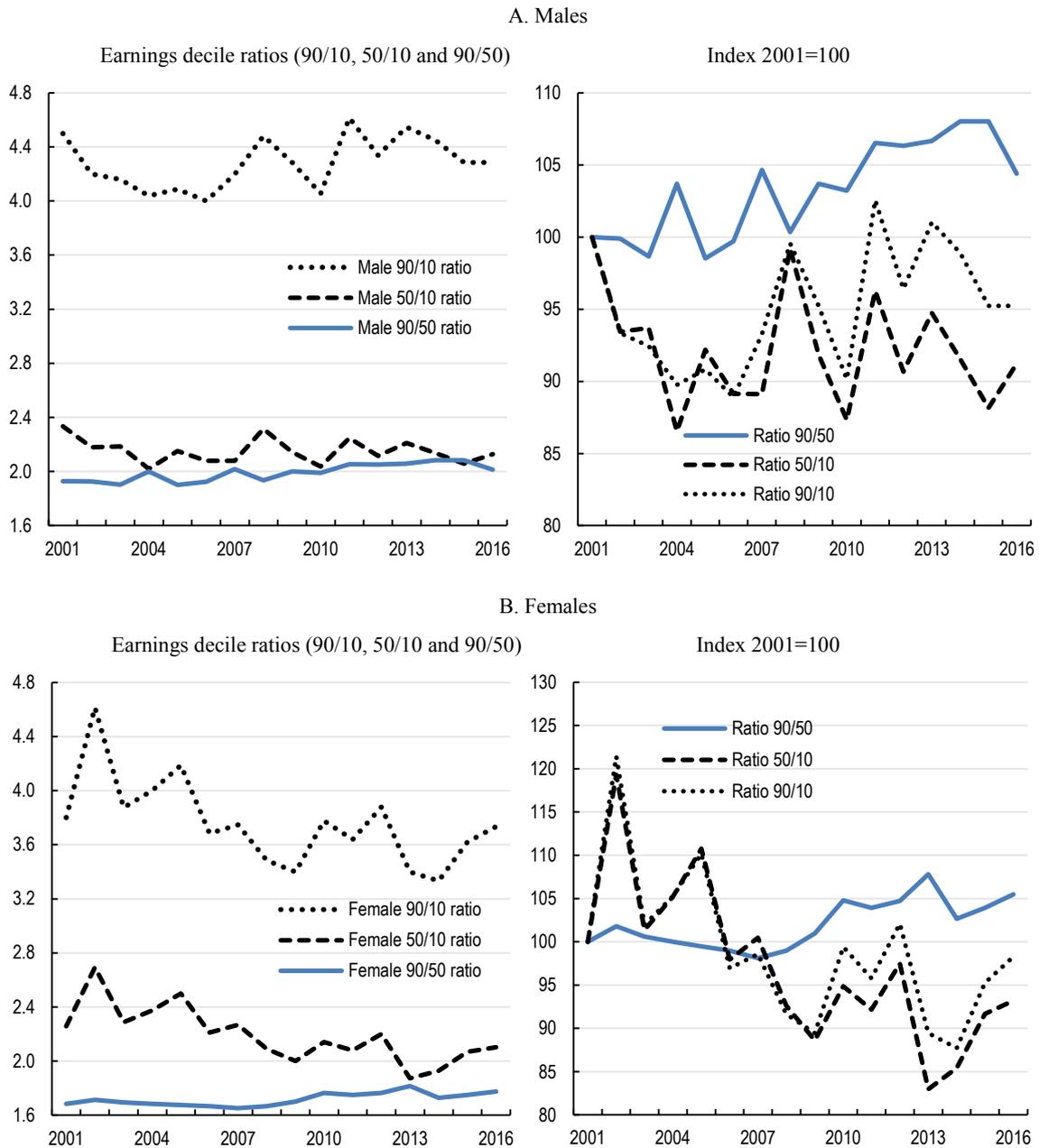
Source: OECD calculations based on HILDA database.

36. The evolution of earnings decile ratios (90/10, 90/50 and 50/10) for full-time employees by gender is depicted in Figure 26. The figures confirm the findings from above. For both male and female workers top-end inequality (90/50 ratio) has been on the rise, while bottom-end inequality (50/10 ratio) fell (especially for women), as bottom earners recorded faster growth in earnings over the observed period.

37. Borland & Coelli (2016) report that the rising earnings inequality in Australia over the last four decades is linked to changes in the occupation composition of employment. At the same time, however, they report that the earnings differentials between workers with different levels of education attainment have remained stable, which they interpret as reflecting a large recent rise in the numbers of university graduates. Chatterjee et al. (2016) report that the rising wage inequality in Australia cannot be explained by observable factors such as education or experience but unobservable or residual factors reflecting idiosyncratic risk and unexpected labour market outcomes.

38. We explore HILDA data to better understand the evolution of wages across education groups and occupations over the last 15 years. Figure 27 shows median labour market income across different education levels for full-time employed workers. The data are rather erratic, probably due to the sample size getting small at this level of disaggregation. For both men and women it appears that the rate of pay of the highest education group (Masters and PhDs) has grown the least over the last 15 years, particularly in the last several years. On the other hand, median wages of those with certificate III or IV appear to have grown the fastest. It is not obvious from the chart what has happened with overall inequality across education levels. However there are indications that wage gaps have generally been slightly reduced. Further analysis shows that the percentage gap between highest and lowest median wage has been slightly reduced, and variation across education groups (measured by the coefficient of variation) has also declined.

**Figure 26. Decile earnings ratios (full-time employed) by gender**

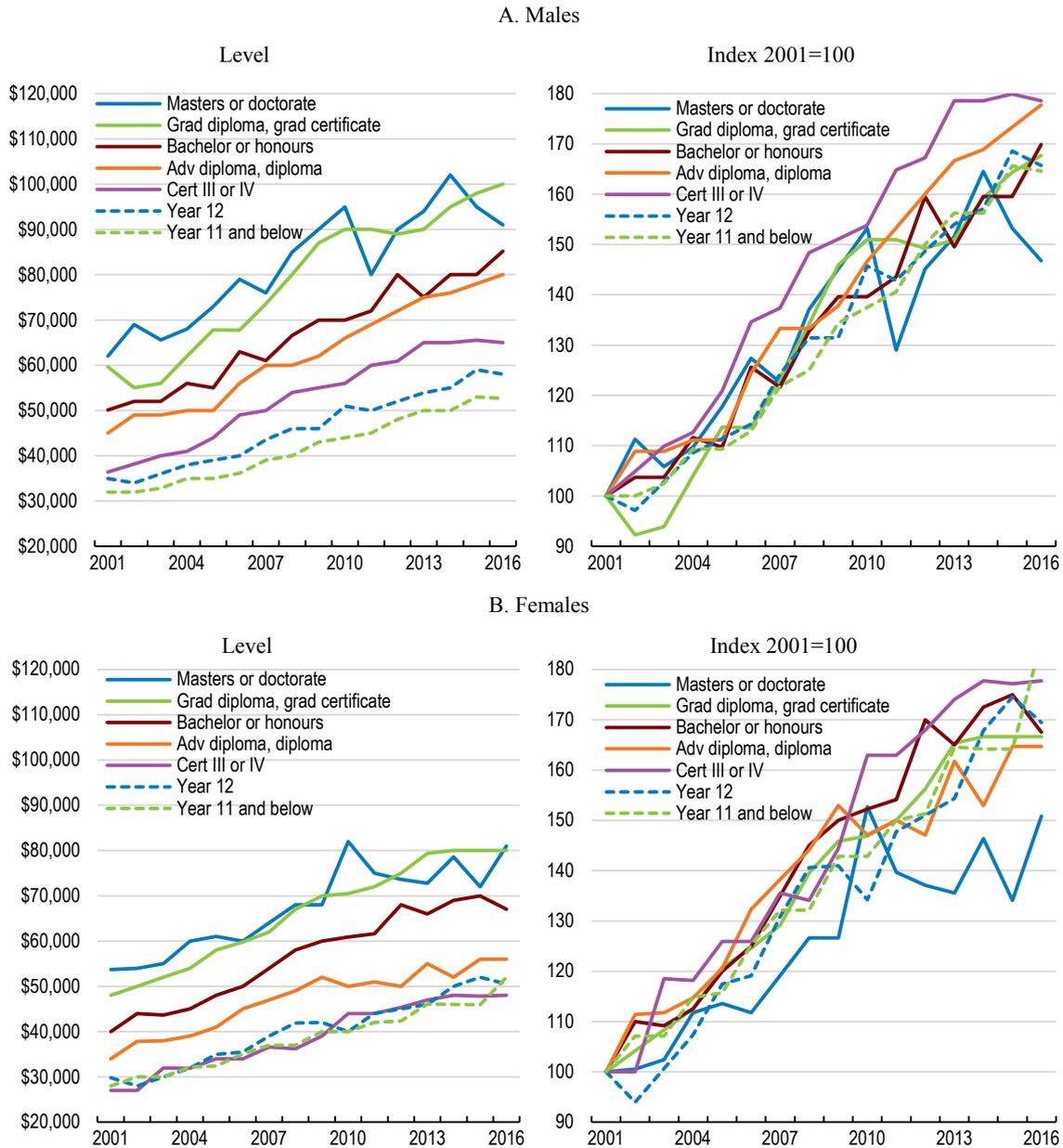


Source: OECD calculations based on HILDA database.

39. Globalisation and technical change can impact the relative rate of pay and employment opportunities among different occupations. Technological progress has favoured certain skills compared to others, and information and communication technology can replace certain tasks better than others. This in turn is reflected in the labour market where we can observe job polarisation: a decline in the share of middle-skill, middle-pay jobs relative to jobs with higher or lower skill levels (OECD, 2017). Coelli and Borland (2016) find evidence of job polarisation in Australia, although they report that the effect

was mostly concentrated in the 1980s and 1990s. All this also has a bearing on the earnings distribution.

**Figure 27. Median earnings (full-time employed) by level of education**

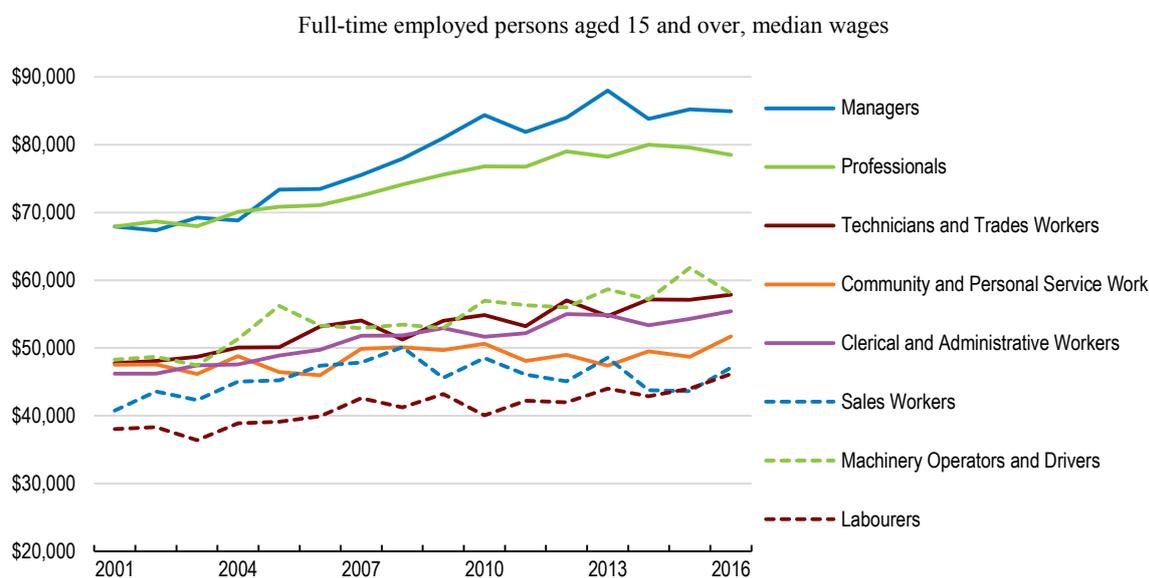


Source: OECD calculations based on HILDA database.

40. Using HILDA data, we depict differences in earnings across different skill and occupation groups (Figure 28 and 29). While there have been no large shifts in relative pay across occupations, a clearer picture emerges when the occupations are grouped into high-skill, medium-skill, and low-skill occupations. This is shown in Figure 28, where it is clearly seen that higher skills attract higher salaries. The gap in wages between high and

low skilled was rising between 2007 and 2014. It has started to close since then, but it still remains larger than in the early 2000s.

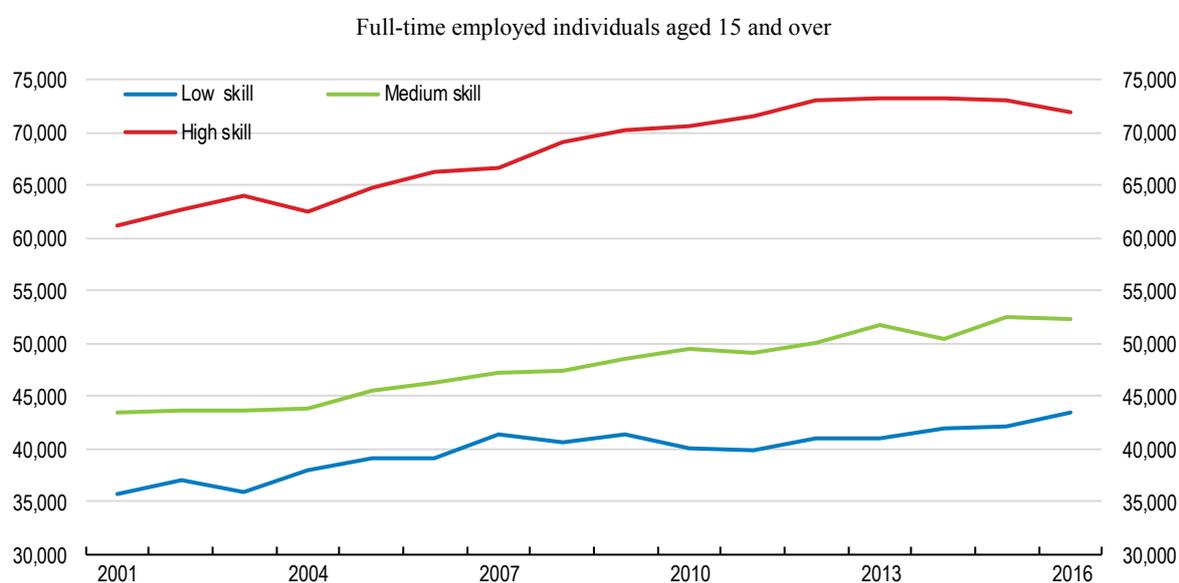
**Figure 28. Real wages by occupation**



Note: Full-time employed respondents reporting positive values for earnings.

Source: OECD calculations based on HILDA database.

**Figure 29. Real median wages and salaries for occupations requiring different skills levels (2001 to 2016)**

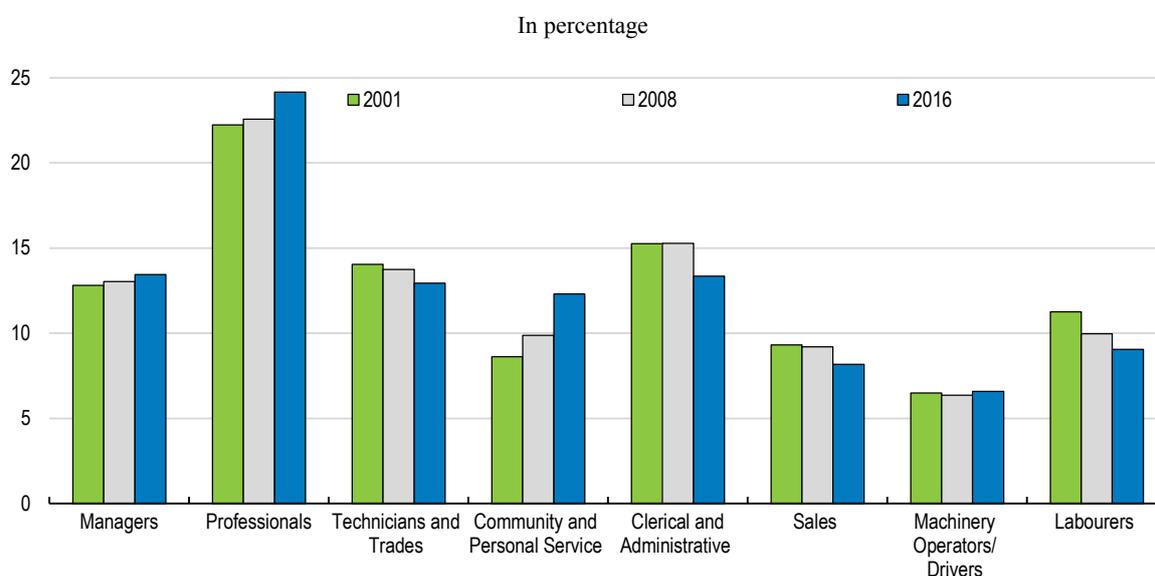


Note: Occupations are ranked by wage level following Autor and Dorn (2013) and Goos et al. (2014). High-skill occupations include jobs classified under the ISCO-88 major groups: legislators, senior officials, and managers (group 1), professionals (gr. 2), and technicians and associate professionals (gr. 3). Middle-skill occupations include the ISCO-88 major groups: clerks (gr. 4), craft and related trades workers (gr. 7), and plant and machine operators and assemblers (gr. 8). Low-skill occupations include the ISCO-88 major groups: service workers and shop and market sales workers (gr. 5), and elementary occupations (gr. 9).

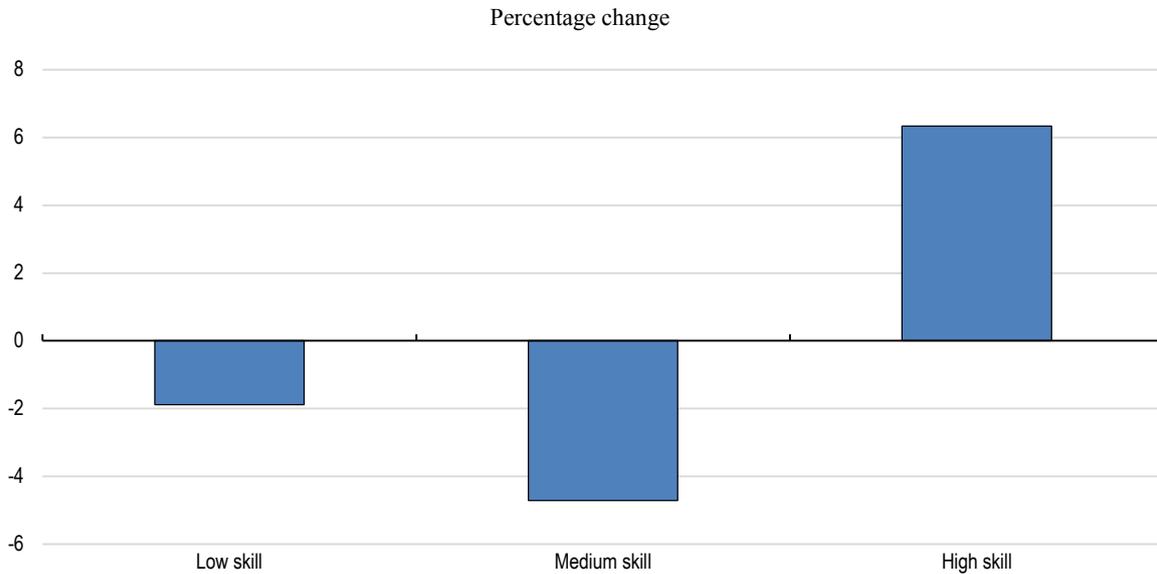
Source: OECD calculations based on HILDA database.

41. Finally, we consider changes in employment over time across various occupation and skill groups. Figures 30 and 31 show supporting evidence for job polarisation - the gradual decline in the share of middle skilled jobs - jobs where routine tasks can increasingly be performed by computers and robots. Figure 30 shows changes in employment shares by occupations and Figure 31 changes in employment shares across skill groups. Employment share of professionals (high skilled) and personal services workers (medium skill, non-routine) has increased significantly, while that of clerical workers (medium skill, routine), service and sales workers (low skill, non-routine) and labourers (medium skill, routine) has decreased. The changes in these shares are however not only related to automation and decline of the manufacturing sector, but also to other structural changes such as population ageing and greater demand for personal services.

**Figure 30. Employment shares by occupation (2001-2016)**



Source: OECD calculations based on HILDA database.

**Figure 31. Changes in employment shares by skill groups (2001-2016)**

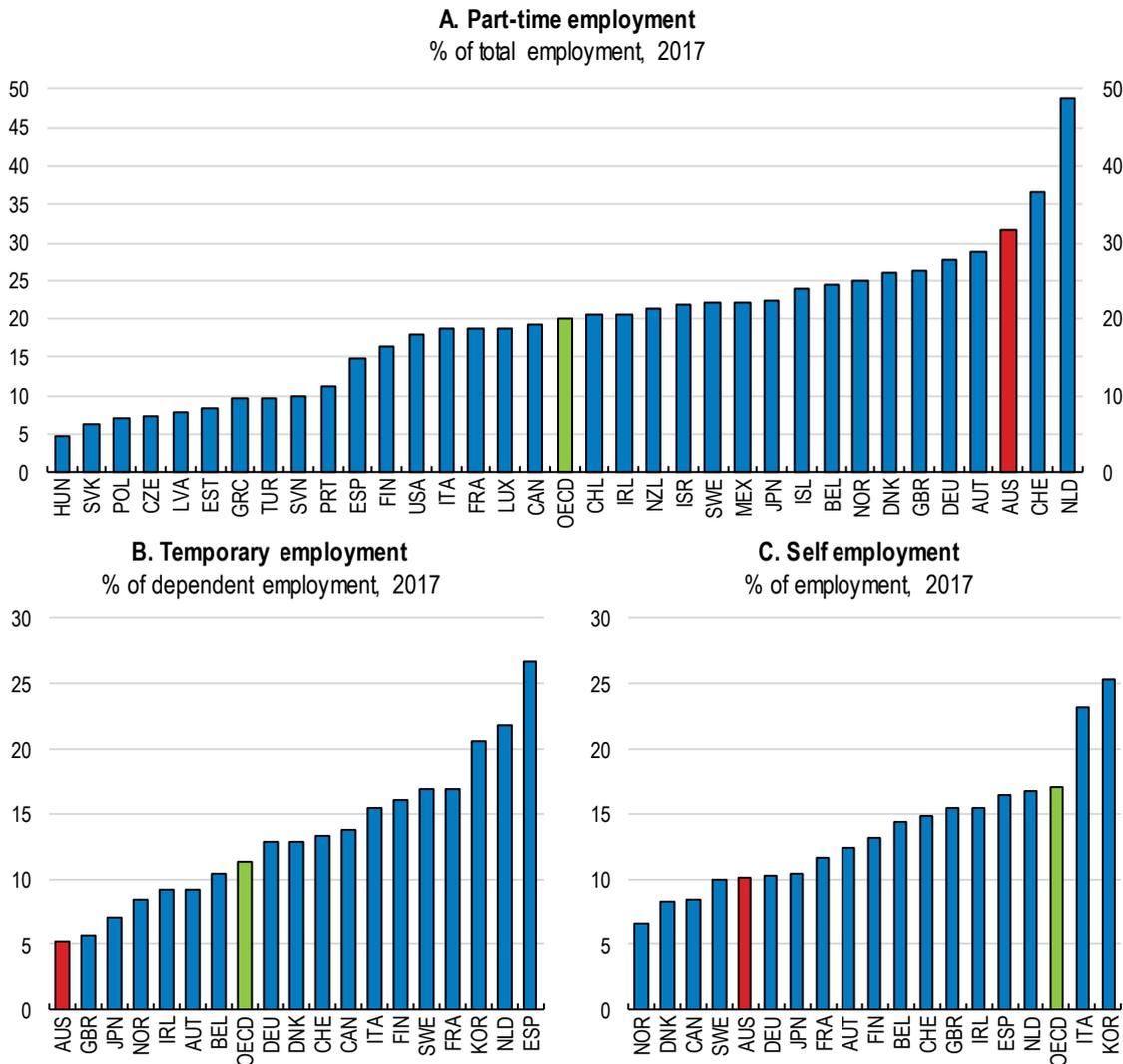
*Note:* Occupations are ranked by wage level following Autor and Dorn (2013) and Goos et al. (2014). High-skill occupations include jobs classified under the ISCO-88 major groups: legislators, senior officials, and managers (group 1), professionals (gr. 2), and technicians and associate professionals (gr. 3). Middle-skill occupations include the ISCO-88 major groups: clerks (gr. 4), craft and related trades workers (gr. 7), and plant and machine operators and assemblers (gr. 8). Low-skill occupations include the ISCO-88 major groups: service workers and shop and market sales workers (gr. 5), and elementary occupations (gr. 9).

*Source:* OECD calculations based on HILDA database.

### *Non-standard workers and duration of contracts*

42. According to OECD data, Australia has quite a high share of workers in so called non-standard employment, which OECD (2015) categorises as workers that work part-time, on temporary contracts or as self-employed (Figure 32). In Australia, it is part-time work that dominates, while the shares of self-employment and temporary work are comparatively low (these groups are not mutually exclusive, workers can work part-time and be on a temporary contract, for example). Across the OECD, non-standard employment has been on the rise since 1990s. Non-standard employment can be associated with poorer labour conditions (wages, working time, job security, leave entitlements, etc.), less training and poorer job prospects. Yet, at the same time, part-time, temporary and self-employment arrangements may be attractive to certain workers as they offer higher flexibility, and might have been chosen voluntarily (OECD, 2015).

Figure 32. Share of non-standard employment



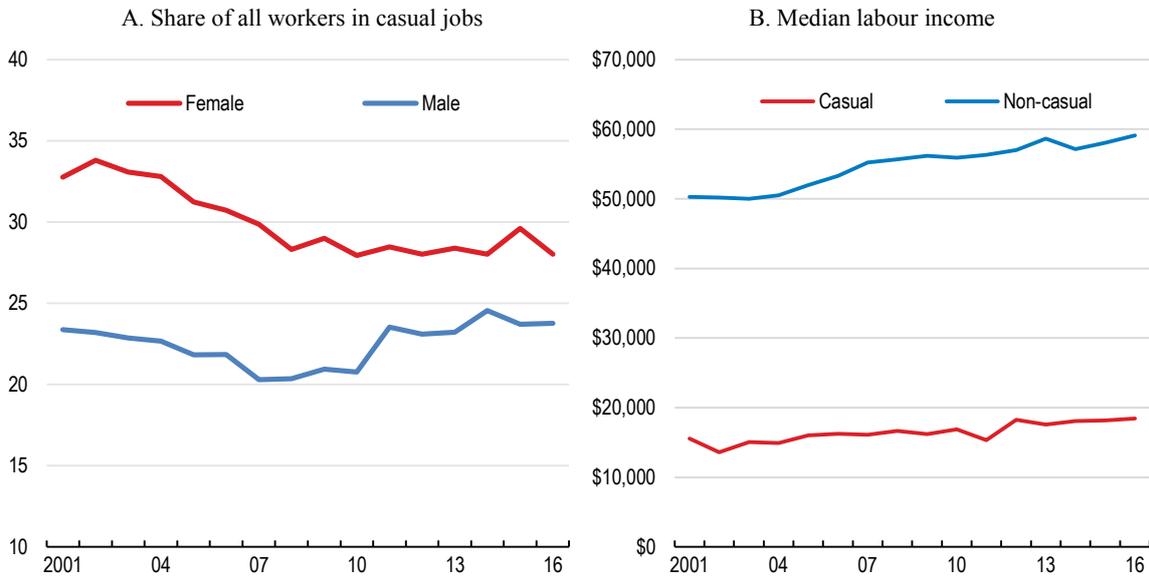
Source: OECD, Labour Force Statistics database.

43. Borland and Coelli (2016) report that the incidence of casual employment (those that receive no paid sick leave or holiday leave – a narrower definition to the non-standard work above) in Australia has risen since the 1980s, especially for females, but it peaked in the 2000s and then started falling. We find support for this in the HILDA data; there have been no large increases in casual employment in the last 15 years. As shown in Figure 33, the share of men in casual jobs fell until about the time of the global financial crisis, but has risen since. For females, similarly, the falling trend stalled with the crisis, and it shows tentative signs of reversal in the most recent periods. The incomes of casual workers are significantly lower than of other workers (panel B), and this has to do partly with lower hours and lower experience, but the gap seems to be rising.

44. Borland and Coelli (2016) furthermore report that employment contracts have, contrary to popular belief, on average become of longer duration. HILDA data again support this finding; between 2001 and 2016, contracts have become of slightly longer duration for both men and women (Figure 34). Nevertheless, Australia has recorded rising

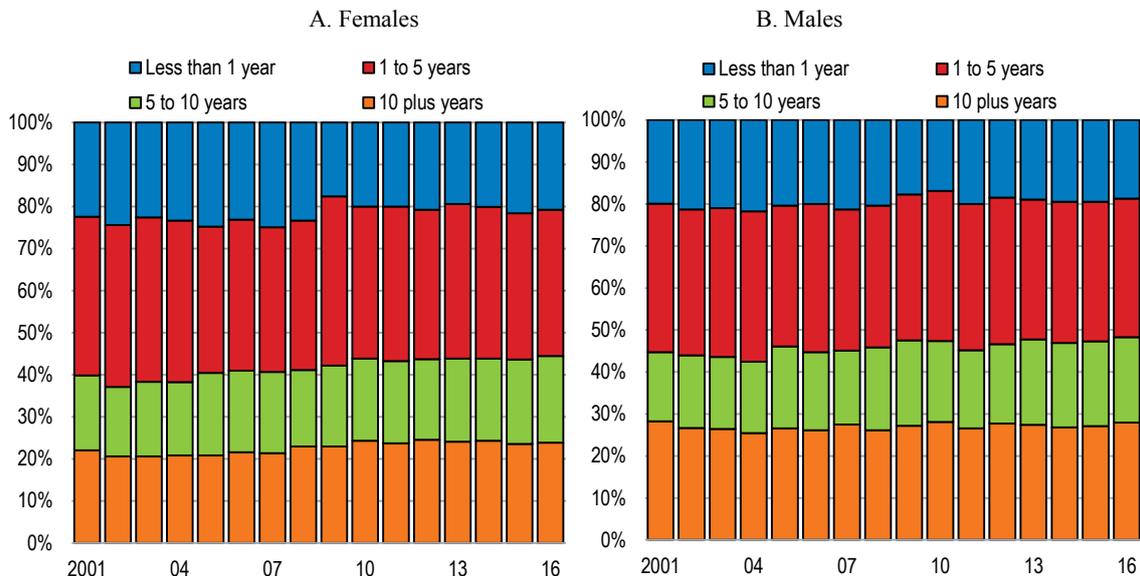
underemployment - workers who work part-time but would prefer to work longer hours if they had a chance. From about the mid-1990s underemployment has risen, in particular for young workers (15-24) among whom the incidence of part-time work has risen rapidly (Borland and Coelli, 2016).

**Figure 33. Share of workers in casual jobs, by gender, 2001-2016**



Note: ABS definition, no paid holiday leave and no paid sick leave.  
 Source: OECD calculations based on HILDA database.

**Figure 34. Duration of current jobs, by gender, 2001-2016**



Source: OECD calculations based on HILDA database.

## Conclusion

45. This paper analyses income, wealth and earnings inequality in Australia. Evidence from OECD data shows that income inequality in Australia has risen in the last two decades - as in many other OECD countries - and is above the OECD average. However, most of the rise in income inequality in Australia was concentrated before the global financial crisis in 2008. Since then, income inequality has been roughly constant. Despite no shifts in overall inequality, there is evidence in the HILDA data that growth of incomes in the middle of the distribution has been slower than in the tails of the distribution.

46. Echoing income inequality, there has been no clear trend in the overall inequality in labour-market income over the last 15 years. While Australia has experienced a rising inequality in wages - that grew most quickly for top earners - this has been offset by increased participation, longer hours worked and a decline in the share of jobless households, with most of the effect at the bottom of the distribution (Greenville et al., 2013). We observe most of these developments also in the HILDA data over the last 15 years.

47. We depict differences in earnings across education, occupation and skill groups and we show changes in employment. According to HILDA data, relative pay across education groups has not recorded large shifts over the last 15 years, but we find evidence for job polarisation. Notably, the share of high skilled jobs versus middle skilled jobs has increased. Considering changes in employment by occupation, we find that employment of professionals and personal services work has increased significantly, while that of clerical workers, sales workers and labourers has decreased.

48. Australia's labour market has changed markedly over the recent decades, with a growing participation rate, especially of women, and higher incidence of part-time work. The incidence of casual employment - that receive no paid sick leave or holiday leave - in Australia has been reported to have risen since the 1980s, especially for females, but according to the HILDA data it has fallen since early 2000s. We also find no evidence for a popular belief that contracts have become of shorter duration over time, echoing results reported by Borland and Coelli (2016).

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