

## AGEING WORKING PAPERS

Maintaining Prosperity In An Ageing Society: the OECD study on the policy implications of ageing

## RESOURCES DURING RETIREMENT

### WORKING PAPER AWP 4.3

This is one of a series of analytic papers that supported the OECD's horizontal work on ageing. The results of the entire project are summarised in *Maintaining Prosperity in an Ageing Society*, OECD 1998.

Assessing adequacy of retirement provisions requires considering the full range of resources available in old age. While such an assessment requires much better data than those currently available, this study provides evidence on income, market wealth and pension rights based on household surveys in nine OECD countries.

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## RESOURCES DURING RETIREMENT

by

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### ABSTRACT/RÉSUMÉ

Evidence presented in this study indicates that measures of income replacement based on public pension only give a misleading account of income adequacy during retirement. When taking into account all sources of retirement income and direct taxes paid, replacement ratios are much higher and exhibit greater uniformity across countries. This suggests that individuals may, to some extent, adjust to institutional and market constraints to achieve some target replacement ratios. There are, however, large differences in economic conditions within the retired population. Reforms of public pension programmes need to take account of this heterogeneity, to avoid major disruptions of living standards for the most vulnerable groups, thereby also lessening resistance to reform.

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Les données présentées dans cette étude montrent qu'on a une vision inexacte des ressources dont disposent véritablement les retraités si on considère uniquement les pensions que leur sert un régime public de retraite. En tenant compte de tous les types de revenu perçus par les retraités, ainsi que de l'incidence de la fiscalité directe, on aboutit à des taux de remplacement beaucoup plus élevés et qui présentent aussi une beaucoup plus grande uniformité au niveau international. On peut donc penser que les gens tiennent compte, dans une certaine mesure, du contexte institutionnel et des contraintes du marché pour s'assurer un certain niveau de ressources au moment de leur retraite. Les disparités sont toutefois importantes, au sein de la population retraitée, du point de vue de la situation économique. Les réformes visant les régimes publics de retraite doivent en tenir compte pour éviter de porter gravement atteinte au niveau de vie des groupes les plus vulnérables et, ainsi, amoindrir les résistances à l'égard des réformes.

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## FAMILY RESOURCES DURING RETIREMENT<sup>1</sup>

*Richard Disney and Marco Mira d'Ercole*

### I. Introduction and summary

1. The demographic transition to an aged society has thrown into sharp focus the issue of maintaining the living standards of the elderly. While the elderly have improved their standard of living relative to the population average over the past two decades, the budgetary pressure associated with population ageing raises the question of whether these standards of living can be sustained, let alone improved, for the future elderly. Whether demographic pressures on public budgets will translate in the future into inadequate resources during retirement depends on the range of resources on which the elderly have some claim and on their relative dependence on particular sources. The importance of the different types of resources for older people varies across cohorts, family types, as well as across the income distribution. As a result, the vulnerability of standards of living to retrenchment of public pension programs, to difficulties in re-employment for older workers, and to other adverse conditions, will vary along each of these dimensions.

2. Assessing adequacy of retirement provisions requires considering the *full range* of resources available in old age. Virtually all OECD countries have “retirement packages” consisting of public and occupational pensions, mandated either by the government or by collective agreements; and a complicated web of further private sources, such as part-time earnings and assets, as well as support provided by the extended family (Börsch-Supan, 1997). Income, as conventionally measured in household surveys, is an inadequate measure of this range of resources, as it often excludes some types of capital income (capital gains, imputed rents on owner occupied housing) which are likely to be especially important for the well-being of the elderly. Moreover, irrespective of the income flow they generate, private wealth accumulated during working life, such as housing and financial assets, provides an important buffer in the event of unforeseen shocks, such as long-term illness, disability, or widowhood. For individuals before retirement, an important component of their economic resources is represented by the prospective pension flows to which individuals will be entitled during retirement, although ongoing reform of pension arrangements throughout the OECD area may cast doubt as to whether current provisions will effectively be available by the time current workers reach retirement age. As a result, an assessment of adequacy requires broadening the range of economic resources to encompass income, market assets and pension wealth.<sup>2</sup>

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1. This Chapter is based on a draft prepared by Prof. Richard Disney, of Queen Mary & Westfield College, London. Data were provided by Hans Baekgaard (NATSEM), for Australia; Francois Guillaumat-Taillet and G r me Accardo (INSEE), for France; Axel B rsch-Supan and Anette Reil-Held (University of Mannheim), for Germany; Rosaria Marino (Bank of Italy), for Italy; Noriyuki Takayama (Hitotsubashi University), for Japan; Rob Alessie (Tilburg University), for the Netherlands; Kjell Jansson (Statistics Sweden), for Sweden; Richard Disney, for the United Kingdom; Jim Smith (Rand Organisation), for the United States.
  2. Consideration of the *adequacy* of standards of living of older persons have been extensively discussed in the academic literature. Diamond (1977), in his discussion of the rationale for a social security programme, adduced evidence of low wealth-income ratios among many Americans and of inadequate

3. Moreover, a focus on the ‘average’ situation of the elderly is likely to prove too narrow from a policy perspective. Important differences in economic circumstances prevail in old age, with pockets of poverty coexisting with groups whose economic resources exceed their consumption needs<sup>3</sup>. The extent of these differences in economic conditions among the elderly reflects a broad set of influences. First, there are distributional implications of different features of public pension programmes. Flat-rate public pension schemes may produce low standards of living on average, but higher replacement ratios for the poorest elderly, whereas earnings-related pensions may result in higher standards of living but little redistribution towards the poorer. While public pension systems in most OECD countries are characterised by the presence of both tiers, their relative importance varies significantly between countries<sup>4</sup>. Second, differences may reflect the relative importance of other income sources than public pensions. In the United Kingdom, periods characterised by rising public pensions have tended to be associated with reduced inequality, while the opposite has occurred where the standard of living of the elderly mainly depend on income from investments and from private pensions (Johnson and Stears, 1996). This heterogeneity of economic conditions has implications for the perspective retrenchment of public pension programmes and for moves towards greater emphasis on private pension and mandatory savings.<sup>5</sup>

4. The present study analyses a variety of issues concerning income distribution and wealth holdings among the elderly in OECD countries, using data drawn from household surveys (See Section II for a description of the data). Emphasis is given to *adequacy* of economic resources; to *distributional* issues; and to *dependence* on public transfers. The study has three main objectives. The first is to examine the distribution of income and wealth among the elderly, and the relative importance of the different types of resources (in particular the relative roles of public transfers, earnings and private sources) in different countries, for two cohorts and family types. The second is to examine whether particular types of resources *substitute* for, or *crowd out*, other types. The idea of substitution between different economic resources has been discussed in the academic literature in terms of behavioural responses to policy- or other types of constraints on the availability of a given type of economic resource. In this study substitution refers more generally to the relation between alternative pension arrangements and the structure of the retirement income package. The third task is to examine the consequences of saving strategies by looking at accumulated wealth among families at different points of the income ladder, for different cohorts and family groups. This is important in order to investigate whether differences in levels of income are matched by differences in accumulated wealth, or whether wealth varies disproportionately with income.

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private saving for retirement as arguments for mandatory interventions such as public provision. The same point has recently resurfaced in the work of Bernheim and Scholz (1995). However the ‘saving inadequacy’ hypothesis had its critics; Gale (1997), for example, disputed the measures of inadequacy advanced by Bernheim and argued that private asset accruals may be adequate for most Americans.

3. Data on ‘equivalised’ household disposable income by age of individuals, discussed in Burniaux *et al.*, (1998), show that income disparities among individuals aged 65 and over vary significantly across countries; however, these disparities are generally lower than for the entire population, and increased by less over the period considered.
4. An overview of the institutional features of public pension systems, and of social policy programmes more broadly, is given in OECD (1998).
5. Hubbard, Skinner and Zeldes (1995) pointed to the fact that public welfare programmes in which other assets are taken into account in assessing adequacy -- and therefore public disbursements -- will provide strong disincentives to save, especially for the poorer, particularly where pension programmes have income- and asset- tests or welfare floors. Thus public transfer programmes will have widely differing impacts at different points of the income distribution.

5. Some of the key findings of the study are as follows:

- Measures of income replacement based only on public pension give a misleading account of income adequacy. Replacement ratios of public pensions to pre-retirement incomes vary widely across countries and quintiles of the income distribution, rarely exceeding 50 per cent of pre-retirement income and often considerably lower. However, when such calculations take account of all sources of retirement income and are net of direct taxes paid, replacement ratios are much higher and exhibit greater uniformity across countries, typically averaging around 70 per cent of pre-retirement income. The data also suggest, for family units in the lowest income quintile, an almost complete replacement post-retirement of pre-retirement income. There is some evidence of replacement rates declining as we move up the income distribution, but this is not strong; even in the highest quintile, overall replacement rates are very high in a majority of countries.
- The high degree of uniformity of replacement rates contrasts with substantial differences in the composition of disposable income across countries, cohorts, and income quintiles. Among family units before retirement, the main source of cross-country variation is represented by differences in the proportions receiving income from employment. Among family units after retirement, the importance of public pensions is generally larger for lower income groups, while private pensions are more unevenly spread, and less extensive in countries with comprehensive earnings-related public transfers. There is evidence that families in countries with less generous public transfers make greater use of private pensions, investment in financial assets, and even continued employment in order to raise income in old age. This substitution effect is particularly striking for higher income quintiles, while for the lowest quintiles income levels are largely determined by the relative generosity of public transfers.
- There are significant cross-country disparities in the level of market wealth across families at different points of the income distribution. Generally, market wealth-to-income ratios (defined as the sum of net financial assets and housing wealth, relative to gross income) decline along the income scale for the younger age group, and, to a lesser extent, for the older age group. This mainly reflects high access to home ownership, even at the bottom of the income scale, and the resultant larger importance of housing wealth (in proportion to income) for families at the bottom of the income ladder. In contrast, although high proportion of families report some holdings of financial assets, the ratio of net financial assets to income is often very low, especially in the lowest quintile.
- Assessing the adequacy of resources for the cohort coming up to retirement requires measures which encompass estimates of accrued pension wealth. In this study, estimates are presented based on rights accrued at the time of the survey. As a rough benchmark for an assessment of adequacy, simulations suggest that a total (i.e. both market and pension) wealth-to-income ratio above 6 at age 55 is sufficient to provide a replacement ratios of around 0.60 in retirement, so long as individuals retire around the age of 65 and that assets are systematically run down in retirement. Relative to this norm, all countries appear to provide adequate support for retirement, although they differ in the proportion of wealth that takes the form of pension. Concerns arises where retirement takes place at an age much earlier than 65, which may lead to a potential gulf between the wealth-to-income ratio required to provide an adequate replacement ratio and actual saving behaviour.

## II. Key component of the data set

6. This study relies on snapshot tabulations from household surveys in nine OECD countries, provided by national consultants on the basis of standard criteria. The data distinguish between two cohorts of older people, defined on the basis of the age of the household head; those with a family head in an age range around 55 years, and those with a family head of just under 70 years<sup>6</sup>. These two groups are used to characterise a cohort “predominantly” before retirement and a cohort “predominantly” after retirement although, in fact, each of the two cohorts will include both families where the head is still working and others where the head is already in retirement. The key feature of the study is the attempt to gather information on a *broad* range of economic resources, encompassing both measures of disposable income, market wealth, as well as *hypothetical* pension flows for units before retirement. The emphasis is on the benefit or tax unit, although some of these family units live within households containing an extended family.

7. This study has similarities with the data on income distribution presented in Burniaux *et. al.* (1997), but also important differences:

- the data cover a *broader range* of resources than *income only*;
- the focus is on *families* rather than *individuals*, distinguishing between couples and singles rather than equivalising income on a household basis;
- the focus is on *differences* in economic conditions among the elderly, rather than on comparisons of *average* well-being between the elderly and the non-elderly populations; this implies ranking families on the basis of their income, and constructing averages of income sources for each cohort, family type and income quintile;
- for each income quintile, the study calculates average amounts of wealth held in different forms, thus permitting an examination of the relationship between the income distribution and relative wealth holdings.

8. The data collected allocate income sources for each group into several categories, such as earnings, self-employment income, public transfers, investment income and other transfers (mainly private pensions), distinguishing between proportion of each group receiving a given type of income (or assets) and average values among those reporting that type of income source<sup>7</sup>. Income is generally defined as annual disposable income, e.g. net of direct taxes and social security contribution<sup>8</sup>, based on values as

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6. In the case of couples, the head is generally the man (France, the Netherlands), or the person with the highest income (Australia, Japan, Sweden).

7. Both ‘proportions’ and ‘average values’ include units reporting both positive and negative values of each income and assets types.

8. Direct taxes and social security payments of families are in most cases as reported by survey respondents, although they are imputed by the Australian Bureau of Statistics for Australia. In the case of the United Kingdom, the data from the *Family Expenditure Survey* provide disposable income net of direct taxes only, while local taxes are imputed.

reported by survey respondents, and with a consistent treatment of housing costs<sup>9</sup>. Values of market wealth are also collected for each family type, cohort and income quintile, in general directly from survey responses. [Exceptions are noted in Box 1 for the United States and Australia.] Market wealth distinguish between net financial assets (i.e. net of financial liabilities other than mortgages), and net housing wealth (i.e. house value net of outstanding mortgages)<sup>10</sup>. Consultants were also asked to provide estimates of the prospective pension *income*, separately for public (social security) and private pensions, for those currently non-retired in the younger age group. These pension flows, based on *accrued* rights at the time of the survey, are converted into a pension wealth measure using a common set of valuation procedures.

9. In general, the data refer to a year in the early and mid 1990s<sup>11</sup> and are based on a single household survey for each country. However, data for the United States are based on different surveys for the two age groups, while two surveys are used for information on income and assets, respectively, in the case of France and the United Kingdom. In the analysis, *singles* refer to both individuals who have never married and to widows, widowers and divorcees, although the distinction is important for policies on survivors' pensions in the light of their different income and wealth profiles. A summary of the main features of these data sets is contained in Table 1.

Table 1. Main features of the data sets used in this study.

10. Although data are, so far as possible, collected on a comparable basis, there are inevitable differences in collection methods and, on some occasions, data definitions. The most important of these differences, for the United States and Australia, are described in Box 1. Other differences in the data which affect comparability are the following. First, although in the analysis below we refer to a group 'aged 55' and to one 'aged 67', in reality, as is clear from the fourth column of Table 1, these are central ages across a range of age groups which differ across countries, depending on data availability. For example, in Australia and the United Kingdom, the central age of the younger age group is somewhat higher (but still below 60), whereas for the older age group the central age for the United States is in the mid-70s, higher than for most other countries. Second, there are differences across countries as to the treatment of the resources of descendants living with their elderly parents. While, in general, the analysis is focused on elderly families living alone (e.g. without children), this has not always been possible for other countries, where information refers to both elderly families living alone and to elderly living with descendants<sup>12</sup>. Third, there are often differences across countries in the range of resources covered by the questionnaire (for example, in the range of instruments included in financial wealth) and in the allocation of some components. For example, housing wealth is generally reported on a net basis (i.e. after deducting outstanding mortgages), but this was not feasible in the case of Italy and Sweden (in which cases, outstanding mortgages are deducted from financial wealth). Finally, there are differences across

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9. In all countries, the income data exclude both imputed-rents from own-occupied housing as well as housing costs, such as interest of mortgages.
10. The data set also includes information on "other wealth", an heterogeneous category mainly composed of professional assets of self-employed individuals. No data for this category are however available for Sweden and the United Kingdom while, in the case of the Netherlands, the sample exclude the self-employed (and their professional assets). Due to these differences in country coverage, this category of assets is excluded from the analysis.
11. In the case of the United Kingdom, however, the data refer to 1988/89.
12. The analysis refers to family units without children, in the case of Japan, Germany, Sweden and the United Kingdom; to all families, but excluding income and assets of children, in the case of Australia, the Netherlands. In other countries, however, the data may include some resources of children living with their elderly parents.

countries in the number of survey units retained for this study (Table 2), which affect the accuracy of sample averages. As sample sizes are, in general, higher for couples than singles, most attention is paid to the first group.

Table 2. Number of units retained in this study

**Box 1. Data for the United States and Australia.**

Data for the United States and Australia differ in important ways from those of other countries. The most important differences are the following:

-- The income concept for the United States is that of *gross* (e.g. pre-tax), rather than net, income. These data were not adjusted by imputation of tax payments. As a result of this feature, estimates of *replacement ratios* for the United States, presented in Section III, are significantly understated relative to other countries (see below), while measures on income inequality are overstated. In addition, values of the prospective pension flows for units before retirement are based on expectations of survey respondents, rather than being calculated by consultants on the basis on the respondents' earnings-history and pension coverage.

-- In the case of Australia, all components of market wealth except owner occupied housing and mortgage debt are based on imputation methods from the corresponding income flows (Baekgaard, 1998). Also, as occupational pension are most often taken up in the form of lump-sums, the income data for Australia underestimate the extension of private pensions. Another feature of Australian data which crucially affect cross-country comparability reflects the treatment of units reporting negative values of a given type of income. The high numbers of elderly farmers reporting income losses in a particular year results in *negative* values of disposable income for units in the first income quintile. As argued by Bradbury (1997), based on expenditure data, average income is a poor proxy of living standards for self-employed families with low measured income; and in our data set, these families often have significant holdings of market assets. To correct for this, data for the 'bottom' quintile in Australia presented in this study refer to families in the *second* quintile.

In the light of these features, data for the United States and Australia should be treated with special care.

### III. Income of elderly families

11. A first step in order to get a comprehensive picture of all resources available for consumption in old-age is to look at the income of elderly families, as measured in the household surveys used in this study. The present section looks, first, at levels of income for the older, and predominantly already retired, cohort relatively to the younger cohort; second, it presents measures of dispersion of income and of its components to highlight the wide range of circumstances prevailing in old age, and to identify income sources characterised by the highest degree of inequality; finally, it looks at the structure of income and the substitution between the different sources.

#### *The level of retirement income: an analysis of replacement ratios*

12. A widely used summary measure of adequacy of living standards in retirement is the *replacement ratio*, defined as the ratio of income in retirement to income during the working life. Measurement of replacement ratios raise a number of complex methodological issues, such as the treatment of costs associated with work (whether these should be deducted from pre-retirement income or not) and the selection of the most appropriate benchmark for pre-retirement income (earnings in the last year of work or an average of lifetime income, adjusted for inflation), which are extensively discussed in the literature<sup>13</sup>. In this study, replacement ratios are measured by the ratio of income of the 67 year old in each country, family type and income quintile (the numerator), to income of those aged 55 (the denominator). In the absence of panel data, we are obviously unable to match individuals.<sup>14</sup> On the other hand, by having a comprehensive account of income sources, and by calculating replacement ratios after taxes (in all cases except the United States), the analysis here presented is an improvement on measures which focus only on certain sources of retirement income (such as public pensions) and ignore the effect of direct taxes.

13. Figure 1 shows two measures of replacement ratios for singles (top panel) and couples (bottom panel); one which incorporate all components of disposable income in both the numerator and the denominator (we will refer to this measure as “comprehensive” ratios) and a second which comprise public transfers only in the numerator. Looking first at the comprehensive measure of replacement ratios for couples, its most striking feature is the uniformity across countries. The main exception to this pattern is represented by the United States, where however the measurement of income on a pre-tax basis lead to an *understatement* of the replacement ratio in the presence of progressive average tax schedule<sup>15</sup>. For other countries, the range of the “comprehensive” replacement ratios for couples is between 0.68 in the United Kingdom to 0.85 in Germany, with the majority of countries clustering in the 0.70 region. There is rather

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13. For example, Boskin and Shoven (1987) argue that ‘effective’ replacement ratios (i.e. abstracting from family composition and work-related expenses, net of taxes, and compared to life-time average income) are often much higher than those obtained from simple comparisons of public benefits relatively to final or even average earnings, and typically exceed 100 per cent of pre-retirement income.

14. Panel data would allow measurement of “true” replacement ratios whereas the present study examines ratios across different date-of-birth cohorts. If cohort earnings profiles exhibit continued earnings growth late in the working life, these measures understate “true” replacement ratios. However, where earnings growth levels off, the absence of panel data is less important.

15. For example, assuming a tax rate of 33 per cent for the cohort with a head aged 55 and of 16 per cent for those aged 67, measures of replacement rates based on gross income for the United States would be underestimated by 25 per cent relative to measures based on disposable income.

greater variation for singles in these comprehensive ratios, varying from values just above 0.60 for Italy and the United States to close to 0.90 in France and Japan.

Figure 1. Replacement rates for the entire population

14. The extent to which this pattern of relatively uniform replacement ratios across countries and family types reflects institutional features of public pension system, such as uniform provision of public pensions at generous levels, may be highlighted by comparing the comprehensive measures of replacement ratios with measures based on public pension income only. As it is evident from Figure 1, there is greater cross-country variation in replacement ratios based on public pensions only, particularly for singles, with values ranging from below 0.30 in Italy and the United States to around 0.70 in Sweden. For couples, the ratios are usually higher. The discrepancy between the two measures suggests that replacement ratios based only on public pension are a misleading indicator of income adequacy in old age.

15. Naturally, the simple observation of comprehensive measures of replacement ratios within a range between 0.7 to 0.9 does not, by itself, say anything about whether they are adequate or excessive. A number of factors bear on the assessment of what constitute a desirable level. First, if leisure is a normal good, periods in retirement should have greater utility than those in work, unless leisure and consumption are strictly complementary in the same time period. Second, if earnings rise over the lifetime -- at least until late middle age -- a replacement ratio of less than 1 cent relative to income near retirement may actually constitute a replacement ratio above 1 on lifetime earnings. On this basis, a replacement ratio equal to 1 may not be desirable on either efficiency or utility grounds, even though some countries may legislate that pension benefits should 'fully replace' income at work. Given these considerations, these ratios might be considered rather high, implying an attractive inducement to retire as early as possible.

16. A separate issue is that of how replacement ratios compare across the income distribution. In fact, welfare programmes targeted on reducing poverty or inequality would require higher replacement ratios for lower earners (when at work) than for higher earners. This is a predictable outcome of pension programmes with an income-tested or flat component, and should be observed in the form of declining ratios as we move up the income quintiles in the data. Among couples in the bottom quintile, there is some cross-country variation of replacement ratios based on public transfers only, with values of around 0.6 in Italy, Japan and the United States, and in a range of 0.7 to 0.9 in other countries (Figure 2). However, when combining all income sources, replacement ratios generally converge to an even narrower range of around 0.9 (with the only exception of the United States, where the results could be driven by the particular nature of the data). Overall, comprehensive replacement ratios suggest almost complete replacement at 67 of incomes of 55 year olds for those in the bottom quintile. There is some evidence of replacement ratios declining as we move up the income distribution but it is not strong. Even in the top quintile, 'overall' replacement ratios are very high in the majority of countries, and notably in Japan, Germany and the Netherlands. This reflects the role of other retirement income in smoothing out country-specific variations in social security regimes. While, based on social security only, replacement ratios in the top quintile vary from 0.1 in Australia to 0.5 in Sweden, when incorporating all sources of retirement income these ratios range between 0.60 to 0.90 (again with the exception of the United States). In this quintile, other sources of retirement income make up most of the deficit in replacement ratios compared to the lower quintile, and reduce the differences between countries.

Figure 2. Replacement ratios for couples in the top and bottom quintiles

17. As already noted, the measures of replacement ratios here presented are affected by differences in the composition of the two cohorts; by the fact that some families in the younger cohort, especially those

at the lower end of the distribution, may have already retired<sup>16</sup>; and by the fact that (real) income of families in the later cohort may further increase until they reach retirement age. While these cross-sectional data do not allow to assess the significance of these biases, evidence from other studies suggest that this may not be large. For example, evidence for the United Kingdom from two waves of the *Retirement Survey*, for units in full-time work in 1988/89 and in retirement in 1994, points to an average replacement rate of 0.62 (not far from that shown in Figure 1) for all units; when units are ranked by income quartiles in the earliest year, these ratios decline from 0.88 for the first quartile, to 0.56 in the fourth (Johnson and Stears, 1997), compared to 0.9 for the first quintile and 0.7 in the top quintile, in the present study.

18. In summary, the large differences between comprehensive measures of replacement ratios and measures based only on public transfers suggests that, to a large extent, families adjust to differences in the generosity of public pension systems in order to achieve comparable living standards. The capacity to do so, however, seems to differ among families at different points of the income distribution, with higher substitution of income sources at the top than at the bottom end of the distribution, especially in countries where public transfers are directed to the lowest income households. While the measures of replacement ratios here presented have important limitations, evidence from other studies suggest that, in practice, they are a reasonably accurate proxy of “true” replacement ratios from panel data.

### ***Measures of income inequality***

19. A further question concerns the dispersion of incomes across countries. The basic measure of dispersion used in this study takes the form of ratios of average income between quintiles. The interquintile ratios used here are based on *averages* of incomes within the quintiles (most often the first and the fifth quintile) and not on the income of the 20th and 80th percentile units; however the average income in the third (middle) quintile is likely to be close to the median income.

20. Figure 3 show three measures of income dispersion for couples in the two age groups, using interquintile ratios for different segment of the distribution. Looking first at the ratio of average income in the fifth quintile to average income of the first quintile (hereafter denoted as the ‘Q5/Q1 ratio’), this is generally lower for the older than for the younger group, the only exceptions being Japan and the Netherlands. In terms of country ranking, income dispersion is lowest in Sweden, the Netherlands and Germany -- for both cohorts -- and highest for Italy, followed by Australia and the United States<sup>17</sup>. The greater dispersion of incomes among Italian couples in part stems from heterogeneity of retirement experience. In Australia, too, the low incomes in the bottom quintile may arise from the prevalence of farmers in this group, and the impact of the income and asset testing of the state pension. As shown by the second and third panel of Figure 3, these differences between countries and cohorts mainly reflect difference at the top of the income ladder. At the bottom of the distribution, the pattern of relatively high variation in the ratio among couples in the younger group (‘Q3/Q1 ratios’ shown in the bottom panel) contrasts with significantly lower dispersion among the older group, with most indices bunched within a range between 1.5 and 2 (implying that older couples in the top quintile of distribution have an income between 50 and 67 per cent of the median). Such relative uniformity in income levels at the bottom of the

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16. Estimates of replacement rates based on a comparison of equivalised disposable income of individuals living in pensioners- and non pensioners-households (where a pensioners household is one whose head is 55 and over and at least one member receives a pension) for 14 OECD countries are presented in Hauser (1997). When using the “new” OECD equivalence scale, these replacement ratios vary between around 0.74 in Italy and the United Kingdom, to close to 0.94 in the United States.

17. However, as already noted, use of pre-tax income in the United States will tend to generate greater inequality than if post-tax income had been used.

distribution for the older cohort is likely to reflect the existence of minimum pensions and welfare floors in most countries.

Figure 3. Income dispersion among couples, by age

### *An analysis of the structure of disposable income*

21. In the earlier discussion of replacement ratios, the idea of substitution between income sources had been suggested. The idea of substitution has been extensively discussed in the academic literature. For example, the displacement effect of public pension programmes on private savings is well-known, since the seminal work of Feldstein (1974), even if the magnitude of the displacement effect continues to be a source of dispute. Gruber and Wise (1997) stress how social security provisions provide incentives to leave the labour force early, thereby displacing earnings and self-employment income. In this section, ‘substitution’ is used in more general terms, to examine the potential substitution (or complementarity) of different income sources in order to maintain living standards in retirement, in the face of institutional or market limitations on the availability of certain sources. Implicit in this idea of substitution is a behavioural response to constraints, whether imposed by governments or by markets (such as a failure in the annuities market). While the data available for this study do not allow an assessment of behavioural responses to policy changes, they do allow comparisons of outcomes, e.g. whether alternative retirement income arrangements generate different structures of the retirement income package.

22. Our first evidence is that, despite the relative similarity of “comprehensive” replacement ratios across countries, differences in the structure of disposable income, across countries, family types and income quintiles, are large. The evidence in this regard is presented in Figure 4. The standard presentational format is a set of bar charts, for each cohort and family type, depicting the weight of various sources in the disposable income of each quintile; the height of the income bar for each quintile is scaled relative to the average for a given cohort and family type (e.g., disposable income of singles 55 in the first quintile is expressed as a ratio of disposable income of all singles aged 55). Cross-country differences are most evident for the older cohort, and largely reflect differences in the characteristics of public pensions. Some countries are mainly depending on earnings-related public pensions (such as France, Germany and Sweden), whose importance is dominant across all quintiles; others combine flat public pensions, which are more important in the bottom quintile, with private pensions whose importance rise at the top of the distribution (the Netherlands); in yet others, income sources are considerably more heterogeneous, with an important weight, mainly at the top of the distribution, for capital income (the United Kingdom and the United States), and earnings (Italy, Japan). There is less variability for the younger cohort, with earnings representing the largest component of income in all countries, but with large difference in the importance of public transfers at the bottom of the distribution (high in Australia, France, Germany, the Netherlands, Sweden and the United Kingdom, but less so in other countries). The rest of this section considers sources of income in more detail.

Figure 4. Composition of disposable income by country

23. *Earnings* account for most of the variation in income levels for units in the younger age group. Table 3 shows proportions reporting earnings in the two cohorts and family types. In the case of singles in the younger age group, the data highlight large disparities across countries in employment probabilities, from 29 per cent in Australia to almost 75 per cent in Japan. The probability of reporting earnings generally increase along the income ladder, but the relation varies across countries. Proportions reporting earnings are always higher for couples than for singles, particularly in countries (such as Sweden, the Netherlands and the United Kingdom) characterised by higher labour force participation rates of older married women (OECD, 1992 and Disney, 1996). In the older group, very few singles report receiving

earnings, with the major exception of Italy, Japan and Sweden, while these proportions are somewhat higher for couples, as these will often contain a younger spouse. Among older couples in the highest quintile, however, over two thirds report receiving earnings in Italy, Japan and Sweden and nearly one half in the United Kingdom and the United States.

Table 3. Proportion of families reporting earnings

24. Measures of dispersion of earnings (Q5/Q1) also suggest larger differences across countries (Figure 5). To some extent, countries with a high degree of earnings dispersion tend also to be those with higher participation in employment. For example the Netherlands has low earnings dispersion among singles aged 55 as well as low employment probabilities for the same group, while in the United States the same groups have much higher proportion in employment and higher earnings differences. In addition to differences in survey practices in the reporting of small employment income (for example, of casual work of the elderly), this pattern may reflect differences in terms of opportunities for part-time work (in the United Kingdom) and for 'bridging jobs' to retirement (in Japan and Sweden).

Figure 5. Earnings dispersion among couples

25. One possibility is that differences in proportions reporting earnings are offset by the distribution of *self-employment income*. In fact, some economists have suggested that the growing trend towards earlier exit from dependent employment have been compensated by a shift to self-employment in order to maintain pre-retirement income. Overall, the data provide little systematic evidence of this substitution (Table 4)<sup>18</sup>. Australia, France and the United States all show comparatively low proportions reporting self-employment income, although displaying large differences in terms of proportions in dependent employment. There is also less systematic evidence of a positive relation between income quintiles and incidence of self employment. In Germany, self employment rates for the younger group are similar across quintiles, while in Japan the highest proportion reporting self-employment income is in the lowest quintiles, whereas in the United States self-employment is highest at the top of the income distribution.

Table 4. Proportion of families reporting self-employment income

26. The category *Public transfers* comprises old-age pension programmes, welfare payments and other contingency benefits such as unemployment insurance. Receipt of such benefits is almost universal for families headed by 67 year olds, but there is a good deal of heterogeneity in receipt of benefits amongst families headed by 55 year olds (Table 5). Among singles, the average proportions range from 67 per cent in Italy to 25 per cent in Japan. Not surprisingly, there is evidence of a strong negative relationship between income levels and proportion receiving public transfers for units in this cohort; the United Kingdom is not untypical in this respect, with 4 out of 5 singles in the lowest quintile receiving public transfers, but only 1 in 3 in the top quintile. However the degree of 'targeting' of public transfers on the lowest income earners in the younger cohort is far from uniform across countries: in Italy almost 60 per cent of singles in the highest quintile receive some public transfers. In the case of couples, the proportions receiving public transfers are lower, except in Germany and Sweden.

Table 5. Proportion of families receiving public transfers

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18. The surveys used exclude the self-employed, for both age groups, in the Netherlands and, in the case of the older cohort, in the United States.

27. *Other transfers*, which mainly consist of private pensions, show significant variation across countries and quintiles of the income distribution (Table 6)<sup>19</sup>. Looking at the older cohort, there are large disparities across countries in the proportion of elderly families in receipt of private transfers, ranging in the case of singles between 10 per cent in Australia to close to 80 per cent in Sweden<sup>20</sup>. In Japan and the United Kingdom, where workers can ‘contract-out’ of the public pension scheme into a private pension, around one quarter and one half of singles report receipt of an occupational pension, this difference largely reflecting more generous incentives to companies and individuals in the later (Disney, 1996). Comprehensive systems of occupational pensions also exist in the Netherlands and Sweden. Rates of coverage by private pensions are generally higher for couples than for singles. However, in sharp contrast to public pensions, the probability of private pension coverage is positively associated with income quintile in all countries except Japan. Thus, private pension coverage tends to offset the *inequality-reducing* impact of public pensions. Among couples in the bottom income quintile, less than a half in the United Kingdom and than a third in the United States report coverage from an occupational pensions. In these two countries, occupational pensions are often limited to white collar workers, especially in the public sector, while in other countries they may be more closely related to company size and union presence. This is reflected in a differential distribution of private pension receipt across the retired populations in different countries.

Table 6. Proportion of families receiving other transfers

28. The opposite effect on income distribution of public and private transfers is even more evident when looking at measures of dispersion of the two sources. ‘Q5/Q1 ratios’ are reported in Figure 6, for singles and couples in the older cohort, for both public (top panel) and private pensions (bottom panel). Looking first at public transfers, a clear difference exists between countries with flat or ‘floor’ pension benefits, such as Australia, the Netherlands and the United Kingdom, where the interquintile ratio is relatively low; and countries, with earnings-related (hence proportional) schemes, such as France, Italy and Germany. Even in this second group of countries, however, the ‘Q5/Q1 ratios for public transfers are much lower than for incomes as a whole, thus suggesting that social security generally has an equalising effect on retirement incomes. This equalising effect is in stark contrast with that of occupational pensions, as highlighted by the bottom panel of Figure 6; inequality of occupational pensions is generally much higher, and larger than for total income, which confirm the inequality-enhancing character of private schemes.

Figure 6. Dispersion of public and private transfers, families with a head around 67

29. *Capital income*, which aggregates a variety of income sources from real and financial assets, accounts in a majority of countries for a relatively minor share of disposable income, and is generally significant only in the top quintile and for the older cohort. Together with earnings, capital income is the main determinant of the differences in income levels between the upper quintile and the quintile just below. In contrast, there are significant proportions of families in the lowest quintile reporting zero capital income, especially in the Netherlands and the United States (Figure 7). While this may suggest

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19. In addition to private and occupational pensions, other transfers include private health insurance payments, income from workers’ compensation, alimonies, remittances from relatives and income in kind. No data for this income source are available for France (where the data do not allow to separate occupational pensions from public pensions) and Italy (where private pensions are relatively unimportant).
20. Data for Australia underestimate the extension of occupational pensions, as these are often taken up in the form of lump-sums.

displacement of savings by public pensions and other welfare benefits, a similar pattern is not evident for the United Kingdom and Australia, despite the existence in these countries of income- and assets-tests for social assistance and public pensions. However, capital income -- as measured in households surveys -- excludes important components, such as imputed rents from owned-occupied housing, capital gains and reductions of capital assets. As will be shown below, the very unequal distribution of capital income, as measured in these data, mainly reflects differences in the structure of assets, rather than in the extent of ownership of market assets *per se*.

Figure 7. Proportion of families in the bottom quintile reporting no capital income

#### IV. Net market wealth of elderly families

30. Significant resources available to the elderly take the form of assets accumulated through voluntary savings during working life, and which may be run down during retirement. This section looks at ownership of market wealth -- e.g. assets that could be disposed on the market -- for the two cohorts within the nine countries covered by this study. Throughout this section, wealth holdings are reported for units ranked by their level of income (e.g. wealth values are averages across units in different income quintiles, rather than quintiles of the wealth distribution). Market wealth is here defined as comprising financial wealth (net of debt but excluding mortgages) and housing equity (i.e. house value net of mortgage). Owner occupied housing generates services which are excluded from the income sources considered in the previous section. Moreover, some types of financial assets (such as cash and bank accounts) may not generate income streams, or these could take the form of changes in assets values which are not recorded as capital income in the surveys used in this study. As a result, data on market assets provide additional information as to the economic resources of elderly families. Assets are commonly self-reported in households surveys, with the exception of Australia. Wealth information has typically been difficult to collect in household surveys, especially during the post retirement years, and differences in survey design, coverage and sample sizes are even larger than those concerning measures of income<sup>21</sup>. Hence, differences across countries may partly reflect non-comparability in the data.

##### *Market wealth-to-income ratios*<sup>22</sup>

31. The most obvious measure as to the level of market wealth of families is in the form of ratios of market wealth to income<sup>23</sup>. Figure 8 -- which shows market wealth-to-income ratios for singles (top panel)

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21. Measurement of marketable assets is likely to be more accurate in countries relying on specific surveys for the elderly population, such as the United Kingdom and the United States, than in countries using general purpose surveys. More accurate measurement in the former reflect higher sample sizes and lower proportion of item non-responses. For the United States, the use of follow-up bracket questions for respondents who initially refused to answer an assets question (in the *Assets and Health Dynamic Among the Oldest Old*, AHEAD) lowered item non-response by more than 80 per cent and increased estimated mean values by 8 per cent (Smith, 1997).

22. In this section, the income concept used is that of *gross* income; while for France and the United States, this measure is directly reported in the surveys, for other countries it is defined as the sum of income components which are reported on a pre-tax basis.

23. As already noted, in the case of France and the United Kingdom, two different surveys are used for information of income and market assets. Ratios of market wealth-to-income for the United Kingdom presented in this section are based on levels of market wealth calculated from the *1988/89 Retirement Survey*, as a ratio of income from the *1988/89 Family Expenditure Survey*. In the case of France, where

and couples (bottom panel) in the two age groups -- highlights large differences across countries and family groups. Looking first at couples (bottom panel) with a 55 years old head, market wealth-to-income ratios range from around seven in Australia and Japan to around two in Sweden and Netherlands. Market wealth-to-income ratios are higher in the case of older couples, reflecting further wealth accumulation in the remaining years before retirement and lower measured income during retirement. For this older cohort, cross-country differences in these ratios are even larger, ranging from above fifteen in Australia and Japan to around three in Sweden and the Netherlands, but with little changes in the ranking of countries.

Figure 8. Market wealth-to-income ratios

***Holdings of market wealth along the income scales:  
the role of housing and financial wealth***

32. Differences in ratios of market wealth-to-income are also large within countries between units ranked by disposable income. Figure 9 shows, for each cohort and family type, ratios of market wealth-to-income for the top and bottom income quintiles. Cross-country differences in wealth holdings are as large as those highlighted for all units, with some evidence of greater uniformity in these at the top than at the bottom quintile, and among couples compared to singles<sup>24</sup>. More importantly, with the exception of older singles, market wealth-to-income ratios decline as we move up the income scale in a majority of countries. For example, among older couples, ratios of market wealth to income are higher in the bottom than in the top quintile in six of the nine countries. While these high market wealth-to-income ratios among those with low income may be indicative of disproportionately low incomes, rather than of high saving *per se*, there seems to be little evidence of a relation between the size of income inequality (as shown in the previous section) and differences in market wealth holdings across income quintiles. A more plausible explanation of these differences is in preferences for saving and institutional characteristics.

Figure 9. Market wealth to income ratios,  
for units in the top and bottom income quintile

33. The observed pattern of declining market wealth-to-income ratios as we move along the income scale mainly reflects differences in the composition of market assets. In all countries, housing accounts for the dominant share of marketable assets, and housing wealth tend to be more important (as a proportion of gross income) for families at the bottom of the income distribution than for those at the top. The observation of relatively high housing wealth-to-income ratios even among families at the bottom of the income ladder may, to some extent, reflect opportunities for elderly families to substitute taxable income sources (interest and dividends) with untaxable ones (imputed rents from own occupied housing). In this sense, a low level of reported income may be associated with relatively high levels of market wealth.

34. Data on the proportion of survey respondents reporting holdings of a given type of wealth are less affected by differences in valuation methods across countries. As shown in Table 7, rates of home

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the two surveys refer to different years, market wealth is expressed relative to gross income as reported in the wealth survey; hence, the income level is different from that used in Section III.

24. In addition to income, poor health is a potentially a key factor which may limit the ability of families to build up and hold into their previously accumulated wealth. Data for the older cohort in the United States, where the survey gathers information on the health status of each spouse, highlight a consistent and strong pattern; net worth of older couples varies by seven to one when an index of the health of both spouses moves from poor to excellent (Smith, 1997).

ownership are always higher for couples than singles, and are broadly similar for the two cohorts. There are, however, large cross-country differences in the diffusion of home ownership<sup>25</sup>. In the case of singles in the younger cohort, these proportions range from around 30 per cent in Germany and the Netherlands to more than 60 per cent in France and Italy; while in the case of singles in the older cohort less than 20 per cent of elderly Dutch report some housing wealth. For couples, these differences are narrower, ranging between less than 60 per cent (Germany and the Netherlands) to almost 90 per cent (the United States) for the younger group; and between 92 per cent (Australia, Japan) and 40 per cent (the Netherlands) for the older. While rates of home ownership tend to be positively related to income, this relation is often weak. There is great uniformity across quintiles in the diffusion of home ownership in some countries exhibiting both very high (such as Australia, France, Italy and Japan) or very low diffusion of home ownership overall (the Netherlands). Only in Germany, there is a steep positive relationship between income levels and home ownership.

Table 7. Proportion of families reporting housing wealth

35. Financial wealth, on the other hand, tends to be very unequally distributed, and accounts for most of the differences between the top quintile and the quintile immediately preceding it. Not surprisingly, as highlighted by Table 8, proportions of elderly families reporting holding of financial instruments are high in all countries, approaching 100 per cent in Germany, Japan, the Netherlands and Sweden for the higher income quintiles. But, of course, for those at the lower end of the income distribution who report holdings of financial wealth, the absolute amounts may be rather small.

Table 8. Proportion of families reporting financial wealth

36. Even if the diffusion of financial wealth tends to be relatively high in most countries, holdings of financial wealth tends to be much more unequal than in the case of housing. Figure 10 reports the familiar 'Q5/Q1' interquintile ratios for housing (top panel) and financial wealth (bottom panel) among older couples reporting some holdings of the two categories of assets. Interquintile ratios for financial wealth (by income quintile) among older couples vary from around five in Germany, Japan, the Netherlands and Sweden, to above ten in France, Italy, the United Kingdom and the United States. By contrast, the same measure of dispersion for housing wealth varies between two in Australia, Japan, the Netherlands and Sweden, to around five in France, Germany and Italy.

Figure 10. Dispersion of housing and financial wealth among older couples

37. Given its high liquidity, financial assets provide a temporary buffer in the event of unforeseen 'shocks'. Table 9 shows ratios of net financial wealth to income for the four family types, both for all units and for those in the first income quintile. Not surprisingly, looking at this narrower wealth definition, wealth-income ratios are much lower (indeed they are negative in Sweden for 55 year olds, reflecting the inclusion of outstanding mortgages in the financial wealth of this country). In Germany, the Netherlands and the United Kingdom, the buffer provided by holdings of financial assets will cover only a few months of consumption. Among couples with an older head only Australia, France, Italy, Japan and the United States report values at or above three. For units at the bottom of the income ladder, these ratios are in some cases considerably lower (below 1.5 in three countries for singles in the older cohort, and in four countries for couples in the same cohort). Singles in the bottom income quintile basically report no

25. Differences across countries in the importance of home-ownership, and their implications for assessing adequacy of living standard in old-age, are stressed by Castels (1997), who suggests that "benefits that flow to individuals through Europe's generous pension systems are, to some considerable degree, replicated by the benefits deriving from widespread home ownership in the nations of the New World".

financial assets at all in Australia, Germany, Sweden, the United Kingdom. For these groups, maintenance of an adequate standard of living in retirement is almost wholly dependent on provision of adequate public pensions and, in the case of home owners, on the ability to release housing equity at low cost during the remaining lifetime.

Table 9. Ratios of net financial assets to income

## V. Estimates of pension wealth for the cohort coming up to retirement

38. Evidence on the importance of pension arrangements for adequacy during retirement was discussed in Section III, in terms of income flows for the cohort already in retirement. The ‘prospective’ importance of pensions for the cohort before retirement may be assessed in terms of calculations of “pension wealth”, the discounted sum of pension benefits to which families will be entitled when they reach retirement age. Estimates of pension wealth are based on a number of arbitrary assumptions about the level of future benefits, life expectancy, retirement age and discount rates; and the sensitivity of these estimates to changes in assumptions is typically large. In this study, estimates of pension wealth are presented subject to a set of very simplifying assumptions. To reduce the impact of differential methods of valuing pension wealth across countries, common pension income projections were provided by national consultants for the younger age group<sup>26</sup>. This involved ‘freezing’ accruals at the date of observation, and preserving them until a common retirement date (assumed at 65 years of age<sup>27</sup>), with no consideration of future contributions that will be paid until that age; of future earnings growth and inflation; and of taxes to be paid on future benefits. In the case of couples, hypothetical flows take account of direct pensions, survivor benefits and spouse supplements (where these exists). These prospective pension flows were then converted into a stock of pension wealth using a common set of mortality statistics and conditional transitions from couples to singles<sup>28</sup>. Finally, it should be stressed that, while the concept of pension wealth suggest analogies with that of market wealth, its relevance for an assessment of adequacy depends crucially on the credibility of the pension promises for the cohort coming up to retirement.

39. In Figure 11 estimates of pension wealth, as a ratio to gross income, are presented for an hypothetical case of a unit in the younger cohorts not yet in retirement and with a positive entitlement to an old age public pension; these estimates correspond to the discounted sum of future benefits, using a 4 per cent discount factor, with no consideration of which proportion of the age group is entitled to an old-

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26. In the case of the United States, however, pension income projections are based on the survey respondents self-assessment of the value of their pension when they will reach retirement age, rather than on their reported earnings and contributions history.

27. Until age 63 in the case of Germany.

28. A critical assumption in estimates of pension wealth for couples is the one of no-correlation between the life expectancies of spouses. In reality, this correlation is likely to be positive and dependent on the level of family income. Panel data for the United Kingdom confirm this. The probability that both spouses -- within couples with a head 55 to 59 years old in the 1988/89 wave of the *Retirement Survey* -- are still alive in 1994 is around five points higher for families in the top than for those in the bottom income quintile. Among couples with a head 65 to 69 years of age, the difference rises to 19 points. As a result, estimates based on common survival probabilities across income quintiles will overstate pension wealth of those in the bottom quintile, and underestimate those in the top.

age pension. These ratios are shown separately for all units, and for those in the top and bottom quintiles, and distinguish between public pension wealth and occupational pensions<sup>29</sup>.

40. The patterns highlighted by Figure 11 largely reflect those shown in terms of pension flows for the older cohort. There are clear disparities across countries as to the level of pension wealth, and differences in its importance across income quintiles. In five of the nine countries considered, pension wealth correspond to social security only while, for Australia, France, the Netherlands, the United States, the estimates also include occupational pensions. In basically flat public pension programmes, such as the United Kingdom, public pension wealth ‘tilt’ wealth-income ratios in favour of lower income groups. But where incidence of private pension schemes is uneven, and typically covers only better-off workers, this progressive aspect of public pension programmes may be offset.

Figure 11. Market and pension wealth-to-income ratios, couples with a head around 55 years old

## VI. An assessment of wealth adequacy: a simple simulation exercise

41. Arguments about mandatory provisions for pensions have typically rested on concerns of insufficient private savings to provide for ‘adequate’ resources in retirement. ‘Adequacy’ obviously involve a judgement as to the ‘target’ replacement ratio that we want to achieve in retirement. This target is here assumed at 0.60 of pre-retirement income, a value which is not far from the average value observed in Figure 1. A stylised example provides a benchmark for this assessment. Assume first that incomes in retirement are provided entirely through personal savings, and consider an individual who starts working at age 20, works continuously until retirement at age 65, living for a further 15 years. The example assumes that real earnings grow at 2 per cent per annum; that savings earns a real return of 4 per cent per annum; and that the saving rate is constant over the lifetime. Under these assumptions, a ‘target’ replacement ratio of 0.6 at age 65 would require a saving rate of 12 per cent of earned income which, in turn, would generate a wealth-to-income ratio of 5.4 at age 55, and just over 7 at age 67. Of course, higher values for this target replacement ratio and/or a lower desired retirement rate would require higher savings and wealth. For example, the same spreadsheet calculation suggests that, if the individual intended to retire at age 55 with the same target replacement rate of 0.6, this would require a saving rate of around 30 per cent of earned income, and a wealth to income ratio of around 15 at age 55. This illustrate the point that in countries with lower average retirement age, wealth-to-income ratios in old age should be higher and peak earlier than in other countries.

42. What this exercise tell us about ‘adequacy’? A starting point is to aggregate market and pension wealth to obtain overall wealth-to-income ratios. To account for the fact that, in some countries, not all families have an entitlement to an old-age pension, the estimates of pension wealth presented in Figure 12 take account of both values of the hypothetical flows, for units entitled to a pension, and of the proportion of units covered by a public pension programme; hence these estimates will be lower than those presented in Figure 11. Overall, for couples, these vary from values above 10 in Australia, to around 8 in France, Germany, Japan and the United Kingdom, and to around 6 in the other countries; only in Italy this ratio is lower, but this reflects the high proportion of families who are already retired by the age of 55. There is some evidence of an offset between pension wealth and market wealth. In the Netherlands and Sweden, pension wealth is significantly more important, relatively to market wealth, than in the United Kingdom

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29. In the case of occupational pensions, these estimates are adjusted for the proportion of each quintile and family type which is covered by occupational pensions.

and the United States, although France reports above average ratios for both market and pension wealth. Also, pension wealth may be seen as tilting the distribution of market wealth in favour of lower income groups. The values of the total wealth-to-income ratios suggest that, for a planned retirement at 65, the stock of accumulated wealth accumulated through voluntary and mandatory savings is adequate in all countries to assure a target replacement ratio of 0.6 of final pre-retirement income. Of course, this simple exercise assumes that all market wealth is consumed during the lifetime (including housing wealth), and that publicly provided pensions are not further cut back during the demographic transition, assumptions which may not be wholly realistic. Concerns on adequacy of resources may however occur for a planned retirement age which is much earlier than 65.<sup>30</sup>

Figure 12. Market and pension wealth-to-income ratios, families with a head around 55 years old

## VII. Policy conclusions

43. The data presented in this study have a number of limitations. The most important are the lack of a breakdown of family head by sex, which is key for the assessment of the situation of survivors; the specific nature of the data for the United States and Australia, noted in Box 1, which severely affect cross-country comparability; and the very rough assumptions used in the calculation of pension wealth. While some of these could be corrected in later version of this study, the preliminary evidence presented here sheds some light on three set of issues which are important for reforms of public pension programmes. The first encompasses questions about the *level* of retirement resources *and* their *heterogeneity* within the elderly population. The second concern the scope for, and constraints to, *substitution* among the different components of the retirement package. The third is the *risk* of alternative packages and its implications for the vulnerability of specific groups.

44. The first point emerging from this study is that replacement rates limited to public pensions are misleading indicators of the economic status of the elderly. When considering all income sources and direct taxes paid, ‘comprehensive’ measures of replacement ratios are surprisingly uniform across countries and relatively high, probably implying complete utility replacement during retirement. Wealth-to-income ratios for the cohort coming up to retirement, which include both market assets and accrued pension rights, also suggest that these are probably adequate in all countries to support a replacement ratios of around 0.6 at age 65. However, while resources may be adequate to support retirement on *average*, there are large differences in economic conditions within the elderly population. Pockets of elderly families with inadequate economic resources, mainly in the form of public pensions, coexists in all countries with groups with resources in excess of consumption needs<sup>31</sup>. Furthermore, especially in the bottom quintile, there is evidence in many countries of very low levels of financial assets, which are especially important as a shield against unanticipated events. Reforms directed at reducing the current

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30. As already noted, any assessment of ‘adequacy’ which is based on estimates of pension wealth crucially depend on technical assumptions as to a number of factors, and that alternative choices of assumptions can lead to quite different conclusions. One obvious factor which has a large quantitative importance is the rate used to discount future pension benefits; the higher this rate, the lower the pension wealth estimates corresponding to a given pension flow. As already noted, in the estimates presented above this discount factor was arbitrary set at 4 per cent. Under the assumptions used in this study, an alternative choice of a 2 per cent discount rate would have the effect of increasing pension wealth to income ratios by around 40 per cent in all countries.

31. In the case of Germany, Börsch-Supan (1977) notes that, among all elderly aged 66 and more, more than 16 per cent have an annuity income that exceeds consumption by over 50 per cent, and that this percentage rises to almost 25 per cent among the elderly above 75 years of age.

generosity of existing public pension system need to take account of this heterogeneity of conditions, to avoid major disruptions in the standard of living for the most vulnerable groups of the retired, thereby also lessening resistance to reform.

45. The observation of large differences in the composition of the retirement income package across countries, coupled with relatively uniform levels of replacement ratios, suggests that individuals may adjust to institutional and market constraints to achieve some 'target' or 'desired' replacement ratios. This substitution may take many forms. First, public pensions may crowd out earnings -- as workers react to incentives created by social security regulations by withdrawing from the labour force -- and occupational pensions (Blöndal and Scarpetta, 1998). Second, there may be substitution effects between generous public pensions and individuals savings, as suggested by the negative relation across countries between public pension replacement ratios and ratios of market wealth to income. Finally, there may be substitution between public pensions and bequests, with high "involuntary" savings in old age being offset by private intergenerational transfers in the opposite direction (Börsch-Supan, 1997).

46. While these substitution effect will be important for any assessment of the ultimate results of ongoing reforms of public pension programmes, the evidence presented suggests greater scope for substitution -- and greater heterogeneity of income sources -- in countries where public pension programmes are less generous or more targeted on lower income groups. While differences in a point in time in the composition of the retirement package provide no evidence *per se* of behavioural responses, they are at least suggestive of a margin for policy discretion. The scope for substitution may however be constrained by the institutional characteristics of pension systems, by missing institutions (such as the underdevelopment of an annuity market), and by the labour market experience of different groups of the population; workers with short and intermittent careers, and those experiencing long or recurrent spells of unemployment, may be unable to benefit from the growth of occupational pension plans, especially when there are limits with the portability of these plans.

47. Even when substitution may allow the level of retirement resources to remain unchanged, its risk exposure is likely to change as the various components of the retirement package carry differential risks. While countries which are mainly relying on generous pay-as-you-go systems are exposed to demographic and political risks, capital market risks are intrinsic in countries mainly relying on funded pension systems and on the accumulation of market wealth. Risks pertaining to housing are especially important. While housing may serve as a shield against inflation, its low degree of liquidity may translate into large declines in values when the elderly person decides to sell. More generally, the possibility of relying on housing wealth to support consumption during retirement will depend on the availability of cheaper shelter for elderly families.

48. While higher risk of the retirement income package, as measured by its expected variance, is not necessarily a policy concern, it could translate into higher vulnerability for some groups, as expressed by the probability that his retirement income falls below a subsistence level. This heterogeneity of economic conditions in retirement is likely to increase in the future, as components with individual risks (e.g. market assets) increase in weight relative to components carrying a common risk for all elderly (such as public pensions).

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Table 1. Main features of surveys used

	Name of Survey	Year of Survey	Number of units used in this study	Age of Head	Survey Unit	Ranking of units
Australia	<i>Household Expenditure Survey</i>	1993/94	1,094	Between 55 and 59 Between 65 and 69	All elderly	Disposable income
France <sup>1</sup>	<i>i) Budget de famille</i> <i>ii) Actif Financiers</i>	1994/95 1992	1,412 1,587	Between 53 and 57 Between 65 and 69	All elderly	Disposable income
Germany	<i>German Income and Expenditure Survey</i>	1993	5,185	Between 53 and 57 Between 65 and 69	Elderly not living with descendants	Disposable income
Japan	<i>National Survey of Family Income and Expenditure</i>	1994	3,975	Between 53 and 57 Between 65 and 69	Elderly not living with descendants	Disposable income
Italy	<i>Survey of Household Income and Wealth</i>	1995	3,632	Between 50 and 60 Between 62 and 72	All elderly	Disposable income
Netherlands	<i>Socio-Economic Panel</i>	1990	993	Between 51 and 59 Between 65 and 73	All elderly	Disposable income
Sweden	<i>Income Distribution Survey</i>	1995	2,119	Between 52 and 57 Between 66 and 69	Elderly not living with descendants	Disposable income
United Kingdom <sup>1</sup>	<i>i) Family Expenditure Survey</i> <i>ii) Retirement Survey</i>	1988/89 1988/89	2,471 1,383	Between 55 and 59 Between 65 and 69	All Elderly	Disposable income
United States <sup>2</sup>	<i>i) Health and Retirement Survey</i> <i>ii) Assets and Health Dynamics among the Oldest Old</i>	1992 1993	2,206 2,153	Between 51 and 61 Between 70 and 79	All elderly	Gross income

1. In the case of France and the United Kingdom, two different surveys are used for information on income and assets.

2. In the case of the United States, two different surveys are used for the two age groups.

Source: OECD.

Table 2. **Number of units retained in this study**

	Head around 55			Head around 69			Total		
	Singles	Couples	Total	Singles	Couples	Total	Singles	Couples	Total
Australia	156	405	561	235	298	533	391	703	1,094
France <sup>1</sup>	201	472	673	280	459	739	481	931	1,412
	171	603	774	276	537	813	447	1,140	1,587
Germany	713	1,751	2,464	1,097	1,624	2,721	1,810	3,375	5,185
Japan	181	1,143	1,324	454	2,197	2,651	635	3,340	3,975
Italy	383	1,502	1,885	625	1,122	1,747	1,008	2,624	3,632
Netherlands	128	367	495	204	294	498	332	661	993
Sweden	373	1,076	1,449	204	466	670	577	1,542	2,119
United Kingdom <sup>1</sup>	393	733	1,126	612	733	1,345	1,005	1,466	2,471
	197	446	643	343	397	740	540	843	1,383
United States <sup>2</sup>	1,015	1,191	2,206	1,226	927	2,153	2,241	2,118	4,359

1. In the case of France and of the United Kingdom, two different surveys are used for information on income and assets.

2. In the case of the United States, two different surveys are used for the two age groups.

Source: OECD.

Table 3. Proportion of families reporting earnings

	Aged 55											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	29.0	3.5	0.0	13.3	50.7	77.7	65.0	25.6	42.7	76.6	84.7	95.4
France	68.0	33.0	60.0	65.0	88.0	95.0	85.0	64.0	85.0	88.0	92.0	96.0
Germany	66.1	18.6	58.2	84.3	89.1	80.5	83.8	54.6	82.2	93.2	95.7	93.4
Italy	62.9	17.0	53.7	64.8	79.3	93.9	84.5	67.1	76.9	86.1	94.9	96.7
Japan	74.9	52.4	78.2	82.7	67.6	93.6	90.2	72.5	91.0	95.4	94.6	97.5
Netherlands	39.8	4.0	15.4	28.0	57.7	92.3	78.2	30.1	75.3	91.9	95.9	97.3
Sweden	70.7	43.4	47.1	81.9	85.2	95.6	95.7	85.1	98.1	97.5	98.1	99.5
United Kingdom	52.2	5.1	27.8	66.7	86.1	74.7	79.3	45.9	81.6	88.4	93.2	87.1
United States <sup>1</sup>	74.4	36.6	65.3	90.1	88.1	92.1	92.9	80.0	96.2	97.4	97.6	93.3
	Aged 67											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	3.9	5.0	0.0	0.0	7.2	7.3	10.7	5.2	1.9	8.5	4.8	33.2
France	8.0	2.0	2.0	3.0	9.0	26.0	17.0	9.0	9.0	21.0	24.0	25.0
Germany	2.9	1.7	1.9	1.2	1.0	8.7	11.0	1.1	5.2	6.7	15.9	26.5
Italy	21.1	0.4	3.0	13.4	35.8	65.0	40.3	10.1	12.7	35.0	65.1	77.7
Japan	20.8	5.5	16.2	24.8	17.0	40.1	36.5	19.7	14.2	31.4	47.9	69.1
Netherlands	0.5	0.0	0.0	0.0	2.4	0.0	5.8	0.0	3.4	1.7	10.2	13.6
Sweden	15.6	0.0	13.3	10.0	23.9	30.6	45.1	40.2	30.6	35.5	46.8	72.5
United Kingdom	9.8	3.3	10.7	7.3	13.1	14.6	29.5	10.3	14.3	30.8	44.2	47.6
United States <sup>1</sup>	9.5	1.0	5.0	5.7	13.5	22.4	20.2	6.0	8.3	15.6	22.6	48.4

1. As a per cent of gross income.

Source: OECD.

Table 4. Proportion of families reporting positive self-employment income

	Aged 55											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	8.5	16.7	3.8	0.0	7.4	14.7	23.4	28.1	17.6	23.6	23.1	24.6
France	5.0	5.0	5.0	3.0	2.0	11.0	16.0	22.0	9.0	12.0	13.0	23.0
Germany	26.0	19.7	28.8	25.2	27.6	28.6	33.9	30.5	31.2	36.8	30.3	40.9
Italy	11.0	1.1	0.7	8.8	8.1	35.7	21.4	14.6	9.9	15.0	20.1	48.6
Japan	13.8	19.0	18.2	9.9	11.4	10.4	20.6	36.3	21.4	20.3	14.8	10.1
Netherlands	..	..	..	..	..	..	..	..	..	..	..	..
Sweden	11.7	19.7	2.4	12.8	11.0	12.8	27.7	49.5	26.0	19.9	18.0	25.4
United Kingdom	10.9	9.0	11.4	10.3	11.4	12.7	23.1	24.0	21.1	24.0	17.7	28.6
United States <sup>1</sup>	4.0	2.5	1.6	2.0	6.1	7.6	9.2	3.9	8.6	5.4	7.8	20.1
	Aged 67											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	4.5	13.0	2.1	2.6	2.1	2.6	9.2	7.3	7.9	2.4	4.9	23.5
France	2.0	2.0	0.0	1.0	1.0	3.0	5.0	4.0	5.0	4.0	5.0	7.0
Germany	20.0	17.1	21.0	18.7	21.9	21.2	28.5	27.3	27.8	28.7	24.3	34.6
Italy	1.1	0.0	0.0	0.8	0.0	5.7	6.5	0.7	1.4	3.1	6.8	20.4
Japan	11.0	16.8	11.5	8.8	10.0	7.9	19.9	22.5	15.0	19.1	21.1	21.9
Netherlands	..	..	..	..	..	..	..	..	..	..	..	..
Sweden	7.2	3.7	4.8	3.8	5.2	17.9	19.7	33.1	15.5	8.0	15.3	27.2
United Kingdom	4.4	2.5	2.5	1.6	4.9	10.6	12.3	4.8	10.9	11.6	11.6	22.4
United States <sup>1</sup>	..	..	..	..	..	..	..	..	..	..	..	..

1. As a per cent of gross income.

Source: OECD.

Table 5. Proportion of families receiving public transfers

	Aged 55											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	55.8	38.9	100.0	96.9	40.2	2.8	33.7	55.4	60.3	27.5	16.3	9.0
France	59.0	76.0	58.0	70.0	44.0	48.0	58.0	71.0	66.0	62.0	48.0	42.0
Germany	49.5	93.1	58.5	37.4	28.7	29.4	63.3	84.1	68.6	63.1	52.9	47.4
Italy	67.0	77.7	68.8	63.2	68.5	57.8	38.3	33.2	37.9	44.0	43.2	32.4
Japan	25.1	37.0	19.1	39.3	17.2	13.5	6.8	8.7	7.3	3.9	4.1	9.9
Netherlands	66.4	96.0	84.6	72.0	46.2	34.6	48.2	80.8	47.9	39.2	41.1	32.4
Sweden	65.7	86.0	80.0	60.4	56.7	45.7	65.7	79.7	71.0	65.3	59.0	53.4
United Kingdom	56.7	80.8	82.3	50.0	38.0	32.9	38.5	56.8	44.9	32.9	33.3	24.5
United States <sup>1</sup>	28.7	61.5	37.5	19.8	15.2	9.5	19.3	37.7	25.5	16.2	9.2	7.7

	Aged 67											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	89.2	75.3	97.9	97.3	100.0	75.4	78.1	76.6	94.2	96.3	85.5	37.8
France	98.0	100.0	100.0	99.0	100.0	93.0	100.0	99.0	100.0	100.0	100.0	99.0
Germany	99.4	99.8	100.0	99.2	98.9	99.1	99.4	100.0	99.6	100.0	100.0	97.4
Italy	99.0	99.9	99.3	100.0	98.5	96.6	91.4	90.1	95.0	93.5	91.8	86.8
Japan	95.3	93.2	97.0	93.3	97.8	95.2	93.4	86.6	94.7	95.7	95.5	94.2
Netherlands	99.5	100.0	100.0	100.0	100.0	97.6	99.7	100.0	100.0	100.0	98.3	100.0
Sweden	99.5	97.3	100.0	100.0	100.0	100.0	99.8	100.0	100.0	100.0	100.0	99.0
United Kingdom	98.9	99.2	100.0	100.0	100.0	95.1	97.0	98.6	98.6	98.6	98.0	91.2
United States <sup>1</sup>	97.4	98.7	98.2	98.8	96.4	94.9	98.3	98.0	96.5	99.0	100.0	98.0

1. As a per cent of gross income.

Source: OECD.

Table 6. Proportion of families receiving other transfers

	Aged 55											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	1.3	3.1	0.0	0.0	3.2	0.0	6.2	1.7	4.9	9.3	10.0	5.0
France	..	..	..	..	..	..	..	..	..	..	..	..
Germany	11.5	10.8	15.8	9.7	12.0	9.1	5.7	4.0	6.8	7.7	4.1	6.2
Italy	..	..	..	..	..	..	..	..	..	..	..	..
Japan	24.9	18.3	14.8	27.6	43.6	20.3	20.6	21.6	24.4	17.9	19.8	19.6
Netherlands	38.3	8.0	30.8	56.0	46.2	50.0	17.7	11.0	21.9	9.5	24.7	21.6
Sweden	13.5	5.0	9.5	10.5	16.4	25.9	18.1	17.8	22.3	17.2	14.5	18.9
United Kingdom	26.5	16.7	24.1	39.7	20.3	31.6	29.7	32.2	26.5	26.0	33.3	30.6
United States <sup>1</sup>	16.2	15.2	19.2	17.6	15.4	13.7	16.5	13.2	14.9	21.1	19.1	14.5
	Aged 67											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	10.5	0.0	0.0	2.7	8.2	41.6	17.2	3.4	6.0	8.7	35.3	32.6
France	..	..	..	..	..	..	..	..	..	..	..	..
Germany	27.9	15.8	22.6	30.7	33.0	37.5	27.7	18.7	23.9	26.7	30.1	38.9
Italy	..	..	..	..	..	..	..	..	..	..	..	..
Japan	25.4	31.5	15.1	15.4	22.5	42.4	28.9	24.9	27.4	31.1	32.7	28.7
Netherlands	74.5	30.0	65.9	80.5	95.1	100.0	90.5	74.1	89.8	93.2	96.6	98.3
Sweden	79.3	56.7	65.5	83.3	94.6	96.3	93.1	74.6	95.5	97.8	99.6	97.3
United Kingdom	51.1	23.8	37.7	48.8	65.6	79.7	72.9	50.0	72.8	80.8	83.0	77.6
United States <sup>1</sup>	53.7	17.2	29.1	65.5	77.6	79.2	72.8	28.8	79.9	87.1	85.1	83.0

1. As a per cent of gross income.

Source: OECD.

Table 7. Proportion of families reporting housing wealth

	Aged 55											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	56.5	72.6	34.0	49.4	64.5	62.1	85.7	80.4	75.9	80.5	93.0	98.5
France	65.0	43.0	56.0	79.0	75.0	71.0	80.0	60.0	77.0	82.0	85.0	98.0
Germany	32.4	15.0	19.7	26.3	39.5	61.7	58.8	39.5	50.0	55.4	66.2	83.0
Italy	69.5	47.4	55.6	73.0	75.8	93.3	83.2	68.2	78.5	83.9	88.7	96.2
Japan	55.6	54.9	42.9	72.1	70.0	38.4	83.7	73.8	77.5	83.8	93.1	90.3
Netherlands	32.8	16.0	15.4	24.0	42.3	65.4	59.7	46.6	42.5	56.8	68.5	83.8
Sweden	44.2	31.0	20.9	53.5	52.7	62.8	84.2	73.7	82.2	84.7	88.3	92.2
United Kingdom	45.7	23.1	43.6	42.5	48.7	70.0	75.1	58.4	64.0	69.7	87.6	95.6
United States	56.3	27.7	48.8	57.5	64.1	83.4	89.8	74.9	90.0	94.4	95.1	94.6
	Aged 67											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	67.2	54.1	67.4	71.2	61.2	82.1	91.6	78.2	91.1	93.5	95.2	99.9
France	65.0	40.0	74.0	53.0	69.0	87.0	84.0	82.0	81.0	84.0	79.0	97.0
Germany	36.2	27.0	22.5	31.4	43.2	56.9	57.6	45.6	47.6	49.4	63.1	82.4
Italy	63.4	58.0	48.6	72.1	63.3	80.6	82.4	70.1	78.9	83.3	84.6	95.4
Japan	73.8	54.3	76.5	69.5	85.6	83.0	91.7	81.5	91.3	93.9	94.7	96.9
Netherlands	18.6	10.0	17.1	14.6	12.2	39.0	40.8	39.7	20.3	30.5	44.1	69.5
Sweden	38.9	43.4	32.4	18.3	40.4	59.1	75.0	68.5	64.4	68.9	85.7	87.5
United Kingdom	42.3	16.2	27.5	44.1	46.4	76.8	66.2	34.2	53.2	66.3	81.0	96.3
United States	65.8	43.1	60.0	69.8	73.6	82.7	88.3	74.8	86.4	92.7	92.9	94.5

Source: OECD.

Table 8. Proportion of families reporting financial wealth

	Aged 55											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	71.8	64.6	47.6	74.6	87.0	85.0	69.5	56.2	57.8	74.7	71.5	87.1
France	96.0	90.0	91.0	98.0	100.0	100.0	99.0	97.0	99.0	100.0	100.0	100.0
Germany	89.5	65.3	89.3	97.6	99.2	96.2	97.6	93.1	98.1	98.1	99.3	99.3
Italy	90.5	66.5	89.8	96.4	97.0	100.0	96.0	88.1	94.5	98.1	99.5	99.7
Japan	98.7	100.0	96.2	100.0	97.2	100.0	97.0	94.2	97.3	97.4	99.0	97.1
Netherlands	97.7	96.0	100.0	100.0	92.3	100.0	99.5	98.6	98.6	100.0	100.0	100.0
Sweden	93.6	77.2	93.9	98.5	100.0	98.5	99.6	97.8	100.0	100.0	100.0	100.0
United Kingdom	73.6	43.6	64.1	85.0	79.5	95.0	76.0	53.9	74.2	74.2	87.6	90.0
United States	78.0	43.8	72.1	84.1	93.4	96.7	94.8	82.7	95.2	97.5	99.5	99.2
	Aged 67											
	Singles						Couples					
	Income quintile						Income quintile					
	All	1	2	3	4	5	All	1	2	3	4	5
Australia	69.0	52.9	52.0	82.7	74.4	82.8	80.8	58.8	78.3	90.7	87.3	88.9
France	100.0	99.0	100.0	100.0	96.0	100.0	99.0	97.0	100.0	100.0	100.0	99.0
Germany	91.3	80.0	89.6	93.9	95.6	97.6	97.1	93.1	96.2	98.7	99.1	98.5
Italy	88.7	76.4	85.9	91.5	95.3	98.9	92.9	78.6	90.9	95.3	99.9	99.7
Japan	99.7	99.5	98.9	100.0	100.0	100.0	99.4	99.4	99.8	99.2	99.4	99.4
Netherlands	99.5	100.0	100.0	100.0	100.0	97.6	99.3	100.0	100.0	98.3	100.0	98.3
Sweden	91.4	84.1	80.4	94.8	100.0	97.4	98.1	93.6	97.8	98.9	100.0	100.0
United Kingdom	70.8	50.0	63.8	79.4	81.2	79.7	77.8	65.8	64.6	78.8	83.5	96.3
United States	81.7	54.3	77.3	88.8	91.3	96.7	90.6	74.0	90.0	93.8	97.4	97.6

Source: OECD.

Table 9. Ratios of net financial wealth to income

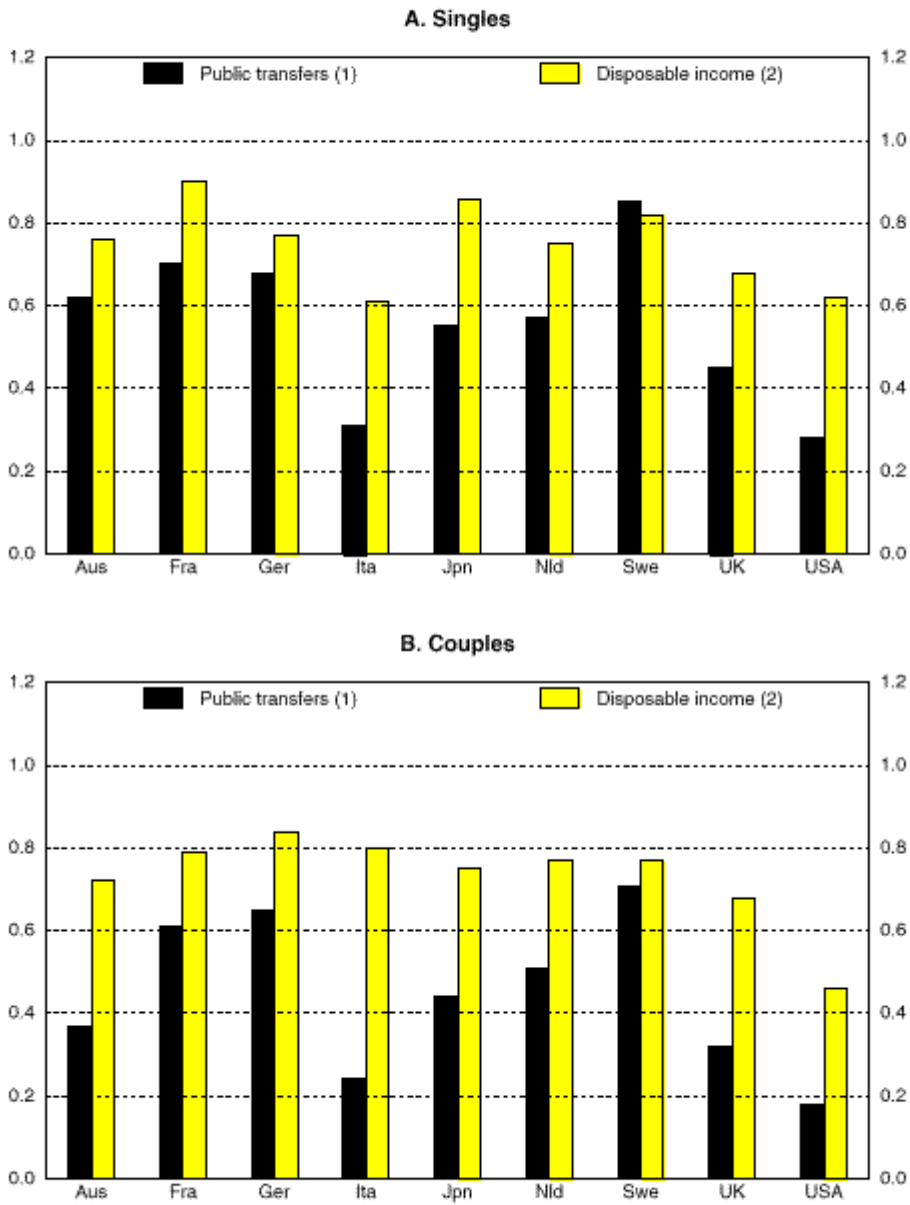
	Total population			
	55 years old		67 years old	
	Singles	Couples	Singles	Couples
Australia	2.2	2.1	6.2	5.0
France	1.9	1.5	2.1	3.7
Germany	0.7	0.5	1.2	1.2
Italy	1.8	1.3	2.8	2.8
Japan	2.8	1.7	4.0	3.8
Netherlands	0.4	0.4	1.0	0.9
Sweden	-0.1	-0.1	1.1	0.7
United Kingdom	0.9	0.7	1.4	1.3
United States <sup>1</sup>	2.0	1.5	3.5	3.2
	Bottom quintile			
	55 years old		67 years old	
	Singles	Couples	Singles	Couples
Australia <sup>1</sup>	0.3	4.0	0.4	2.0
France	1.5	1.3	2.2	2.0
Germany	0.6	0.5	0.9	0.9
Italy	1.9	1.1	2.1	1.7
Japan	5.2	1.9	4.7	3.4
Netherlands	1.2	0.4	1.8	0.7
Sweden	0.0	-0.1	1.9	0.8
United Kingdom	0.4	0.9	0.7	0.8
United States <sup>2</sup>	0.7	1.7	2.3	2.4

1. Data for Australia refer to the second lowest quintile.

2. As a percentage of gross income.

Source: OECD.

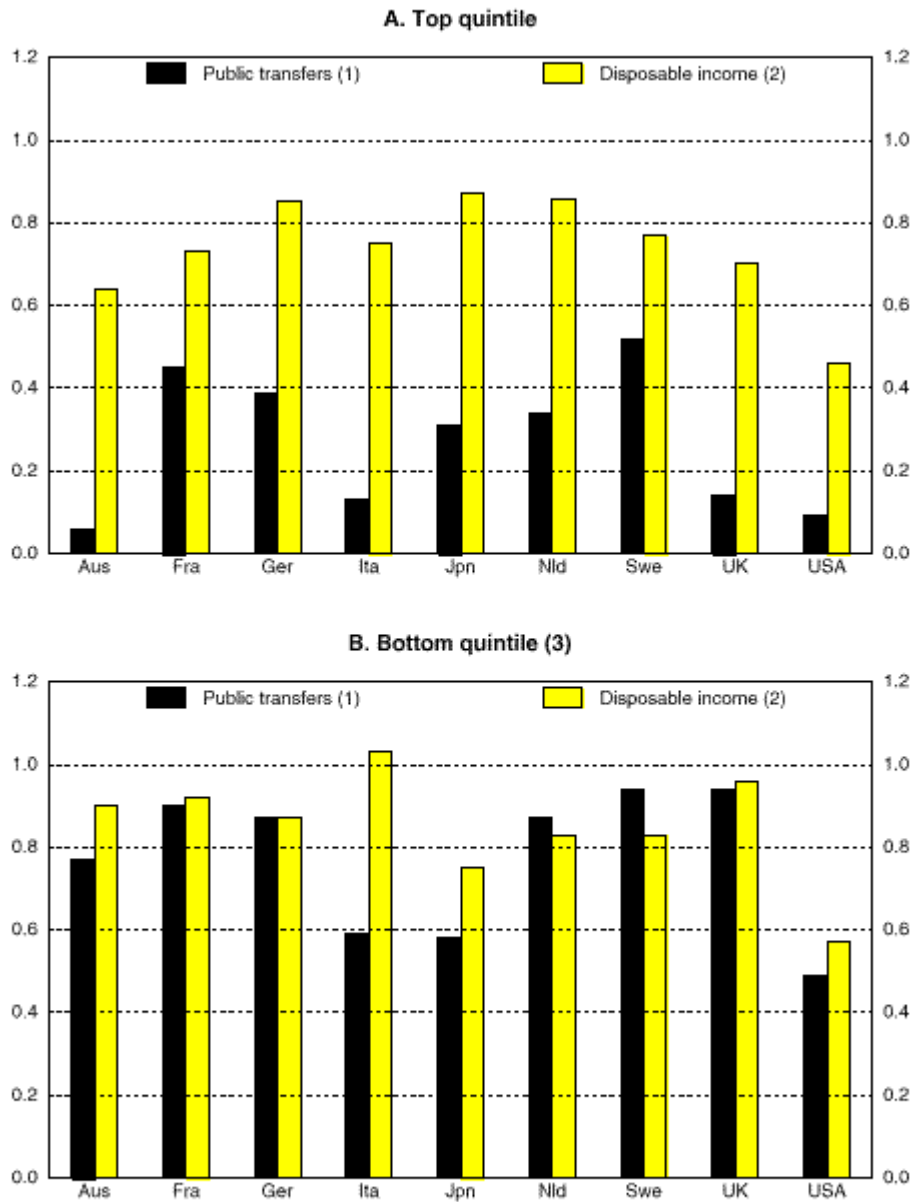
Figure 1. REPLACEMENT RATIOS FOR THE ENTIRE POPULATION



1. Public transfers of households with head aged 67 relative to income of households with head aged 55.  
 2. Income of households with head aged 67 relative to income of households with head aged 55.  
 Source: OECD.

Fig114.jpg

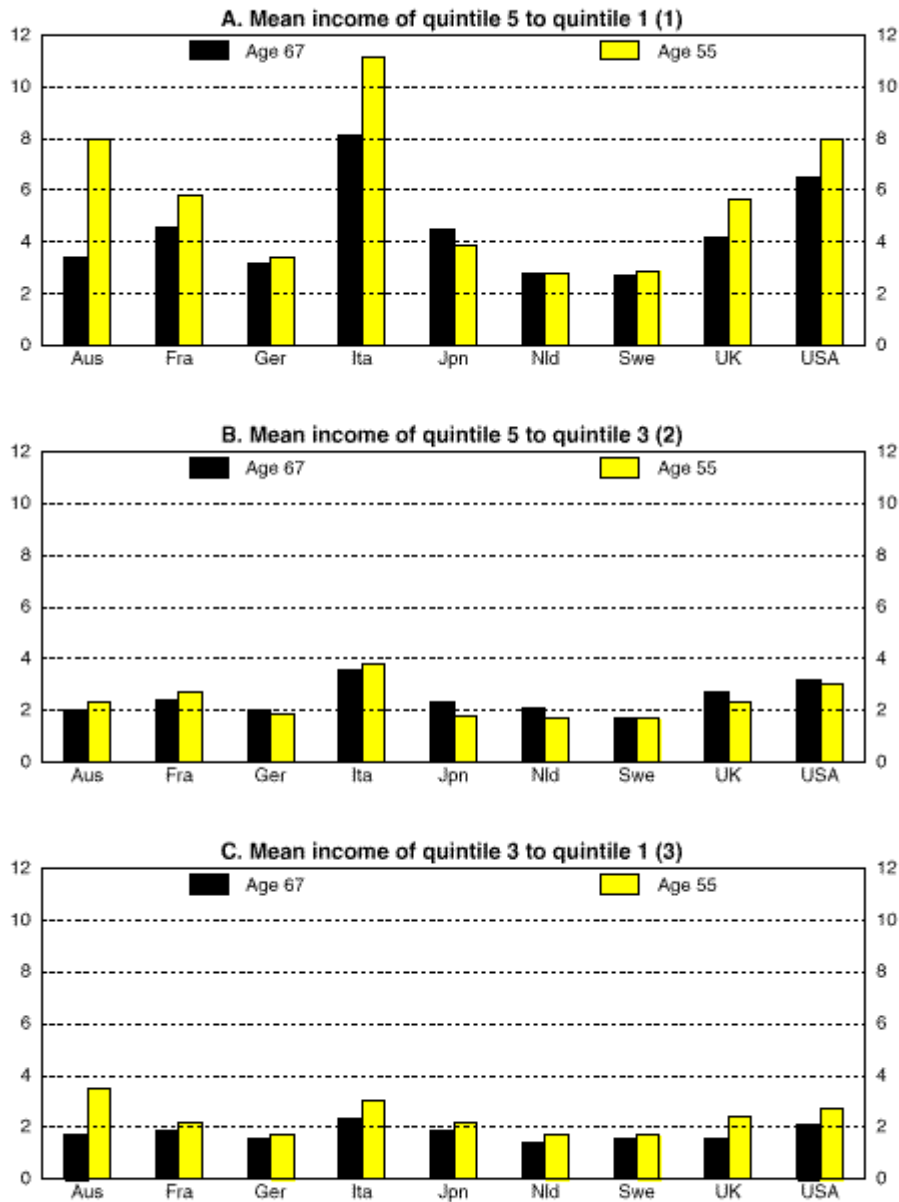
Figure 2. REPLACEMENT RATIOS FOR COUPLES IN THE TOP AND BOTTOM QUINTILES



1. Public transfers of households with head aged 67 relative to income of households with head aged 55.  
 2. Income of households with head aged 67 relative to income of households with head aged 55.  
 3. For Australia, the bottom quintile refers to q2.  
 Source: OECD.

File15.inp

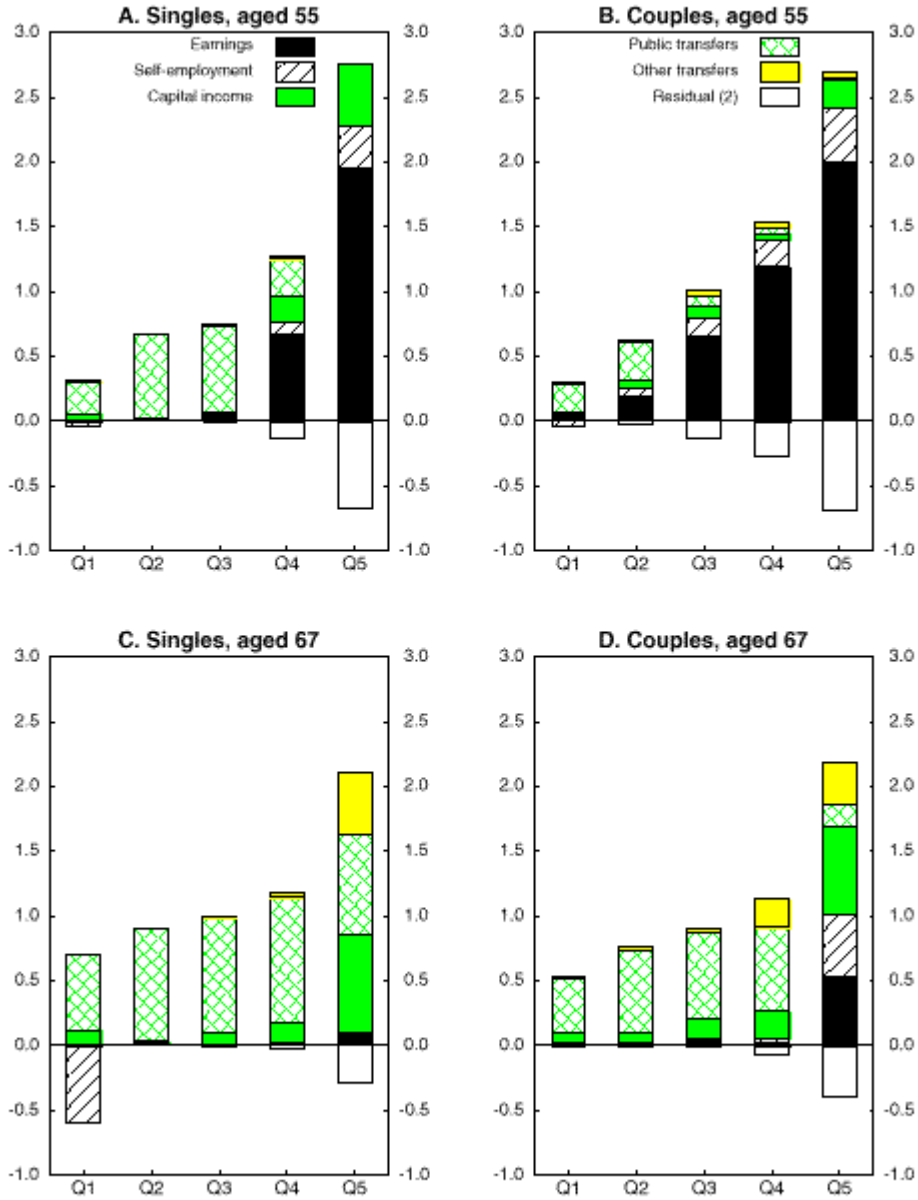
Figure 3. INCOME DISPERSION AMONG COUPLES, BY AGE



1. Ratio of mean income for units in the top quintile (q5) to the bottom quintile (q1).  
 2. Ratio of mean income for units in the top quintile (q5) to the middle quintile (q3).  
 3. Ratio of mean income for units in the middle quintile (q3) to the bottom quintile (q1).  
 Source: OECD.

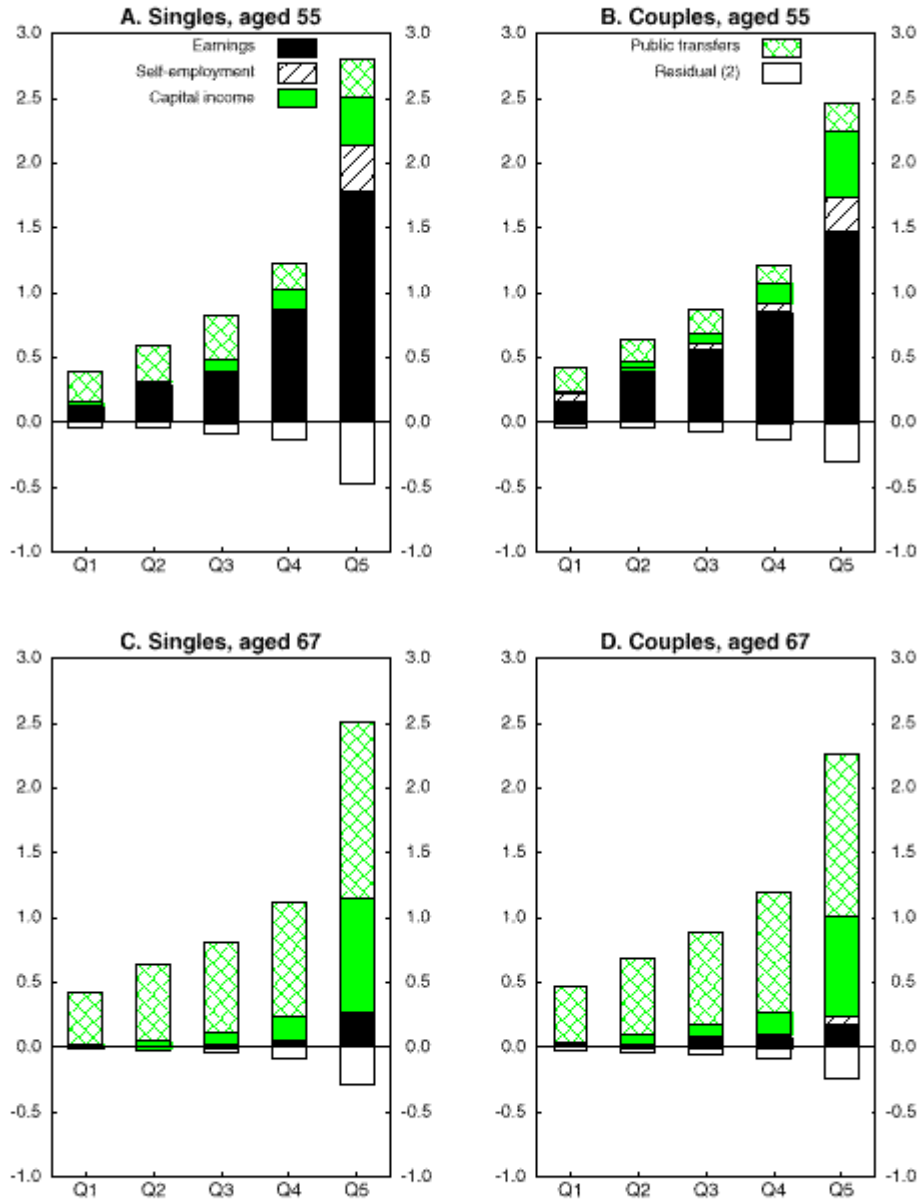
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**Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1)**  
Australia



1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
2. The residual includes taxes.  
Source: OECD.

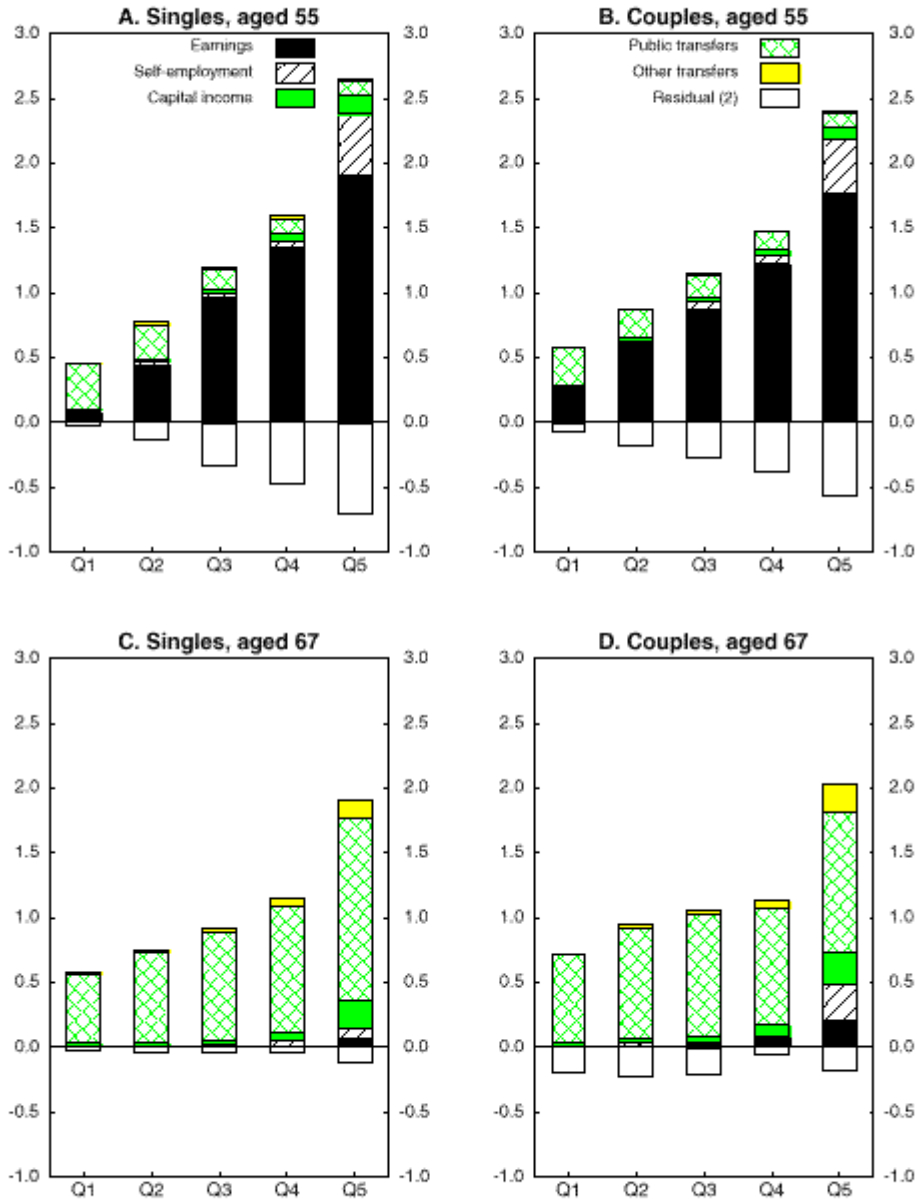
**Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1) (continued)**  
France



1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
2. The residual includes taxes.  
Source: OECD.

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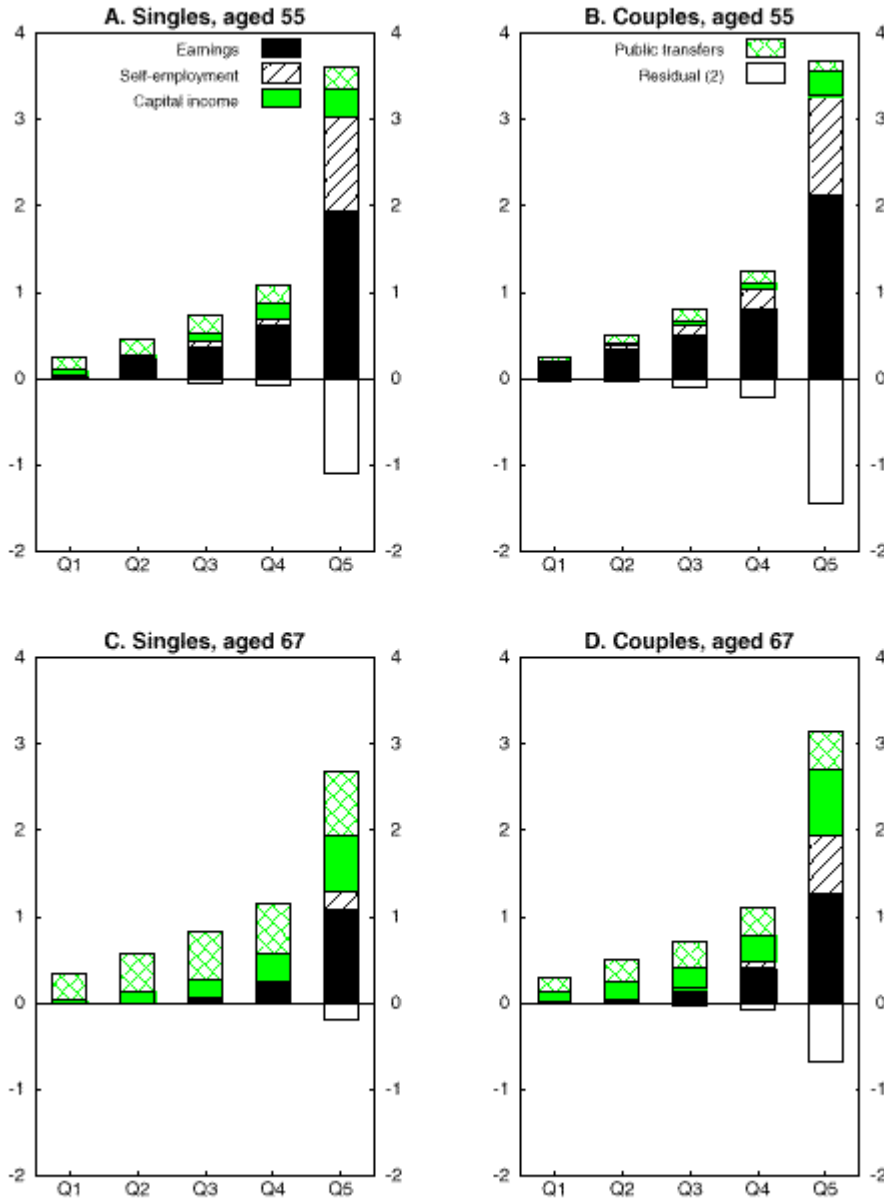
Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1) (continued)  
Germany



1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
2. The residual includes taxes.  
Source: OECD.

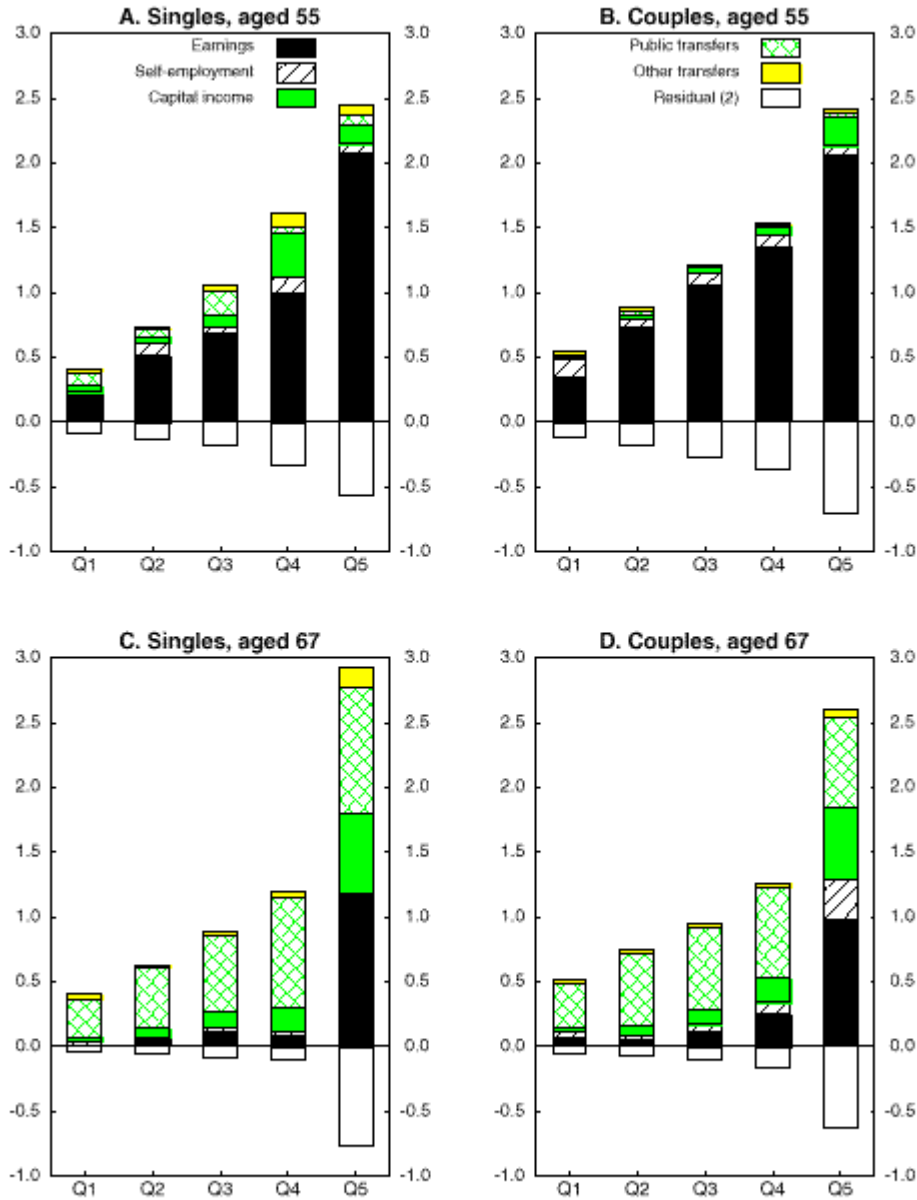
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**Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1) (continued)**  
Italy



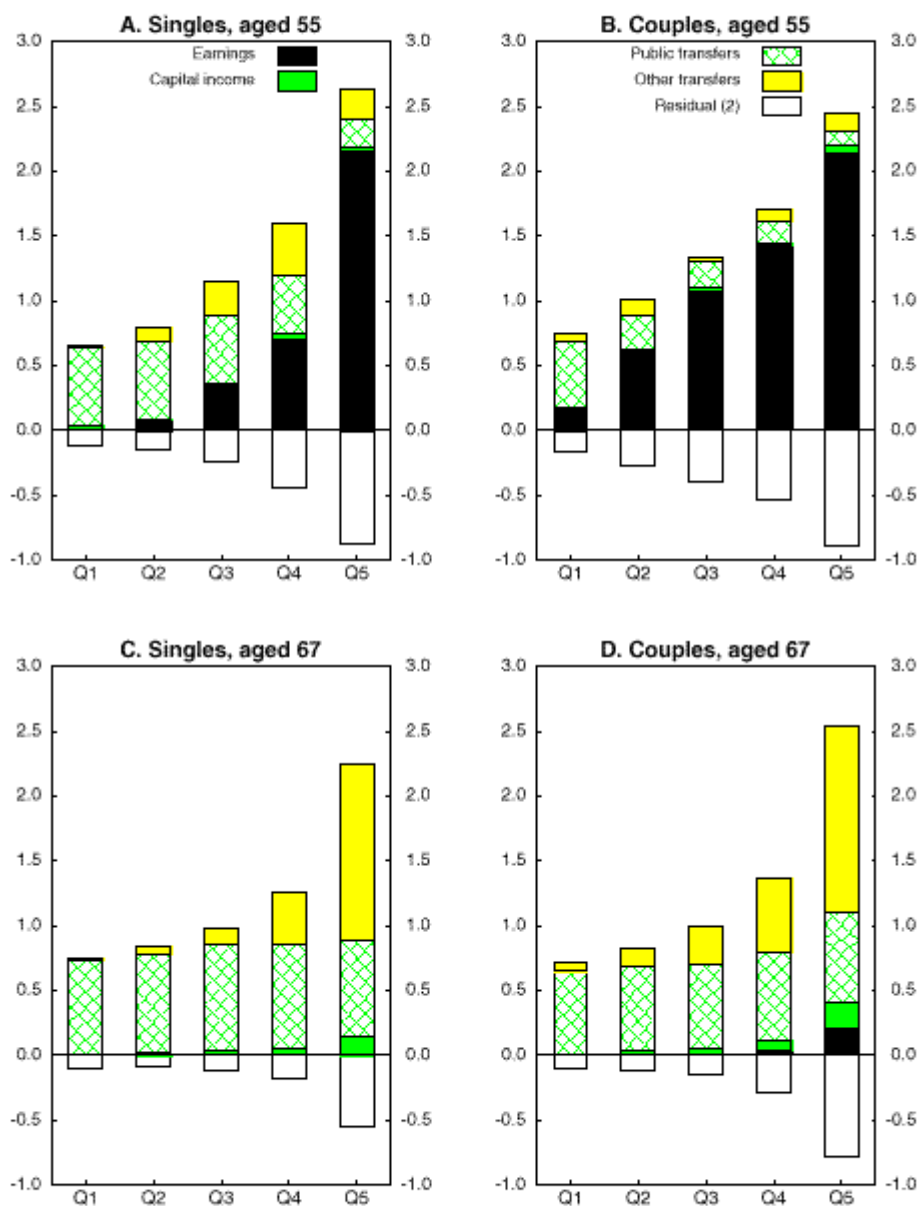
1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
2. The residual includes taxes.  
Source: OECD.

Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1) (continued)  
Japan



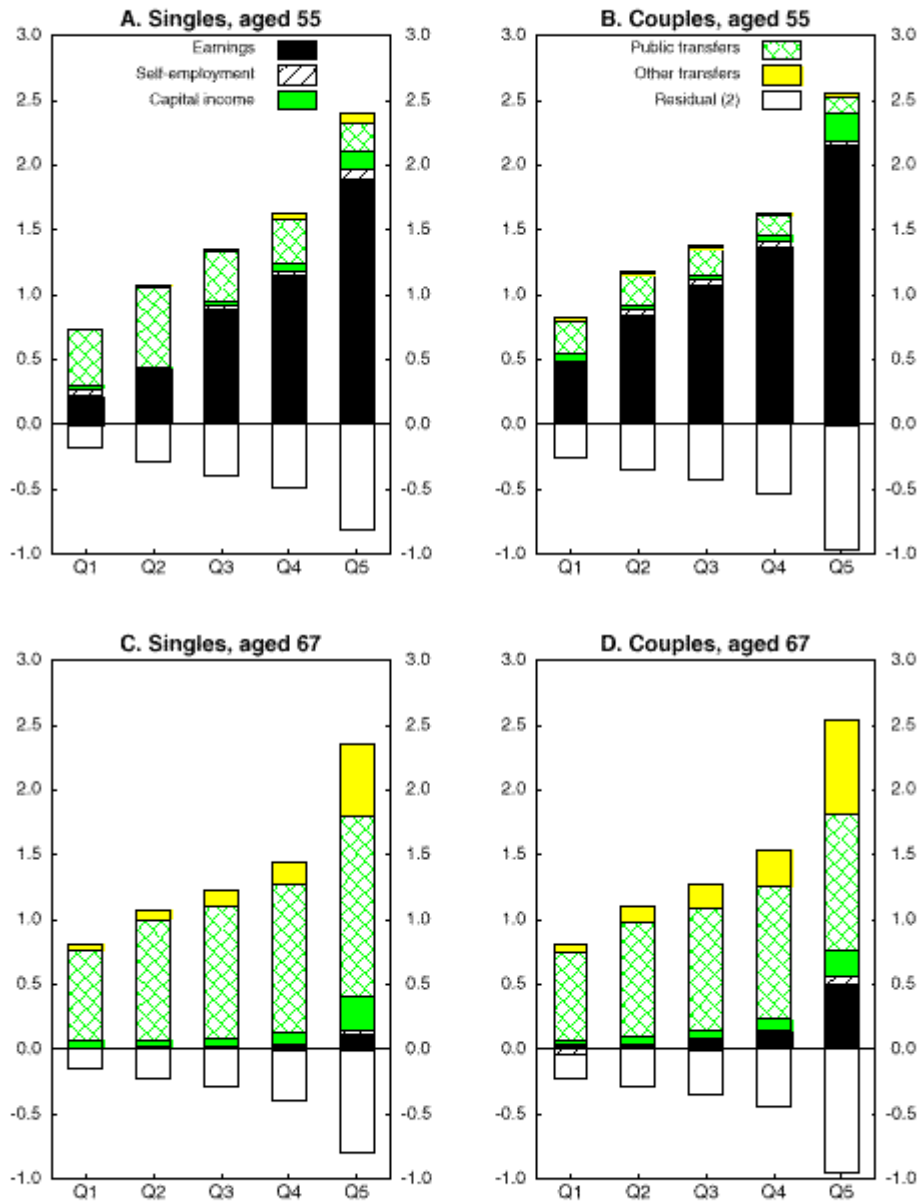
1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
2. The residual includes taxes.  
Source: OECD.

**Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1) (continued)**  
**The Netherlands**



1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
 2. The residual includes taxes.  
 Source: OECD.

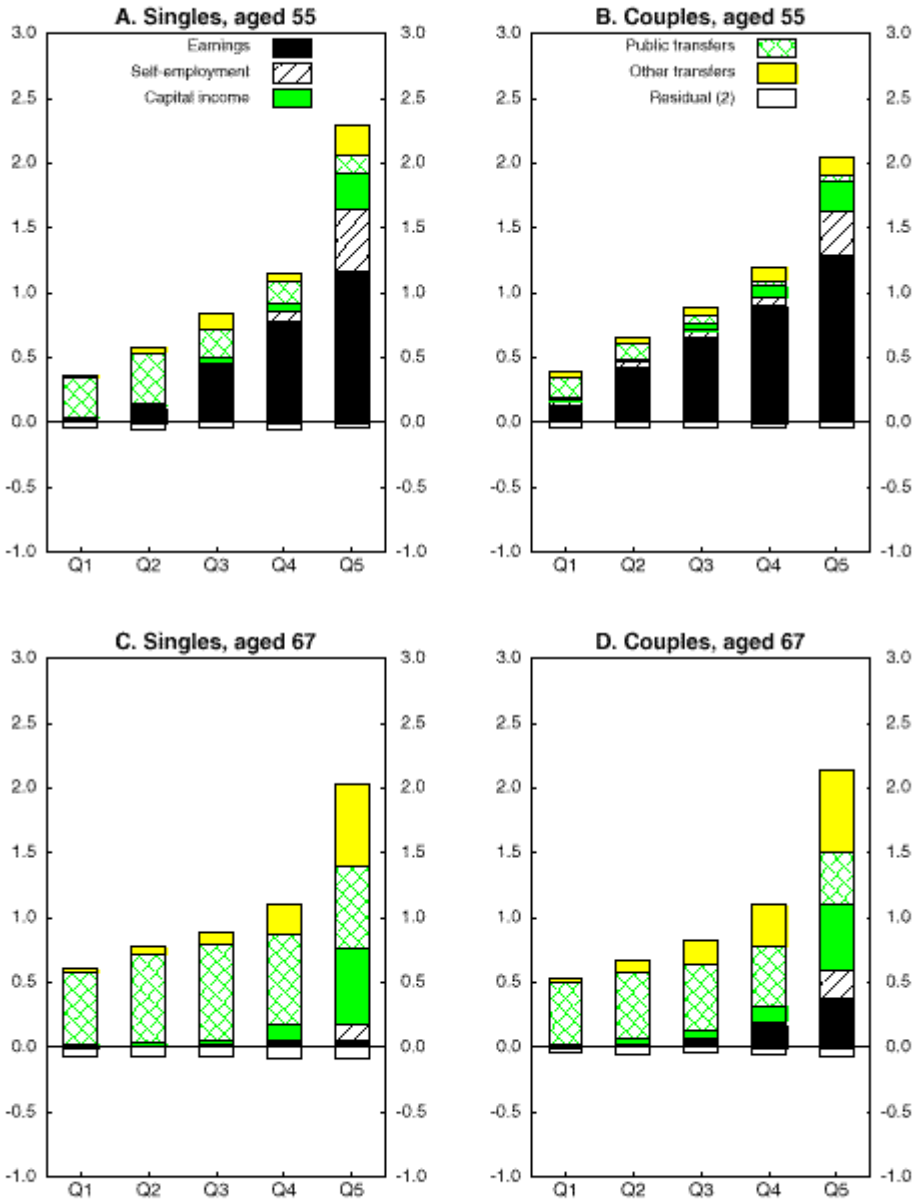
**Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1) (continued)**  
Sweden



1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
2. The residual includes taxes.  
Source: OECD.

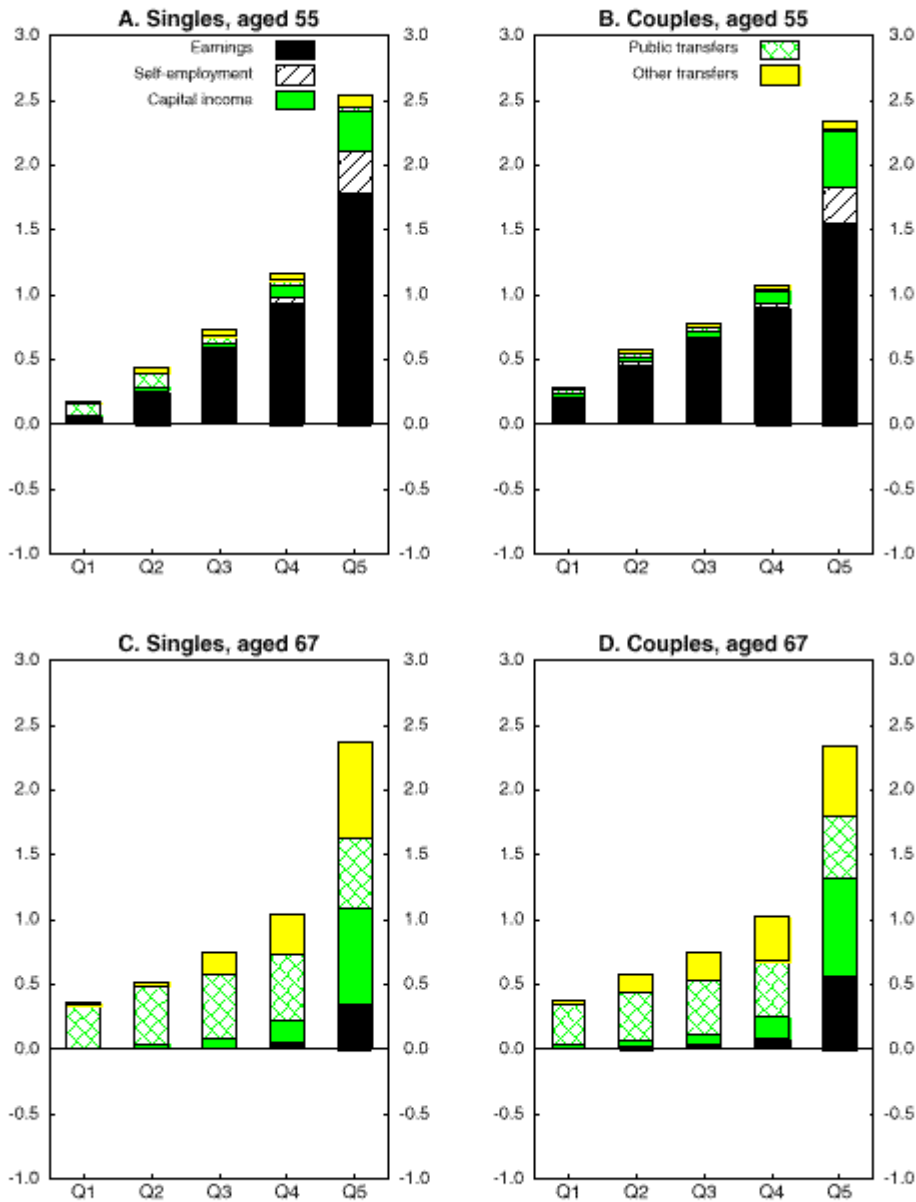
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**Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1) (continued)**  
**The United Kingdom**



1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
 2. The residual includes taxes.  
 Source: OECD.

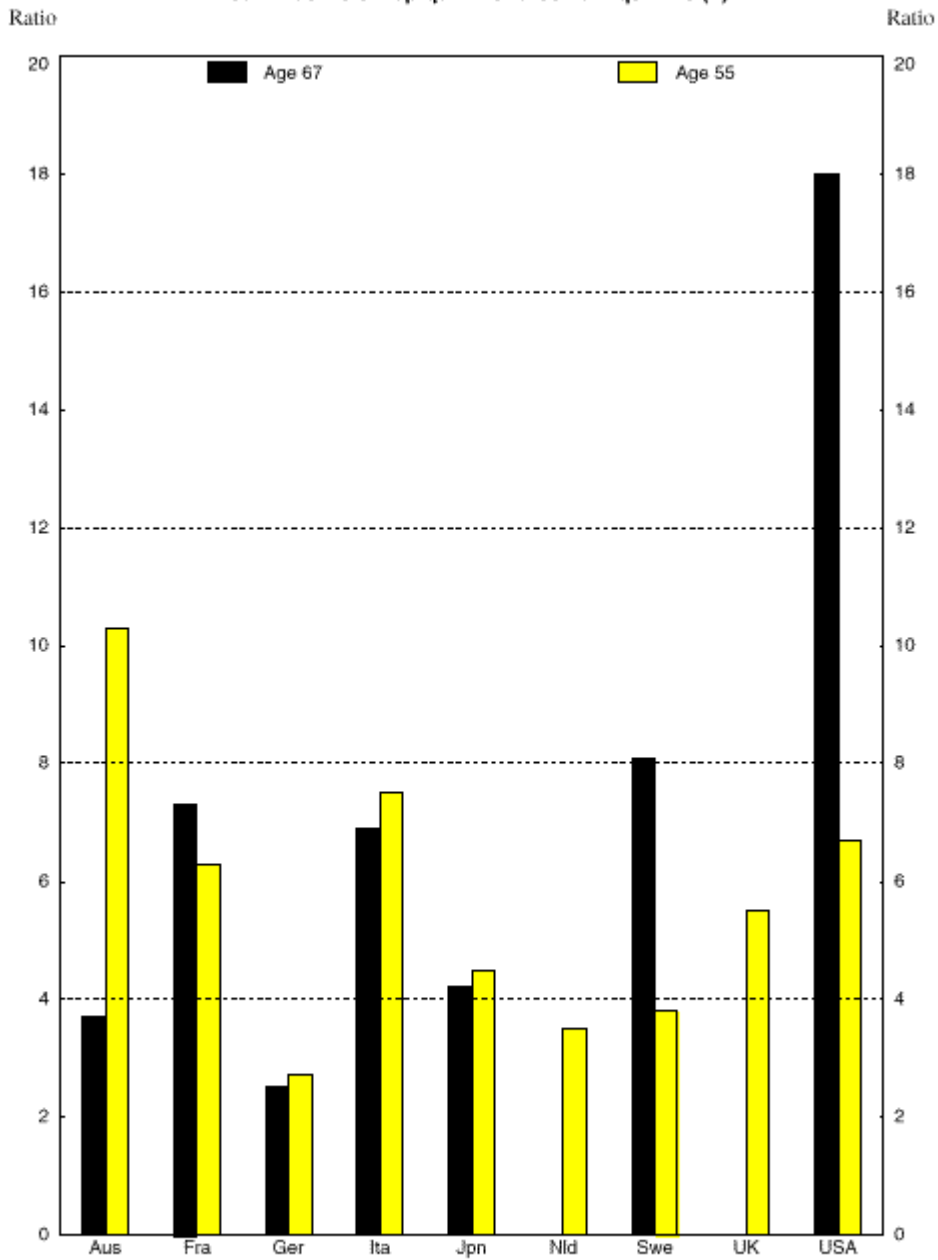
**Figure 4. COMPOSITION OF DISPOSABLE INCOME BY COUNTRY (1) (continued)**  
**The United States**



1. Each quintile is expressed as a percent of the average disposable income for the total cohort.  
 Source: OECD.

Figure4.png

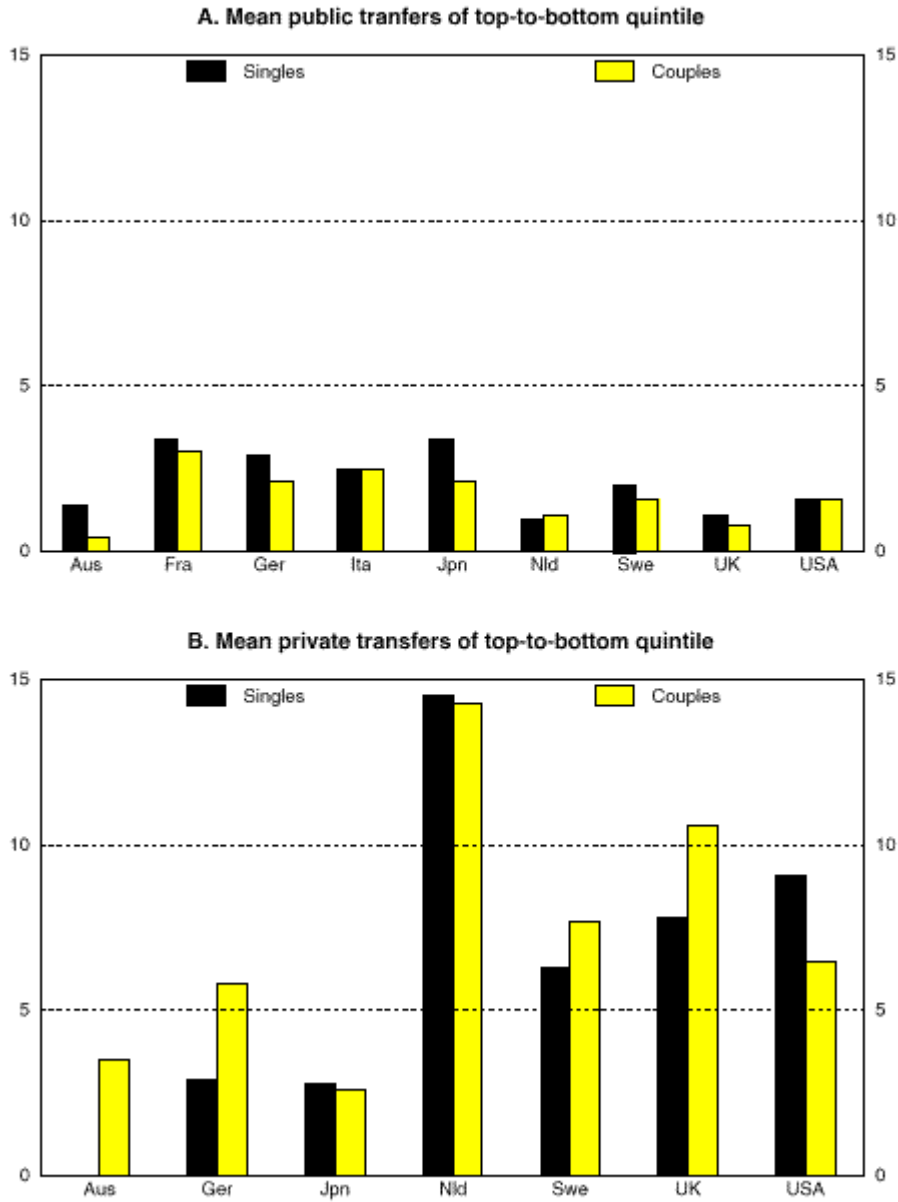
**Figure 5. EARNINGS DISPERSION AMONG COUPLES**  
**Mean income of top quintile to bottom quintile (1)**



1. Ratio of mean earnings for units in the top quintile (q5) to the bottom quintile (q1).  
 Source: OECD.

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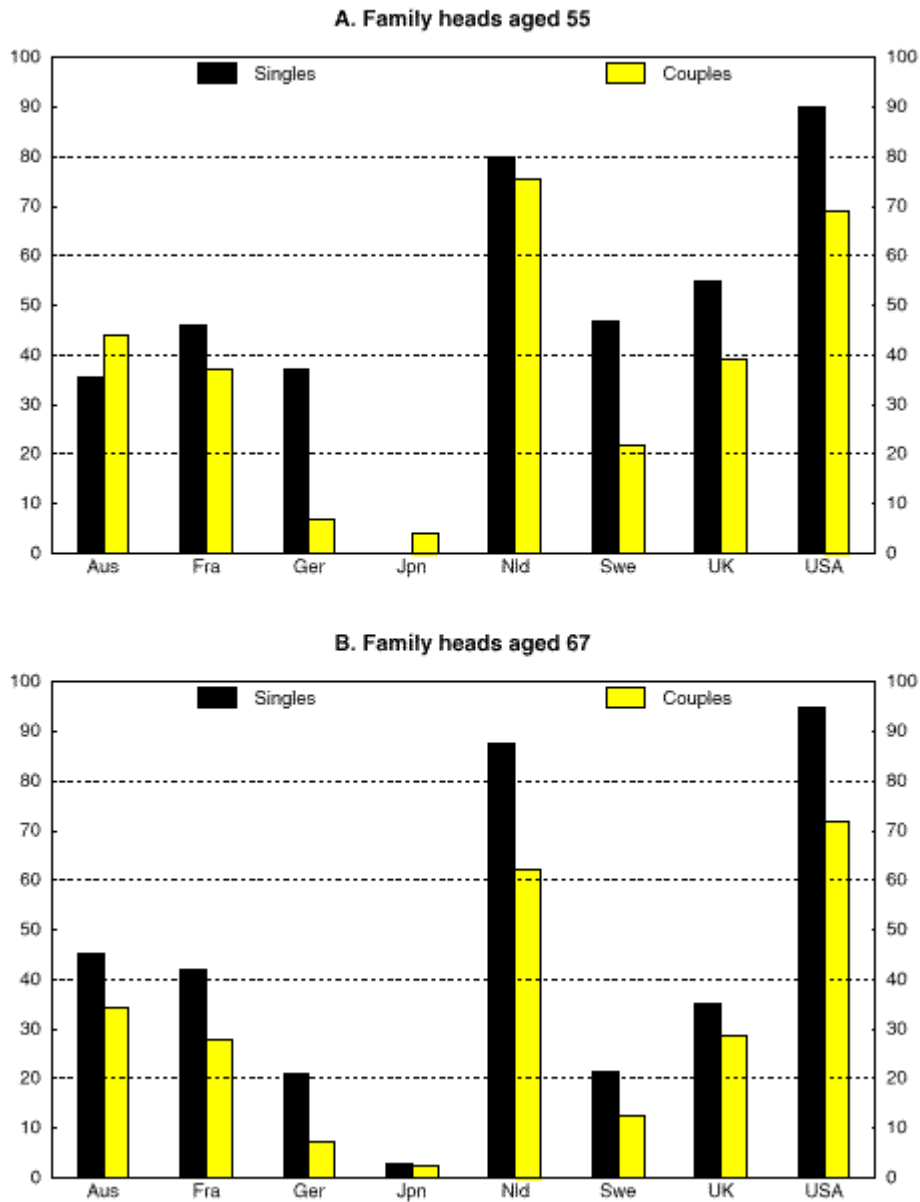
Figure 6. DISPERSION OF PUBLIC AND PRIVATE TRANSFERS, FAMILIES WITH A HEAD AROUND 67



Source: OECD.

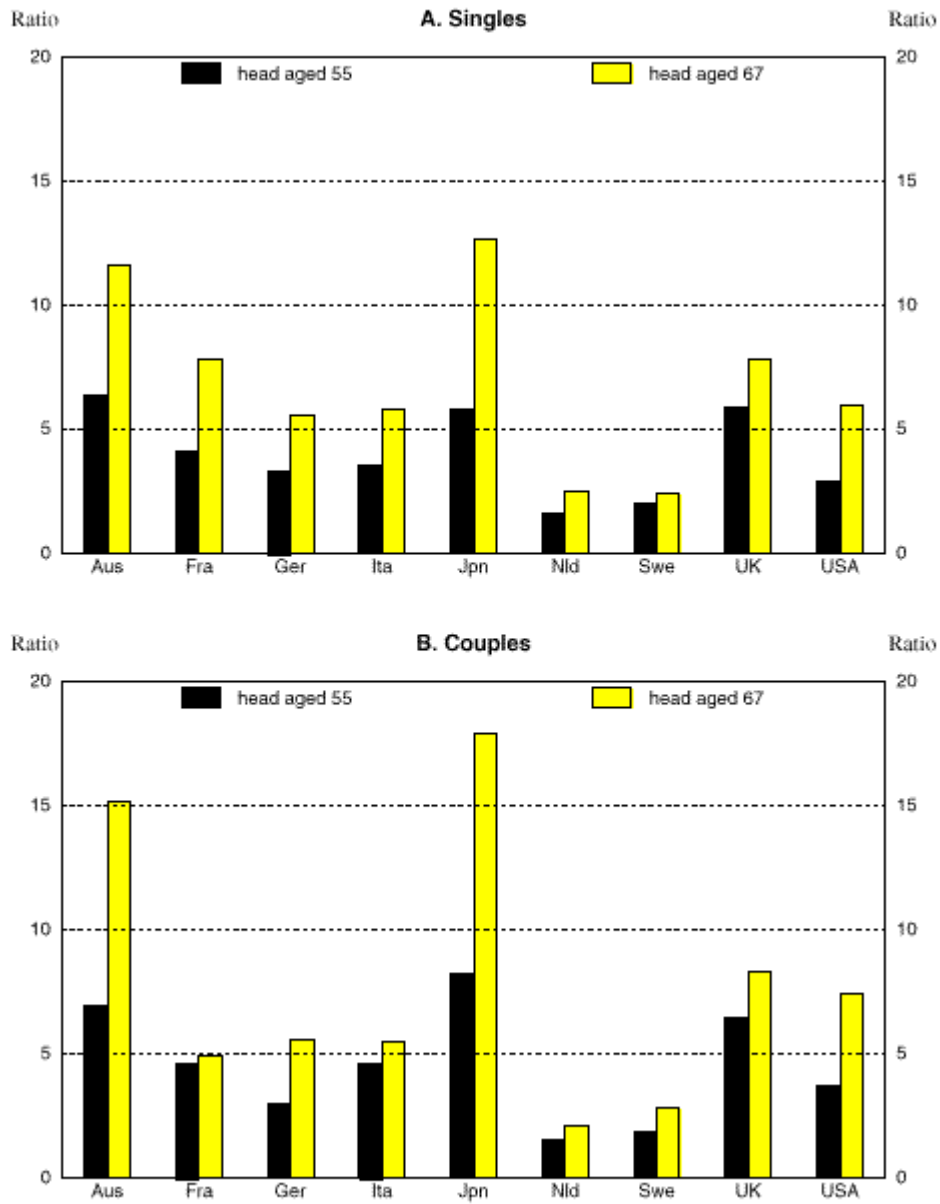
Figure4.jpg

**Figure 7. PROPORTION OF FAMILIES IN THE BOTTOM QUINTILE REPORTING NO CAPITAL INCOME (1)**



1. Data refer to households in the lowest quintile (q1).  
Source: OECD.

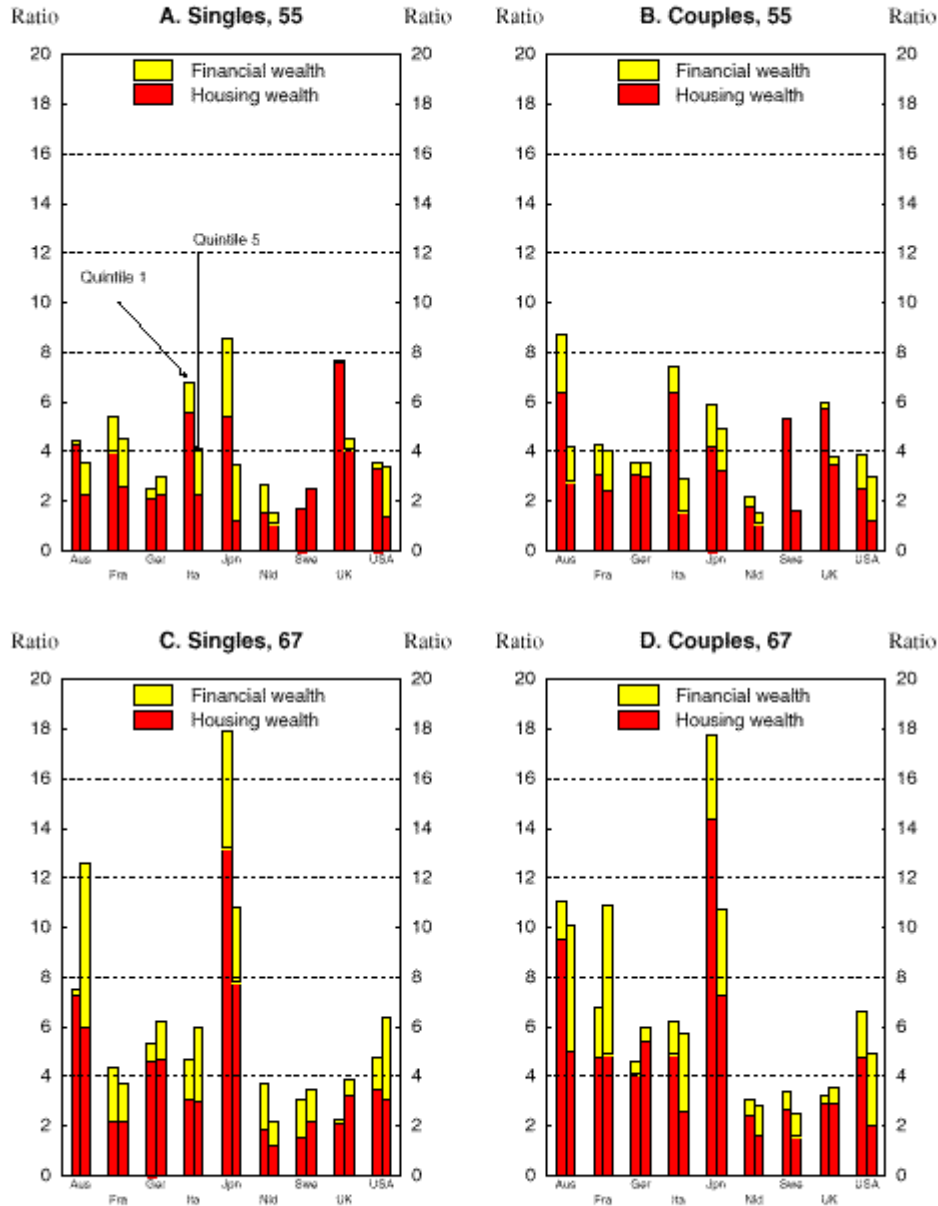
Figure 8. MARKET WEALTH-TO-INCOME RATIOS



Source: OECD.

fiwr30.ep

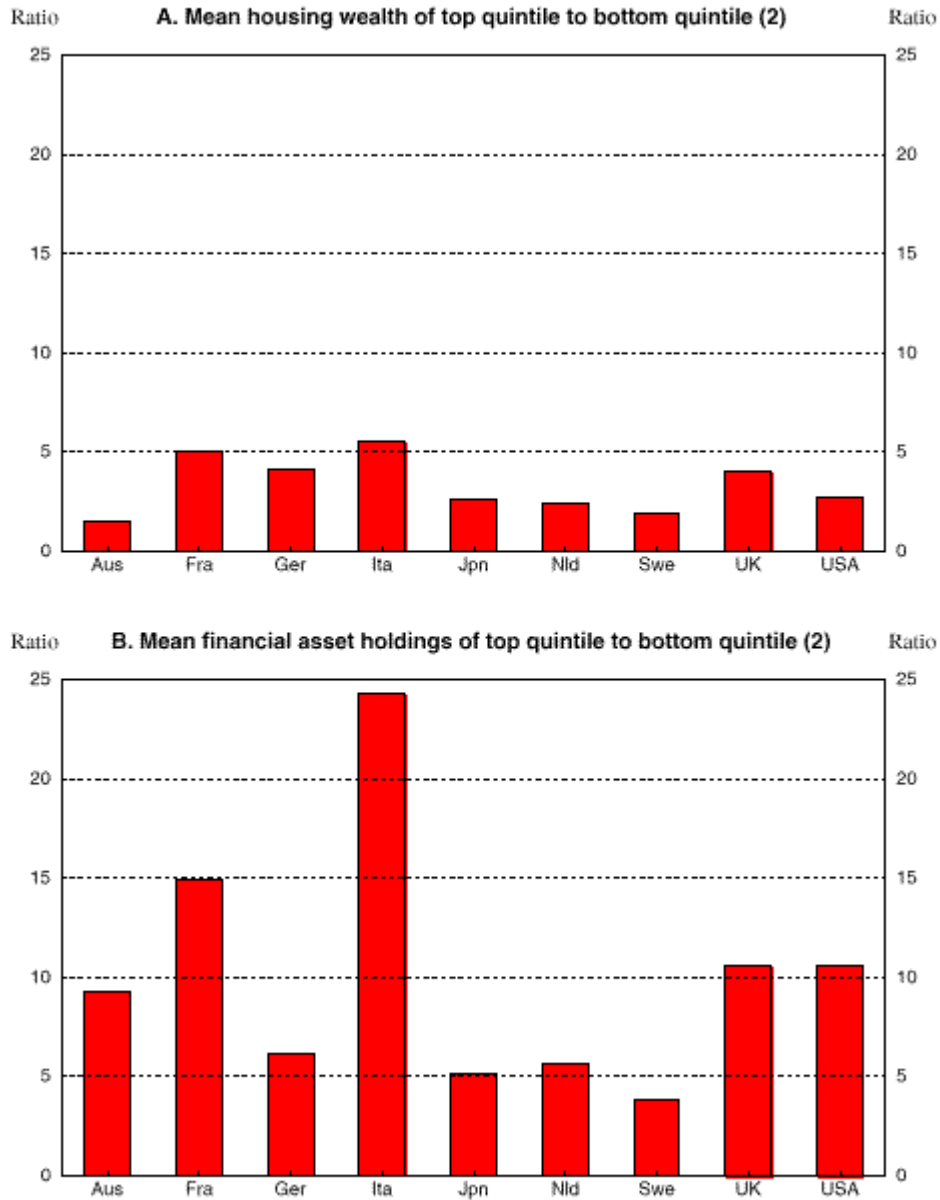
**Figure 9. MARKET WEALTH-TO-INCOME RATIOS FOR UNITS IN THE TOP AND BOTTOM INCOME QUINTILES (1,2)**



1. In each figure, the first bar represents Q1, the second bar Q5.  
 2. For Australia the bottom quintile refers to Q2.  
 Source: OECD.

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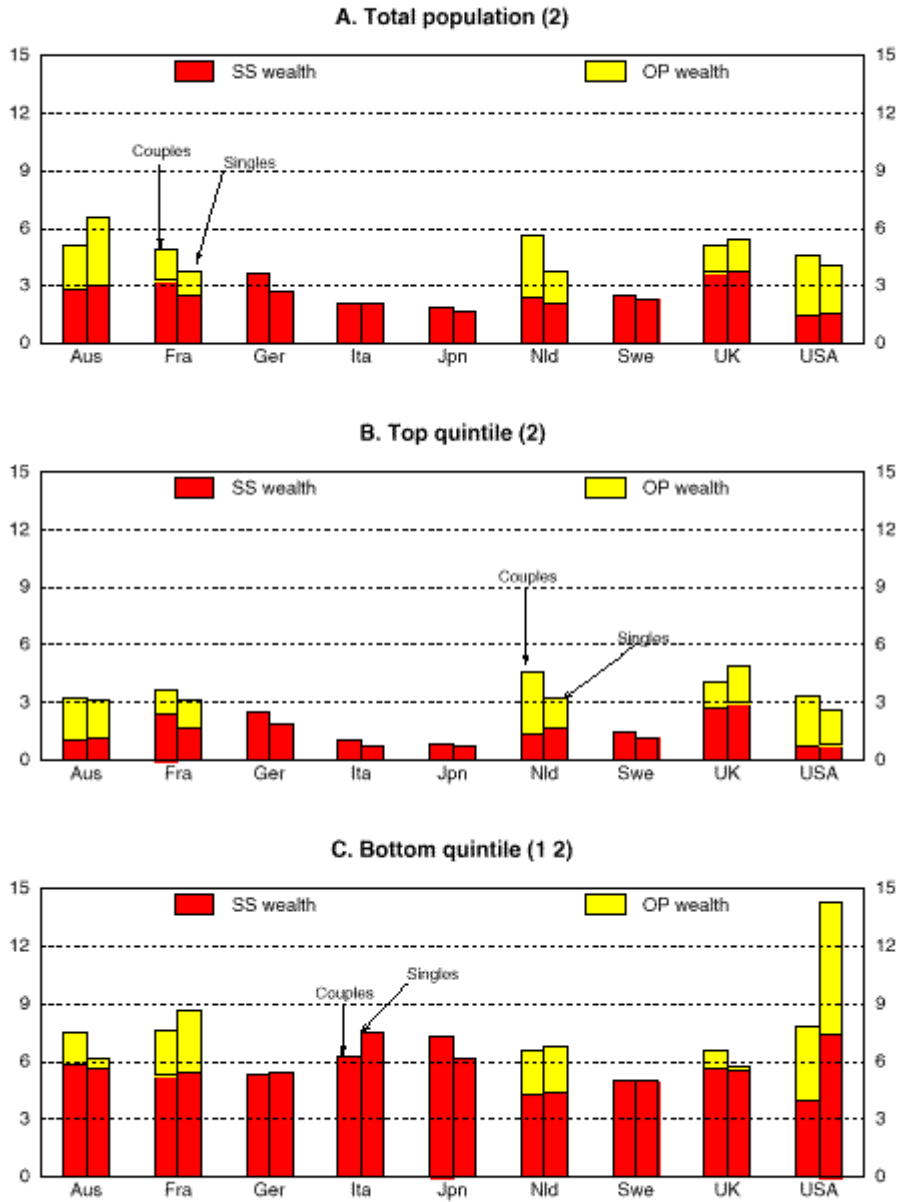
**Figure 10. DISPERSION OF HOUSING AND FINANCIAL WEALTH AMONG OLDER COUPLES (1)**



1. Household head aged 67.  
 2. For Australia, the bottom quintile refers to q2.  
 Source: OECD.

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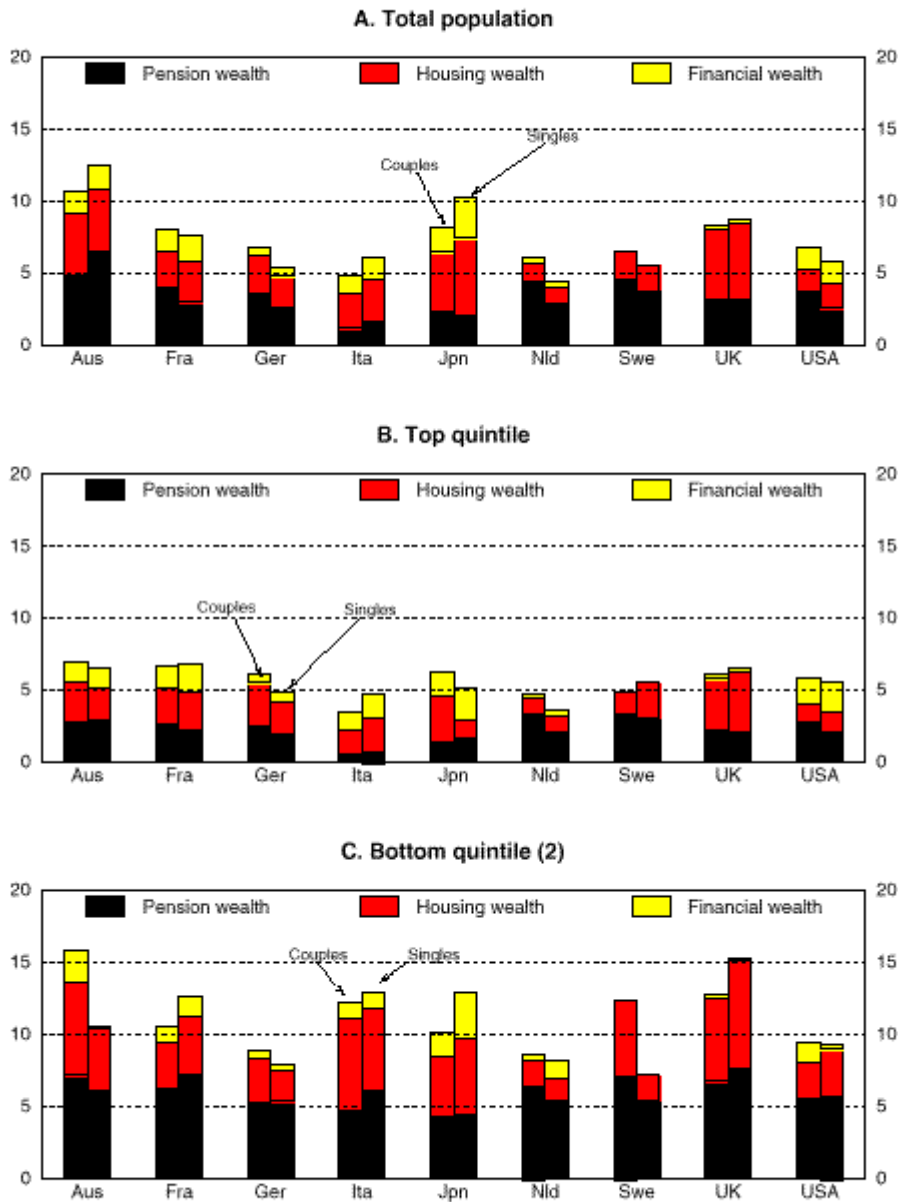
**Figure 11. SOCIAL SECURITY AND OCCUPATIONAL PENSION WEALTH-TO-INCOME RATIOS FOR FAMILIES WITH A HEAD AROUND 55 YEARS OLD (1)**



1. For Australia, the bottom quintile refers to q2.  
 2. The first column represents couples and the second column represents singles.  
 Source: OECD.

Figure 11

**Figure 12. MARKET AND PENSION WEALTH-TO-INCOME RATIOS, FAMILIES WITH A HEAD AROUND 55 YEARS OLD (1)**



1. The first bar represents couples, the second singles.  
 2. For Australia, the bottom quintile refers to q2.  
 Source: OECD.