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ABSTRACT

The Asset Portfolios of Native-Born and Foreign-Born Households^{*}

This paper analyses the net worth and asset portfolios of native- and foreign-born Australian families using HILDA (wave 2) data. Specifically, we estimate a system of asset equations with an adding-up constraint imposed to control for variation in households' total net worth. Our results indicate that after accounting for differences in human capital and income levels, single immigrants have a wealth advantage of almost \$185,000 relative to single native-born individuals. Although the wealth gap between mixed and native-born couples is not statistically significant, immigrant-only couples have approximately \$150,000 less wealth on average than native-born couples. Relative to equally wealthy native-born couples, immigrant-only couples hold substantially more of their wealth in their homes and less in the form of vehicles and financial assets. Mixed couples, on the other hand, allocate their wealth across assets in the same way as native-born couples.

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1 Introduction

There is a great deal we do not understand about how households accumulate wealth. However, it is clear that – whatever the process – the result is enormous inequality in wealth across households. The richest 10 per cent of Australian households are estimated to hold 45 per cent of all household wealth, while the bottom half of the distribution owns less than 10 per cent of total household wealth (Heady et al. 2005). Wealth inequality in other countries is similar (Davies and Shorrocks 2000; Wolff 2006). Economists are increasingly using detailed comparative studies of wealth levels across groups as way of gaining a deeper understanding of both the wealth generation process and the channels through which inequality might be generated. In the United States, the focus has been largely on racial differences (Blau and Graham 1990; Gittleman and Wolff 2000; Altonji and Doraszelski 2005) and (more recently) on ethnicity (Cobb-Clark and Hildebrand 2006b, 2006c) or nativity (Cobb-Clark and Hildebrand 2006a). In other countries like Canada, Germany, and New Zealand there is also an increasing focus on the disparity in wealth levels between native- and foreign-born households (Shamsuddin and DeVoretz 1998; Zhang 2003; Bauer et al. 2007; Gibson et al. 2007; Sinning 2007). This international evidence suggests that natives accumulate more wealth than do immigrants with similar characteristics, though the magnitude of the gap varies widely across the wealth distribution as well as between countries.

These issues have only recently begun to be studied in depth in Australia. Previous research suggests that foreign-born households hold less wealth than Australian-born households (Heady et al. 2005), though the magnitude of the nativity wealth gap in Australia is small compared to other countries, relatively constant across the wealth distribution, and cannot be explained by differences in the characteristics of natives and immigrants (Bauer et al. 2007). We know less about nativity differences

in the composition of wealth, however. This is unfortunate because institutional barriers to credit markets, cultural influences on savings behavior, and variation in residential patterns, earnings histories, and the incentives for precautionary savings may all lead the portfolio choices of immigrants to differ from those of the native born (see Cobb-Clark and Hildebrand 2006a; 2006b). Understanding more about these issues is important for a number of reasons. First, research suggests that there is a differential propensity to consume out of non-financial (housing) and financial wealth (Tan and Voss 2003; Bostic et al. 2005; Dvornak and Kohler 2007), implying that consumption expenditure may differ among groups with similar wealth levels but dissimilar portfolios. Second, the Australian debate on population aging has thus far completely overlooked the fact that the immigrant population is aging more rapidly than the Australian-born population.¹ The Government's report on the challenges posed by an aging population does not differentiate its projections by nativity status for example (Commonwealth of Australia, 2002; 2007). Given that there are important differences in the life-cycle pattern of ownership and portfolio shares across asset types (Porterba and Samwick 2001), any future fiscal pressure generated by population aging will rest heavily on how much, and what types, of wealth Australian households – including immigrant households – hold. Third, assets differ in terms of their expected rates of return, riskiness, and liquidity leading them to serve different functions in providing for a household's financial security. Portfolio choices then have important implications for the rate at which wealth is accumulated as well as for the adequacy of precautionary savings and retirement income (see Bertaut and Starr-McCluer 2002). Finally, wealth appears to provide a degree of economic security which is important in individuals' overall sense of wellbeing (Heady and Wooden 2004).

This paper contributes to our understanding of these issues by analysing the net worth and asset portfolios of Australian families using data from the House-

hold, Income and Labour Dynamics in Australia (HILDA) Survey. These data are particularly well-suited to addressing questions related to the composition of wealth among foreign-born households. In particular, wave 2 of HILDA included a special module on household wealth and the survey's relatively large sample size allows us to explicitly differentiate between native- and foreign-born single individuals on the one hand and native-born, immigrant-only, and mixed couples on the other. Our empirical specification explicitly accounts for those households with nonpositive wealth. Moreover, asset composition is allowed to depend on net worth and our model of asset portfolios is therefore estimated as a system of equations with cross-equation restrictions imposed to ensure that the adding-up requirement is met (see Blau and Graham 1990). This estimation strategy allows us to answer the following questions: First, how does net worth vary by nativity status, region of origin, and immigration cohort. Second, how do the portfolio choices of equally wealthy native- and foreign-born households differ?

We find that after accounting for differences in human capital characteristics and income levels, single immigrants have a wealth advantage of almost \$185,000 relative to single native-born individuals. On the other hand, while the wealth gap between mixed and native-born couples is not statistically significant, immigrant-only couples have approximately \$150,000 less wealth on average than native-born couples. Net worth is largely unrelated to a household's arrival cohort, although there is substantial variation in household net worth across region-of-origin groups. Relative to equally wealthy native-born couples, immigrant-only couples hold substantially more of their wealth in their homes and less of their wealth in the form of vehicles and financial assets. Mixed couples, on the other hand, allocate their wealth across assets in the same way as native-born couples.

We proceed as follows. In Section 2 we discuss the details of the HILDA data, while Section 3 describes the empirical specification and presents our results. Our

conclusions follow in Section 4.

2 Data

2.1 The HILDA Survey

The data come from the Household Income and Labour Dynamics in Australia (HILDA) Survey which is a longitudinal survey of Australian households encompassing approximately 13,000 individual respondents living in more than 7,000 households. Our analysis exploits the 2002 release of HILDA (wave 2) which included a special module on household wealth (see Wooden et al. 2002; Heady et al. 2005). This wealth module is unique as it provides the only recent source of data on the assets and liabilities of individual Australian households. While accurately measuring assets and liabilities is always difficult, the aggregate net worth of Australian households estimated from HILDA matches aggregate wealth statistics derived from national accounts by the Reserve Bank of Australia remarkably well (Marks et al. 2005). In addition, it is interesting to note that the distributions of the major components of wealth captured in HILDA are consistent with various estimates over the 1986-2000 period derived from indirect measures of wealth in previous studies (see Marks et al. 2005 for a detailed discussion).

We restrict our sample to include all single- and couple-headed households in which the reference person is between 25 years and 75 years old. Native-born couples include all couple-headed households in which both partners were born in Australia, while immigrant-only couples comprise all couple-headed households in which both partners are foreign-born. Mixed couples are those in which one partner is native-born and the other is foreign-born.² Excluding all observations with missing values on one or more of the variables of interest results in a total sample of 3360 couple-headed households (including 2125 native-born, 664 mixed, and 571 immigrant-only

couples) and 2434 single-headed households (including 1851 native-born and 583 immigrant households).

Most of HILDA's wealth components are collected at the household level (see Heady 2003 for details). In this paper, we consider the way in which wealth is distributed across the five broad asset types commonly discussed in the wealth literature including: net financial wealth, net business equity, net real estate equity, the value of vehicles, and the total value of superannuation assets. More specifically, net financial wealth is calculated as the total value of interest-bearing assets held in banks and other institutions, stocks and mutual funds, life insurance funds, trust funds and collectibles minus the total value of unsecured debts (which also includes car loans). Net business equity includes the net value of all business shares owned by all household members. Real estate captures the net value (equity) of all properties owned by household members including principal home, holiday and other properties. The vehicle component reflects the total value of all vehicles owned by household members including all transport and recreational (such as boats or caravans) vehicles.³ The superannuation component includes the total amount of superannuation capital owned by all household members (see Heady 2003 for details).

2.2 Net Worth and Asset Portfolios

Information about household wealth, asset holdings, and income by nativity status and household type is presented in Table 1. Although the median wealth levels of native-born and mixed couples are virtually identical, immigrant-only couples have approximately \$85,000 less net worth at the median than other couples. This wealth gap is likely to be related to differences in the pattern of asset ownership. Virtually all Australian couples – irrespective of their nativity status – report owning wealth in the form of both financial assets and vehicles. However, while one in five native-born

and mixed couples own business assets, this is true of only 14 per cent of immigrant-only couples. Similarly, immigrant-only couples are much less likely to own real estate (77 versus 87 per cent) or have superannuation wealth (78 versus 90 per cent). For those who do however, equity in real estate holdings is not significantly different to that of native-born couples though the value of superannuation assets lags behind. Single immigrants, have similar wealth and income levels to single native-born individuals. Rates of asset ownership are also very similar across the two groups and – conditional on ownership – there is no significant difference in the superannuation wealth of immigrants. Information about the characteristics of the sample are presented by immigrant status and household type in the Appendix (see Table A1).

[TABLE 1 HERE]

Given these differences in wealth levels and patterns of asset ownership, it is perhaps not surprising that asset portfolios are also related to nativity status and household type. Figures 1A - 1E show the way in which each group's net worth is distributed across the five major asset categories. Although the average share of wealth held as financial assets (approximately 14 per cent) and vehicles (approximately 5 per cent) is unrelated to a couple's nativity status, there are substantial differences in the way the wealth is allocated across other asset types. Immigrant-only couples hold over half (56 per cent) of their wealth in real estate, while 18 per cent of their wealth is in the form of superannuation assets (see Figure 1B). In contrast, native-born and mixed couples have somewhat less of their wealth tied up in real estate and instead have superannuation assets that account for fully a quarter of their total wealth portfolio (see Figures 1A and 1C). Interestingly, the asset portfolios of single individuals appear to be less sensitive to nativity status. In particular, native- and foreign-born individuals allocate similar fractions of their

wealth to real estate (53 versus 58 per cent) and superannuation (17 versus 12 per cent).

[FIGURES 1A - 1E HERE]

3 Empirical Specification and the Results

It is possible that the relationship between nativity status and portfolio allocation reflects differences between groups in the underlying factors such as income or life-cycle stage which determine the way in which families allocate their wealth. Alternatively, these differences may arise from disparities in wealth levels themselves. To investigate this issue, we begin by estimating the determinants of net worth in order to assess how wealth levels are related to household characteristics, in particular nativity status. We then turn to estimating a simultaneous model of asset allocation which takes account of a household's net worth. This allows us to compare the asset portfolios of households that are equally wealthy.

3.1 The Determinants of Net Worth

Conceptually, variation in wealth levels across households is due to differences in the level of inherited wealth, rates of return on existing assets, or in previous savings behavior (i.e., income and consumption patterns). Most of the previous empirical wealth literature estimates reduced-form models which are meant to capture the fundamental relationships between household characteristics and these sources of wealth disparity. Life-cycle theory, for example, suggests that consumption and savings decisions – and ultimately wealth accumulation – are functions of permanent rather than current income levels. If, however, households face income uncertainty or credit constraints we would expect transitory income shocks to have an independent effect on wealth levels. Moreover, Lundberg and Ward-Batts (2000) note that although much of the previous literature on the life-cycle behavior of households

has attempted to explain outcomes like savings levels or retirement patterns using individual-based models, net worth is also likely to be a function of factors such as spouses’ relative bargaining power, savings goals, etc. Consistent with this, Lundberg and Ward-Batts provide evidence that the characteristics of both partners are important determinants of household net worth.

Given this conceptual framework, we estimate the following reduced-form model of net worth (W_i) for couple i :

$$\sinh^{-1}(W_i) = \alpha_0 + Y_i\beta_1 + X_i\beta_2 + I_i * [F_i\alpha_1 + M_i\alpha_2 + C_i\beta_3 + R_i\beta_4] + \eta_i \quad (1)$$

where Y_i is a vector of the household’s permanent and transitory income. Following Blau and Graham (1990), we generate a measure of permanent income by predicting income using income models estimated on wave 2 HILDA data.⁴ Moreover, X_i includes the demographic characteristics of both partners (a cubic in age and indicator variables for previous relationships) as well as household characteristics (number of children younger than 18 living in the household and the number of years a couple has been together). Thus, $\hat{\beta}_2$ will largely reflect the effect of a household’s life-cycle stage on wealth levels. The relationship between nativity status and wealth levels is captured through a series of indicator variables which differentiate between immigrant-only (F_i) and mixed (M_i) couples and take account of both immigration cohort and region of origin. Specifically, I_i is an indicator variable which takes the value of one for couples with at least one foreign-born partner, i.e. whenever $F_i = 1$ or $M_i = 1$. Given this, $\hat{\alpha}_1$ and $\hat{\alpha}_2$ capture the estimated wealth gap between immigrant-only and mixed couples relative to similar native-born couples. Moreover, the model includes a full set of indicators for arrival cohorts (C_i) and regions of origin (R_i) to capture variation in wealth within the immigrant population.⁵ Equation (1) is identified by constraining the coefficients on the cohort and region of origin indicators to sum to zero.⁶ The model includes a random error term, $\eta_{it} \sim N(0, \sigma^2)$, and all remaining terms are vectors of parameters to be esti-

mated. Finally, we adopt an inverse hyperbolic sine transformation (\sinh^{-1}) of the wealth and income data which accounts for skewness in the distributions of these variables, but unlike the more standard log transformation is defined for households with nonpositive transitory income and net worth.⁷ The model for single individuals is defined analogously. Marginal effects and t-statistics from equation (1) are calculated for both couples and single individuals and presented in Table 2.⁸

Not surprisingly, household wealth is closely related to both permanent and transitory income. Specifically, couples hold an additional \$57 dollars in net worth for every additional dollar of permanent income they have, while single individuals accumulate \$83 dollars in wealth for each additional dollar of permanent income. On the other hand, net worth is approximately \$5 lower for every dollar that current income falls short of permanent income. Consistent with Lundberg and Ward-Batts (2000), we also find that the age of both partners is closely related to net worth. Interestingly, household wealth is not related to the number of years a couple has been together, but is substantially lower when either partner has been previously married though neither effect is statistically significant. On the other hand, divorced and widowed individuals have approximately \$215,000 less wealth on average than their never-married counterparts, a difference which is statistically significant. Finally, couples with children less than age 18 still at home have substantially less wealth than couples without children or couples whose children have left home, though there is no effect of children on the wealth levels of single individuals.

[Table 2 HERE]

Foreign-born individuals have a wealth advantage of almost \$185,000 relative to similar native-born individuals. On the other hand, while the wealth gap between mixed and native-born couples is not statistically significant, immigrant-only couples have substantially less wealth – approximately \$150,000 on average – than native-

born couples with the same income levels and demographic profiles. This wealth gap is much larger than the unconditional nativity wealth (see Table 1) and is consistent with previous evidence suggesting that, given their characteristics, immigrant-only couples would be expected to have a wealth advantage if they accumulated wealth in the same way as similar native-born couples (Bauer et al. 2007).

It is also interesting to consider how the wealth position of immigrants varies with the length of time a household has been in Australia and where it migrated from. The parameterization of equation (1) implies that $\hat{\beta}_3$ and $\hat{\beta}_4$ measure deviations in wealth across entry cohorts and regions of origin respectively from the average wealth of the immigrant population as a whole (i.e. $I_i = 1$). Net worth is largely unrelated to a household's arrival cohort, although mixed and immigrant-only couples arriving in Australia between 1975 and 1984 have significantly more wealth than the population of mixed and immigrant-only couples as a whole. In contrast, there is substantial variation in household net worth across region of origin groups. Households in which at least one partner is foreign born have higher than average wealth when the household is from non-English-speaking Europe and substantially lower than average wealth when the household is from a non-English-speaking country elsewhere in the world. Finally, foreign-born individuals from English-speaking countries have significantly lower net worth than the average. Consistent with previous evidence for immigrants to the United States (Cobb-Clark and Hildebrand 2006a), these results highlight that there is considerable variation in wealth levels within the population of immigrants to Australia which is more closely related to regions of origin rather than to entry cohorts.

3.2 Asset Portfolios

Cultural influences on savings behaviour, differential access to credit markets, disparity in residential patterns and earnings profiles, and the potential for return

migration may all lead native- and foreign-born households to not only acquire different levels of net worth, but to also allocate their wealth differently across asset types. For example, the savings behaviour and risk attitudes of children have been linked to those of their parents (Chiteji and Stanford 1999; Dohmen et al. 2006) suggesting that social norms in the sending country may influence the post-migration portfolio decisions of immigrants. Risk attitudes may also be directly linked to nativity (Bonin et al. 2007), and there are concerns that immigrants may face particular barriers in accessing financial markets after migration (Osili and Paulson 2004; 2005) which may limit their ability to secure the necessary funding to purchase assets such as housing or businesses. Finally, the potential for return migration implies that immigrants have the ability to spread financial and labour market risk across two markets which will influence the extent to they engage in precautionary savings as well as the types of assets they hold (Galor and Stark 1990; Djajic and Melbourne 1988; Djajic 1989; Dustmann 1987; Amuedo-Dorantes and Pozo 2002).

To gain a deeper understanding of these issues, we need an estimation strategy that: first, recognizes that the propensity to invest in a specific asset will depend on the type and amount of other assets held; and second, compares households with the same level of net worth. Estimating a single-asset equation controlling for immigrant status would ignore the simultaneous nature of the portfolio decision as well as confound the effect of disparity in wealth levels associated with nativity status with nativity-related differences in the propensity to allocate wealth to certain assets. Therefore, we need to estimate a system of equations with an adding up constraint imposed to account for total net worth (see Blau and Graham 1990). Consequently, we estimate the following reduced-form model of asset composition:

$$\begin{aligned} \sinh^{-1}(A_{ik}) &= a_{0k} + Y_i b_{1k} + X_i b_{2k} + W_i b_{3k} \\ &+ I_i * [F_i a_{1k} + M_i a_{2k} + F_i W_i b_{4k} + M_i W_i b_{5k} + C_i b_{6k} + R_i b_{7k}] + \mu_{ik} \end{aligned} \quad (2)$$

where A_{ik} is the dollar value of asset k that household i holds. We consider five major asset categories: financial wealth, business equity, real estate equity, total value of vehicles, and superannuation funds. As above, Y_i includes both permanent and transitory income, while X_i includes those demographic characteristics reflecting a household's life-cycle stage. These characteristics are assumed to have a direct effect on the allocation of wealth across asset types, while other characteristics, for example education and occupation, affect asset portfolios only indirectly through their effect on permanent income. Asset composition depends on net worth (W_i) in order to account for any capital market imperfections (such as credit constraints) which might vary across households and be related to the decision to hold a particular asset. Differences in the effect of wealth on the asset portfolios of immigrant-only and mixed couples relative to similar native-born couples are captured in equation (2) by an interaction term between net worth (W_i) and our indicator variables for immigrant-only (F_i) and mixed (M_i) couples. We again adopt an inverse hyperbolic sine transformation (\sinh^{-1}) of assets and income to account for the potentially nonpositive and highly skewed nature of the distributions of these variables. Finally, equation (2) is estimated as a system of equations and a set of cross-equation restrictions are imposed in order to satisfy the adding-up requirement that the sum of assets across asset types equals net worth.⁹ The model for single individuals is defined analogously. Marginal effects and t-statistics from this estimation are presented in Table 3 for couples and in Table 4 for single individuals.¹⁰

The way in which households allocate their wealth across major asset categories is closely related to both permanent and transitory income levels. Comparing households that are equally wealthy, but which have different incomes, we find that at higher levels of permanent income both couples and single individuals are holding more of their net worth in business assets and superannuation and less of their wealth in real estate. On the other hand, larger gaps between permanent and cur-

rent income levels, i.e. larger transitory income shocks, are associated with couples allocating more of their portfolio to business assets, but less to superannuation and financial wealth. These patterns imply that a couple with relatively little permanent income that is also facing a transitory income shock will have concentrated more of its wealth in housing than an equally wealthy couple with higher levels of income. Single individuals experiencing a transitory income shock also hold more business and fewer superannuation assets, though the relationship between transitory income shocks and financial wealth, while negative, is insignificant. In sum, higher income appears to be associated with a diversification of wealth across all other asset types for both couples and single individuals. Superannuation wealth, for example, is expected to increase between \$16.31 (couples) and \$18.40 (single individuals) for every dollar permanent income increases, everything else equal. Finally, it is interesting to note that when current income lags behind permanent income, both couples and single individuals hold more equity in businesses. This is consistent with Anderson and Wadensjö (2006) who find that the propensity of becoming self-employed is higher among workers whose predicted income differs from their current income perhaps suggesting that households are using self-employment to buffer against lower than expected incomes.

[TABLES 3 AND 4 HERE]

Asset portfolios are also correlated with a household's life-cycle stage. Increases in the age of the household head, for example, are associated with a household holding more of its wealth in financial assets and less in real estate or superannuation. Although a household's wealth level is directly related to the age of the spouse (see Table 2), a spouse's age is only loosely linked to the couple's portfolio allocation once we control for net worth and the age of the household head. Households with young children under the age of 18 hold more of their wealth in the form of real estate and

less in the form of superannuation. Moreover, sole parents also have more equity in businesses than equally wealthy single individuals without children at home. This is consistent with previous evidence that the number of children at home is positively related to the probability that a woman is self-employed (Connelly 1992; Hildebrand and Williams 2003; Williams 2004). Finally, divorced and widowed individuals hold more real estate and less superannuation wealth on average than equally wealthy never-married individuals, while it is the financial wealth and real estate holdings of couples that are most closely related to the marriage history of spouses. On balance, these results are broadly consistent with the way in which we expect asset portfolios to evolve as households age. Younger households with children hold a relatively large share of their assets in real estate, while older households have shifted their wealth to liquid assets (financial wealth) from illiquid assets (real estate and superannuation) (see Porterba and Sandwick 1997; Flavin and Yamashita 2002; Milligan 2005).

Relative to equally wealthy native-born couples, immigrant-only couples hold substantially more (approximately \$500,000 on average) of their wealth in their homes and less of their wealth in the form of vehicles and financial assets. On the other hand, mixed couples in which one partner is native born and the other is foreign born allocate their wealth across assets in the same way as couples in which both partners are native born. There are no statistical differences in the portfolio allocations of these latter two groups suggesting that intermarriage may be associated with the assimilation of immigrants' wealth levels and asset holdings towards Australian norms. This would be consistent with other evidence that intermarriage is associated with faster wage assimilation after migration (Meng and Gregory 2005; Meng and Meurs 2006). Still, there is also no statistical difference in the portfolio allocations of foreign- and native-born single individuals (see Table 4) which may imply that in Australia portfolio allocations do not differ much across nativity status and that the differences in the relative portfolio allocations of immigrant-only and

mixed couples stem from selectivity into intermarriage (see Kantarevic 2004). It is particularly striking that, irrespective of household type, immigrants hold the same level of superannuation wealth as equally wealthy native-born Australians. This is somewhat surprising given the large US literature documenting the disparity in the labour market outcomes, in particular the earnings profiles, of immigrants and natives (see for example Chiswick 1978; Borjas 1985; Schultz 1998). Immigrants to Australia, however, have a lower earnings disadvantage upon entry as well as a slower rate of earnings assimilation than do immigrants to the United States (Chiswick and Miller 1985; Miller and Neo 2003) which may account for their ability to accumulate superannuation wealth in a way that is consistent with native-born workers.

Given their average portfolio allocation, it is perhaps not surprising that at the margin immigrant-only couples allocate relatively more of any increase in net worth to increasing their financial wealth, while relatively less is directed towards increasing real estate equity. Specifically, native-born couples allocate \$.20 of every additional dollar of net worth to increasing their financial assets, while immigrant-only couples allocate \$.12 more than this towards financial assets. Every additional dollar of net worth is associated with an increase of \$.54 in the real estate equity held by native-born couples, but an increase of only \$.42 in the real estate equity of immigrant-only couples. Mixed couples and single immigrants, on the other hand, have a marginal propensity to hold assets as net worth increases which is not significantly different to that of the native born.

These aggregate patterns in the asset portfolios of immigrants across different household types mask a certain amount of variation in the asset positions of immigrants arriving in Australia in different periods from different sending countries.¹¹ Couples entering Australia after 1985, for example, hold significantly more of their wealth in the form of financial assets (\$80,600) and business assets (\$23,872) and significantly less in real estate (\$109,000) and vehicles (\$11,375) than do immigrant-

only and mixed couples as a whole. Similarly, single immigrants arriving after 1985 also hold more financial assets and less real estate than more established immigrants arriving earlier. This tendency of more recent immigrants to hold a larger share of their total wealth in financial rather than housing assets is consistent with previous evidence for immigrants to the United States (Cobb-Clark and Hildebrand 2006a). Unfortunately, the cross-sectional nature of our data does not allow us to assess the extent to which these patterns are due to life cycle effects (aging effects) rather than to birth cohort effects within the immigrant population. Finally, single individuals from non-English-speaking Europe have significantly more of their wealth in superannuation assets than do other single immigrants, while immigrants from other non-English-speaking countries hold significantly less wealth in superannuation and vehicles.

4 Conclusions

Wealth plays a critical role in providing economic security to households throughout the life cycle. Given this, there are a number of reasons to be interested in nativity differences in not only the level of household wealth, but also in its composition. Consumption patterns have been linked to portfolio decisions (Tan and Voss 2003; Bostic et al. 2005; Dvornak and Kohler 2007), for example, suggesting that expenditure may differ amongst equally wealthy households with dissimilar portfolios. Moreover, there is substantial life-cycle variation in the ownership rates and portfolio shares of different assets (Porterba and Samwick 1997). This implies that an understanding of the fiscal effects of population aging requires insight into the way that wealth levels and asset portfolios differ across native- and foreign-born Australian households. Finally, assets differ in terms of their expected rates of return, riskiness, and liquidity leading them to serve different functions in providing for a household's financial security.

This paper begins to address these issues by analysing nativity differences in the net worth and asset portfolios of Australian families. To this end, we use HILDA data to estimate the determinants of net worth and asset composition. Our estimation strategy accounts for the non-positive, highly-skewed nature of many of our underlying data and allows us to estimate a system of asset equations with cross-equation restrictions imposed to ensure that the adding-up requirement is met (see Blau and Graham 1990). Our results indicate that single immigrants have a wealth advantage of almost \$185,000 relative to single native-born individuals once differences in human capital characteristics and income levels are taken into account. However, couples in which both partners are foreign born have approximately \$150,000 less wealth on average than couples in which both partners are native born. The wealth gap between mixed and native-born couples is not statistically significant. While net worth is largely unrelated to a household's arrival cohort, there is substantial variation in household net worth across region-of-origin groups. Immigrant-only couples hold substantially more of their wealth in their homes and less of their wealth in the form of vehicles and financial assets than do equally wealthy native-born couples. Mixed couples, on the other hand, allocate their wealth across assets in the same way as native-born couples.

Taken together, these results suggest that there are many reasons to be optimistic about the overall wealth position of immigrants to Australia. The nativity wealth gap is much smaller in Australia than in other immigrant-receiving countries for example (see Bauer et al 2007). At the median, immigrant-only couples have approximately 83 per cent of the net worth of native-born couples, while mixed couples and single immigrants have a small wealth advantage (see Table 1). Like Bauer et al. 2007, however, we also find that mixed and immigrant-only couples' wealth disadvantage grows once we control for a household's income level and life-cycle stage indicating that immigrant couples are positively selected with respect

to wealth-related characteristics. In contrast, the wealth advantage of single immigrants becomes larger rather than smaller once we condition on their characteristics implying that – unlike immigrant couples – single immigrants are negatively selected with respect to those characteristics most closely associated with net worth. Their large wealth advantage only becomes apparent when we compare them to native-born individuals with similar characteristics.

The differences in the relative wealth position and asset holdings of mixed and immigrant-only couples points to the possibility that intermarriage may facilitate the wealth assimilation of immigrants to Australia. Couples in which one partner is foreign born and the other native born have wealth levels and asset portfolios that are not significantly different to those of otherwise similar couples in which both partners are native born. Assimilation in wealth associated with intermarriage would be consistent with previous research which finds that intermarriage is linked to faster wage assimilation after migration (Meng and Gregory 2005; Meng and Meurs 2006). At the same time, the cross-sectional nature of our data does not allow us to account for any unobserved heterogeneity associated with intermarriage. In particular, our finding that immigrant couples are positively selected with respect to wealth-related characteristics while single immigrants are negatively selected is also consistent with positive selection into marriage generally. Unfortunately, our cross-sectional data also do not allow us to make any progress in ascertaining whether – as is the case with wages – there is assimilation in the wealth position of immigrants with time since migration. Immigrant couples entering Australia after 1985, for example, have more financial wealth and less real estate equity than more established immigrant couples. This may be due either to life cycle effects (aging effects) or to birth cohort effects within the immigrant population. The wealth module in wave 6 of the HILDA survey will provide a second observation on household wealth which will prove useful in understanding the extent to which

immigrant' wealth position assimilates to that of the native-born population and whether intermarriage facilitates this process.

Finally, it is striking that immigrants to Australia have the same level of superannuation wealth as equally wealthy native-born Australians given the large US literature documenting the disparity in the earnings profiles of immigrants and natives (for example Chiswick 1978; Borjas 1985; Schultz 1998). Miller and Neo (2003), however, conclude that the complex system of award rates of pay provides immigrants with a degree of earnings protection when they first enter the labour market leading the earnings gap for recent arrivals to be lower in Australia than in the United States. We can only speculate about the extent to which these institutional differences also account for immigrants' ability to accumulate superannuation wealth in a way that is consistent with native-born Australians. At the same time, immigrant-only couples allocate more of their wealth to their homes and less to financial assets than do equally wealthy native-born couples which may leave them more vulnerable to movements in the housing market. Given that there appears to be a differential propensity to consume out of non-financial (housing) and financial wealth (Tan and Voss 2003; Bostic et al. 2005; Dvornak and Kohler 2007), it would be useful to explore the consequences of this composition of wealth for the consumption expenditure of these households.

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Notes

¹Fully 14.6 per cent of the foreign-born population is between the ages of 55-64 in comparison to 7.9 per cent of the Australian-born population. In effect, 35.7 per cent of Australians aged 55-64 years old are foreign-born in comparison to 21.9 per cent of the population overall. (Authors' calculations based on Table X03 (ABS 2003)).

²Couple-headed households include both married and cohabiting couples.

³We consider the total value of all vehicles, not vehicles equity as the amount of car loan is lumped together with other debts (such as other loans, hire purchase or overdraft) in the HILDA survey making it impossible to derive a measure of vehicle equity.

⁴The explanatory variables include: a quadratic in age (both head and spouse), education (for both head and spouse), marital history variables, head's occupation (including a dummy for not employed), states and territories dummies, household type dummies (immigrant and mixed), year of landing and origin group (english speaking, Europe, others) dummies. Predicted income resulting from this model is used as our measure of permanent income. Transitory income is the difference between permanent and current income so that positive values reflect a lower than expected current income. An inverse hyperbolic sine transformation has been used for both permanent and transitory income.

⁵Following Marks et al. (2005), we designate the highest income earner as the household's person of reference. For immigrant-only couples we assign the reference person's region of origin and cohort to the household. For mixed couples, the region of origin and immigration cohort are those of the person of reference.

⁶This implies that $\hat{\beta}_3$ can be interpreted as the wealth gap between native-born couples and the population of mixed couples irrespective of year of arrival or region of origin. Similarly, $\hat{\beta}_4$ is the wealth gap between native-born couples and the population of immigrant-only mixed couples.

⁷This function approximates $\log(W_{it})$ for positive values and $-\log(W_{it})$ for negative values of net worth (see Burbidge et al. 1988).

⁸Estimated coefficients have been converted into marginal effects which give the change in net worth (measured in dollars) for each one unit change in the underlying independent variable. To illustrate, consider the effect of a change in x_{it} on wealth levels ($\frac{\partial W_{it}}{\partial x_{it}}$):

$$\begin{aligned}\hat{\gamma} &= \frac{\partial \sinh^{-1}(W_{it})}{\partial x_{it}} \\ &= \frac{\partial \sinh^{-1}(W_{it})}{\partial W_{it}} \frac{\partial W_{it}}{\partial x_{it}} \\ \frac{\partial W_{it}}{\partial x_{it}} &= \hat{\gamma} \frac{\partial W_{it}}{\partial \sinh^{-1}(W_{it})}.\end{aligned}$$

Marginal effects are calculated for each individual and then averaged over the

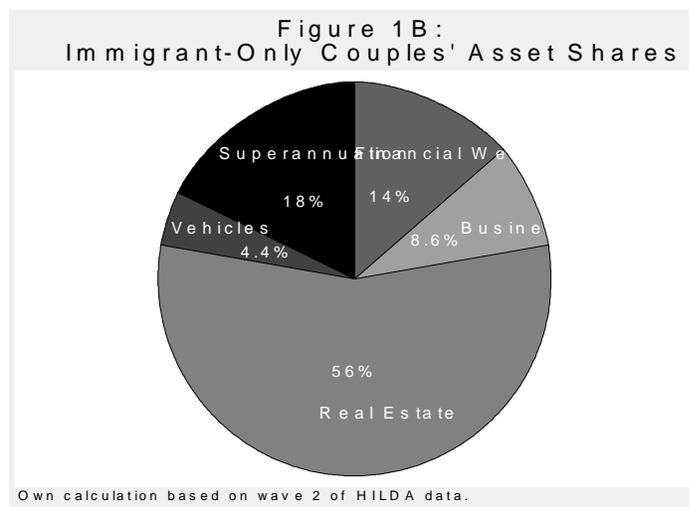
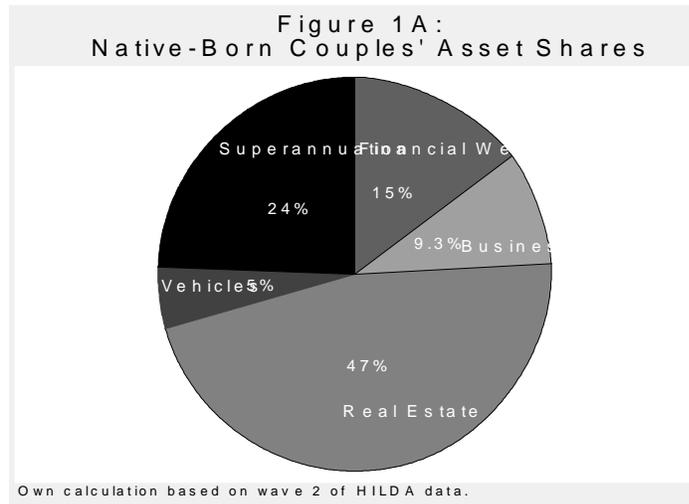
relevant sub-sample using the sample weights (see Greene, 1997, p. 876). Bootstrapped standard errors (with 500 replications) are used to calculate the reported t-statistics.

⁹Specifically, we require that the estimated marginal effect of an additional dollar of wealth sum to one across asset types, while the marginal effect of a change in any other independent variable is restricted to sum to zero. Note that while these constraints hold on average, they may not hold for any particular couple.

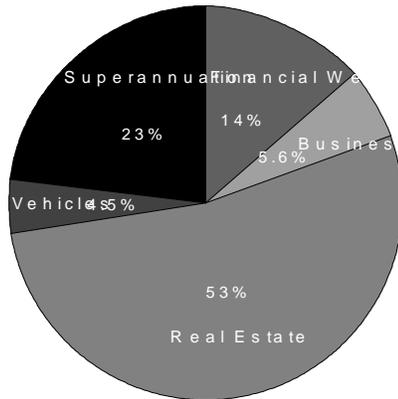
¹⁰Marginal effects and bootstrapped standard errors are calculated in the same manner as above.

¹¹Recall that the parameterization of equation (equation 2) implies that \hat{b}_6 and \hat{b}_7 measure deviations in portfolio allocations across entry cohorts and regions of origin respectively from the average portfolio of the immigrant population as a whole (i.e. $I_i = 1$).

5 Figures and Tables

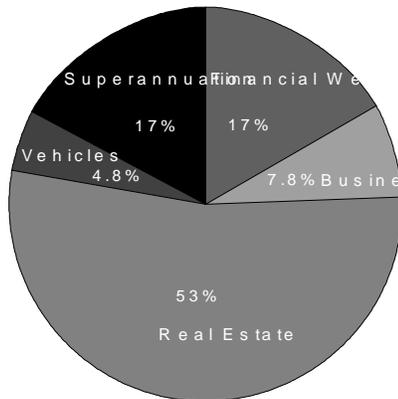


**Figure 1C:
Mixed Couples' Asset Shares**



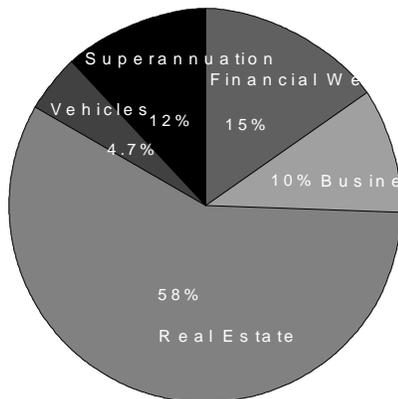
Own calculation based on wave 2 of HILDA data.

**Figure 1D:
Native-Born Singles' Asset Shares**



Own calculation based on wave 2 of HILDA data.

**Figure 1E:
Foreign-Born Singles' Asset Shares**



Own calculation based on wave 2 of HILDA data.

Table 1: Wealth Holding by Immigrant Status and Household Type

	Native-Born	Mixed	Immigrant-Only
Couple-Headed Households			
Net Wealth			
Mean Total Net Wealth	530570	514685	442003*
Median Total Net Wealth	354283	356000	268500*
%>0	99	99	97
Mean Asset Portfolio			
All households			
Financial Wealth	77948	70727	60007
Business	49592	28650*	38072
Real Estate	247437	274281	245478
Vehicles	26439	22995*	19465*
Superannuation	129154	118033	78982*
Conditional on owning the asset			
Financial Wealth	110739	105226	83099*
Business	282136	159235*	299667
Real Estate	288165	327180*	319465
Vehicles	27082	24147	20566*
Superannuation	144213	131318	101818*
Proportion Owning			
Financial Wealth	0.998	0.994	0.998
Business	0.192	0.201	0.138*
Real Estate	0.870	0.855	0.774*
Vehicles	0.976	0.952*	0.946*
Superannuation	0.896	0.899	0.776*
Current Income	64348	69939*	57173*
N	2125	664	571
Single-Headed Households			
Net Wealth			
Mean Total Net Wealth	287047		309942
Median Total Net Wealth	129000		144300
%>0	94		95
Asset Portfolio			
All households			
Financial Wealth	47674		47672
Business	22434		31120
Real Estate	153309		179257
Vehicles	13895		14532
Superannuation	49735		37362*
Conditional on owning the asset			
Financial Wealth	67761		71582
Business	277020		309441
Real Estate	252319		281636
Vehicles	16668		17818
Superannuation	68917		54497
Proportion Owning			
Financial Wealth	0.983		0.971
Business	0.096		0.106
Real Estate	0.615		0.641
Vehicles	0.834		0.816
Superannuation	0.722		0.686
Current Income	30507		29881
N	1851		583

Note: Own calculation based on wave 2 of HILDA data.* Indicates a significant difference from native-born Australian households (.05 level). All figures are reported in Australian dollars

Table 2: Determinants of Net Worth by Household Type (Marginal Effects and t-Statistics)

	Couple-Headed Households		Single-Headed Households	
	dy/dx	t-stat	dy/dx	t-stat
Income				
Permanent Income	57.25	9.29	82.75	10.08
Transitory Income	-5.62	-3.15	-4.42	-2.86
Demographics				
Age	20166.22	2.77	33726.56	10.42
Age of Spouse	23679.54	2.49	0.00	0.00
Kids<18	-68608.97	-2.35	5241.76	0.12
Years Married	182.79	0.03	0.00	0.00
Head Prev. Married	-190859.22	-1.45	-213487.13	-2.25
Spouse Prev. Married	-28450.85	-0.28		
Immigrants				
Immigrant Status			184435.66	2.37
Immigrant-Only	-149286.66	-2.10		
Mixed	-115467.59	-1.46		
Year of Entry				
<1965	-20851.22	-0.30	-28026.94	-0.22
1965-1974	-41625.74	-0.45	57073.53	0.58
1975-1984	208429.86	2.23	-230525.85	-1.58
1985+	-145952.90	-1.14	201479.26	1.83
Region of Origin				
English Speaking	-10882.33	-0.17	-256433.50	-3.09
Non-English Europe	292958.96	2.76	202065.79	1.64
Other Non-English	-282076.63	-2.10	54367.72	0.50
N	3360		2434	
R ²	0.14		0.14	

Note: Married refers to relationships between persons who are either legally married or effectively living together in a *de facto* relationship. All figures are reported in Australian dollars.

Table 3: (Average) Determinants of Asset Portfolios: Couple-Headed Households(Marginal Effects and t-Statistics)

	Financial Wealth		Business Assets		Real Estate		Vehicles		Superannuation	
	dy/dx	t-stat	dy/dx	t-stat	dy/dx	t-stat	dy/dx	t-stat	dy/dx	t-stat
Income										
Permanent Income	0.74	0.36	1.97	3.88	-19.09	-9.18	0.08	0.49	16.31	12.94
Transitory Income	-1.50	-2.73	6.41	3.78	-2.38	-1.52	-0.62	-3.10	-1.91	-6.47
Demographics										
Age of Head	13262.77	4.77	-1589.17	-1.84	-6785.28	-2.07	-237.95	-0.82	-4650.38	-3.10
Age of Spouse	4531.32	1.68	882.53	1.09	-893.30	-0.87	-251.84	-0.23	-1937.82	-1.79
Kids<18	3361.54	0.28	830.02	0.22	38626.05	3.15	732.23	0.80	-43549.84	-8.03
Yrs Married	-4750.25	-2.27	148.60	0.21	3665.63	1.61	209.25	0.98	726.77	0.58
Previously Married										
Head	53304.19	1.27	11401.17	0.81	-68494.20	-1.44	-1785.18	-0.36	5574.01	0.23
Spouse	-120834.32	-3.11	2177.00	0.17	131160.89	3.07	-2011.41	-0.40	-10492.16	-0.44
Immigrants										
Immigrant-Only	-421555.41	-3.39	-17707.42	-0.77	503714.09	5.24	-31587.30	-2.11	-32863.97	-0.81
Mixed	-70373.77	-1.27	-19695.32	-0.80	43147.34	0.68	4616.74	0.48	42305.02	0.59
Net Worth										
Net Worth	0.20	3.83	0.01	7.76	0.54	48.95	0.05	2.14	0.20	5.92
Net Worth×										
Immigrant-Only	0.12	3.32	0.00	0.06	-0.12	-5.14	0.02	1.56	-0.01	-1.37
Mixed	0.53	1.94	0.00	0.64	0.00	-0.10	-0.21	-1.36	-0.32	-1.45
Year of Entry										
<1965	-6141.91	-0.18	76.66	0.01	33822.88	0.91	4345.38	1.37	-32103.01	-1.30
1965-1974	-43486.40	-1.32	-7919.01	-0.95	54798.65	1.46	1824.37	0.59	-5217.62	-0.26
1975-1985	-30972.08	-0.75	-16029.18	-1.52	19942.85	0.45	5205.01	1.72	21853.40	1.23
>=1985	80600.38	2.12	23871.53	2.19	-108564.38	-2.80	-11374.76	-2.96	15467.23	0.82
Region of Origin										
English Speaking	9643.91	0.35	-8066.14	-1.12	-31096.63	-1.04	4241.96	1.50	25276.90	1.65
Non-English Europe	-29883.12	-0.89	6739.13	0.73	25124.24	0.67	-3253.93	-0.87	1273.68	0.07
Other Non-English	20239.21	0.60	1327.01	0.14	5972.39	0.16	-988.04	-0.29	-26550.57	-1.40
N	3360		3360		3360		3360		3360	
R ²	0.13		0.05		0.29		0.09		0.40	

Note: Married refers to relationships between persons who are either legally married or effectively living together in a *de facto* relationship. All figures are reported in Australian dollars

Table 4: (Average) Determinants of Asset Portfolios: Single-Headed Households(Marginal Effects and t-Statistics)

	Financial Wealth		Business Assets		Real Estate		Vehicles		Superannuation	
	dy/dx	t-stat	dy/dx	t-stat	dy/dx	t-stat	dy/dx	t-stat	dy/dx	t-stat
Income										
Permanent Income	2.25	0.96	2.15	5.27	-24.94	-10.27	2.14	6.59	18.40	21.59
Transitory Income	-0.75	-1.41	0.34	3.15	0.90	1.63	-0.03	-0.61	-0.46	-5.14
Demographics										
Age of Head	7525.93	8.87	192.50	1.01	-4673.90	-5.07	133.47	1.05	-3177.99	-8.66
Kids<18	-12723.03	-1.29	8696.50	3.16	38245.32	3.66	1384.92	1.04	-35603.71	-9.05
Prev. Married	-31363.46	-1.29	1743.46	0.25	54888.25	1.95	3041.74	0.87	-28309.98	-2.45
Immigrants										
Immigrant	-40591.21	-1.15	4216.05	0.58	30976.56	1.02	-3787.22	-0.51	9185.82	0.50
Net Worth										
Net Worth	-0.22	-0.98	0.05	5.16	0.36	35.93	0.38	1.93	0.43	8.42
Net Worth×Imm.	-0.22	-0.16	0.00	0.74	0.01	0.54	0.48	0.39	-0.27	-0.73
Year of Entry										
<1965	613.30	0.02	-11737.06	-1.10	30759.04	0.86	1513.15	0.34	-21148.42	-1.61
1965-1974	-11992.03	-0.33	1961.65	0.18	2407.52	0.07	-459.26	-0.11	8082.13	0.72
1975-1985	-56263.83	-1.52	6489.20	0.55	53134.72	1.31	-4056.28	-0.71	696.19	0.05
>=1985	67642.56	1.93	3286.22	0.32	-86301.28	-2.34	3002.39	0.67	12370.11	1.32
Region of Origin										
English Speaking	13346.92	0.49	-11117.21	-1.43	-5471.34	-0.20	4367.36	1.35	-1125.74	-0.14
Non-English Europe	-30960.84	-0.89	-1507.08	-0.15	-8219.44	-0.23	5541.69	1.30	35145.68	3.27
Other Non-English	17613.92	0.48	12624.30	1.13	13690.77	0.36	-9909.05	-2.16	-34019.94	-3.51
N	2434		2434		2434		2434		2434	
R ²	0.09		0.07		0.28		0.10		0.43	

Note: All figures are reported in Australian dollars

5.1 Appendix

Table A1: Descriptive Statistics by Immigrant Status and Household Type

	Couple-Headed			Single-Headed	
	Native-Born	Mixed	Immigrant-Only	Native-Born	Immigrants
Demographics					
Age	47.1	46.9	50.8	46.6	47.8
Age of Spouse	46.3	45.8	49.4		
Kids<18	1.0	0.8	0.8	0.5	0.5
Education	11.9	12.2	12.2	11.6	11.9
Education of Spouse	11.4	11.9	11.7		
Years of Marriage	22.6	19.7	25.4	21.3	19.2
Previously Married					
Head	0.109	0.161	0.121	0.118	0.140
Spouse	0.115	0.192	0.118		
Occupation					
Manag-Admin	0.212	0.201	0.371	0.397	0.415
Professional	0.115	0.107	0.064	0.051	0.047
Assoc-Profess	0.185	0.225	0.162	0.146	0.157
Tradesperson	0.117	0.126	0.078	0.087	0.062
Advanced Service	0.122	0.093	0.106	0.056	0.061
Intermediate Service	0.017	0.026	0.011	0.031	0.013
Intermediate Production	0.080	0.072	0.077	0.103	0.120
Elementary Service	0.083	0.065	0.074	0.043	0.033
Labourers	0.023	0.022	0.023	0.048	0.044
Region					
New South Wales	0.304	0.296	0.365	0.325	0.391
Victoria	0.247	0.240	0.284	0.224	0.229
Queensland	0.231	0.191	0.113	0.214	0.136
South Australia	0.081	0.087	0.076	0.088	0.073
West Australia	0.087	0.121	0.131	0.098	0.134
Tasmania	0.033	0.022	0.005	0.028	0.008
Northern Territory	0.004	0.013	0.007	0.008	0.006
ACT	0.014	0.031	0.019	0.016	0.023
Year of Entry					
<1965		0.212	0.160	0.000	0.235
1965-1974		0.135	0.242	0.000	0.244
1975-1984		0.065	0.148	0.000	0.186
1985+		0.122	0.450	0.000	0.335
N	2125	664	571	1851	583

Note: Calculations are based on the second wave of the HILDA survey. Married refers to relationships between persons who are either legally married or effectively living together in a *de facto* relationship. All figures are reported in Australian dollars