



Can immigrants insure against shocks as well as the native-born?

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ABSTRACT

We examine the impact of job displacement and serious health problems on multiple measures of individual and household well-being using longitudinal data. We extend the previous literature by examining whether these shocks have differential effects for the native-born and immigrants and whether shock mitigation strategies and their effectiveness differ by immigration status. Our results suggest that both immigrants and native-born individuals have access to similar institutional and other formal and informal risk-sharing arrangements such that they are able to mitigate shocks against job loss or illness almost equally.

KEYWORDS

Job loss; health shocks; income; consumption; labour supply

JEL CLASSIFICATION

J15; J61; J63; J14; E21

I. Introduction

The impacts that unforeseen events (i.e. shocks) have on household welfare depend on the extent to which household members can take actions to mitigate the direct impacts of these shocks on income and consumption. For example, a shock, such as a household member losing his/her job, can be mitigated by some combination of (1) the individual finding new work or becoming self-employed, (2) the individual receiving government benefits, (3) other household members increasing their labour supply and/or (4) borrowing or using savings to avoid a drop in consumption.¹ Two important potentially exogenous shocks that many individuals experience are job loss and the onset of serious health problems. For this reason, there is a large literature examining the impact of these shocks on individual and household well-being, as well as the strategies used by households to mitigate these shocks.

For example, Topel (1990) employs US longitudinal data from the Panel Study of Income

Dynamics and finds that short run declines in earnings are around 40% for manufacturing workers (see also, Ruhm 1991) while Stevens (1997), using the same data, finds that earnings are 9% below their expected levels 6 or more years after displacement.² Stephens (2001) jointly examines the impact of job loss and disability on consumption. He finds that the earnings of the household head are 25–36% lower in the year of job displacement and that this impact is long lasting. However, the impact on food expenditure is much smaller, indicating the households are able to mitigate much of the impact of these shocks. Browning and Crossley (2001) also find that households reduce their expenditures after suffering a job loss.

Cai, Mavromaras and Oguzoglu (2008) and Zucchelli et al. (2010), using the same data as is used in our study, find that health shocks have significant and negative effects on individual labour supply. Large effects of health shocks on labour supply have also been found in German data (Riphahn 1999).³ A related literature focuses

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¹Other mitigation strategies exist, such as changes in household composition. In this article, we will rule out this particular pathway by focusing on 'stable' households.

²Using Swedish register data, Eliason and Storrie (2006) find earnings losses after job displacement persist into the long run.

³Gertler and Gruber (2002), using data from Indonesia – a developing country, find illness shocks have a negative and significant effect on labour supply and earnings.

on the impact of disability. Using data for Spain, Cervini-Plá, Silva and Castelló (2016) find that wages are reduced by 19–22% after the onset of a disability. Jolly (2013) employs longitudinal data from the United States and finds that the onset of work-limiting disabilities increases the probability of downward income mobility for several years after the event. Polidano and Vu (2015) and Oguzoglu (2016), again using the same data as in our article, find that the onset of a disability leads to less employment in the short run.

In this article, we use 9 years of longitudinal data from the Household, Income and Labour Dynamics in Australia (HILDA) survey to examine the impact of job displacement and serious health problems on individual labour supply and incomes, and household incomes and food expenditure.⁴ Our methodology is identical to Stephens (2001), but we extend on the previous literature by examining whether these shocks have differential effects for the native-born and immigrants and whether shock mitigation strategies and their effectiveness differ by immigration status. Immigrants make up nearly one-quarter of the Australian population and there are a number of reasons to suspect that they may be less able to mitigate adverse shocks than the native-born.

For example, new immigrants to Australia face a stand-down period of 2 years before they qualify for social benefits (source: <https://www.humanrights.gov.au>) and it is quite possible that even longer duration immigrants know less than native-born on how to access benefits. In addition, immigrants may lack access to credit because of a lack of local credit history and may not have the type of local networks that can support risk pooling (Bonin, Constant, Tatsiramos, & Zimmermann 2009; Amuedo-Dorantes and Pozo 2002). Furthermore, previous research has shown that immigrants and the native-born have underlying differences in a number of dimensions that could influence the direct impact of particular shocks, the mitigating strategies used and the effectiveness of these strategies. These include (1) culture (Carroll, Rhee, and Rhee 1994, 1999), (2) attitudes towards risk (Amuedo-Dorantes and

Pozo 2002; Galor and Stark 1991) and (3) preferences (Browning and Crossley 2001).

The possibility of return migration also may influence how migrants respond to shocks (Dustmann 1997; Galor and Stark 1991). For example, Galor and Stark (1991) argue that immigrants having ties to other countries are more likely to emigrate in relation to the native born. Amuedo-Dorantes and Pozo (2002) suggest the reason for increased perceived risk by immigrants could be due to labour market participation, labour market progress and health care coverage. Islam, Parasnis and Fausten (2013) find systematic differences between immigrants and native-born in saving behaviour. They find that the immigrant population tends to save more in Australia, though it is not clear if such behaviour is in response to uncertainty about the job market or for other behavioural reasons such as preferences for saving due to culture, norm and habits as in Carroll, Rhee and Rhee (1994).

To our knowledge, no previous research has examined whether immigrants respond to shocks differently than the native-born. We suspect this is because of a lack of suitable longitudinal data in the major immigrant-receiving countries that contain a sufficiently large sample of working-age immigrants. HILDA is unique in being a large-scale representative survey in a major immigrant receiving country. Important for our analysis, it also collects information on a number of shocks to individuals and households, individual labour supply, household income and expenditure and detailed questions related to immigrant status.

We find that job displacement has limited impacts on both Australian-born and immigrant single men, but large long-term consequences for single women. Among single women, these impacts are even larger for immigrants. It may be that single women have not yet been able to build up a buffer stock of assets, gain access to credit or have other family members living in the home who may expand labour supply to offset the effects of the job loss. This may be especially true for single immigrant women. For Australian-born couples, displacements for husbands have large

⁴We focus on these two shocks because these are the most plausibly exogenous to the individual and the focus of most of the previous literature. We do not look at the onset of disability because we worry this is much more likely to be anticipated by households.

negative consequences but, for immigrant households, the husband's job loss has little impact on either personal or household income. It may be that Australian-born men are more likely to have lost a relatively high paying job (perhaps through industrial restructuring) than immigrant men and that new job opportunities have much lower wages making it difficult for the family to fully smooth what is effectively a large permanent shock to the husband's income.

Experiencing a serious health problem generally has smaller impacts than experiencing job displacement, and for couples, we find almost no evidence of negative effects even in the short run. For singles, there are generally small short-run impacts on hours worked and incomes, which are larger for single immigrant men. Consequently, it appears that the health shocks can for the most part be smoothed in all types of households with the possible exception of single immigrant men.

In [Section II](#), we describe the HILDA data, our sample selection criteria and the key variables used in our analysis. In [Section III](#), we discuss our methodological approach and present our empirical findings. [Section IV](#) concludes and discusses the policy implications of our findings both for Australia and for other similar immigrant receiving countries.

II. Data and sample selection

The HILDA survey

We examine the impact of economic shocks on labour market outcomes and food expenditure using longitudinal data from the nationally representative HILDA survey for the years 2003–2011. This survey began in 2001 and has since been administered annually. However, the data on economic shocks, as described further below, were first collected in 2002 while food expenditure data were not collected annually until 2003; hence, we start our analysis with the 2003 survey round. HILDA collects information on economic and subjective well-being, labour market dynamics

and family dynamics from a sample of more than 7600 Australian households encompassing almost 20,000 individuals aged 15 and older (see [Wooden, Freidin, and Watson 2002](#)). Individuals in sample households are followed over time regardless of whether they remain in their original household.

In our analysis, we focus on measuring the impact of two economic shocks (1) whether an individual has been 'Fired or made redundant by an employer (i.e. job displacement)' and (2) has experienced a 'Serious personal injury or illness to self (i.e. serious health problem)'. These are 2 of 21 events that respondents are asked about having experienced in the current year of each wave of the survey.⁵ Besides the quarter of the year where the event was experienced, no additional information is collected about the event. We focus on these two events because they have been the focus of much of the previous literature and are the events that are most likely to be exogenous and to relate directly to the individual reporting them.

Analysis samples

We begin by restricting our sample to prime-age adults aged between 25 and 64 in each round of HILDA that are not living in multiple family households. We exclude younger and older individuals, and those living in complex family arrangements because our focus is on impact of shocks on labour market outcomes and how households cope with these shocks. We use the information provided about relationships within the household to match all individuals who are in a couple (either married or de-facto) in a particular wave. Three analysis samples are then created from this subset of HILDA data.

The first, called the 'stable single – men' sample, contains all prime-age men who are single for at least 2 consecutive waves at any point in HILDA between waves 3 and 11. For each man who is included in this sample, only the waves that qualify are included. Overall, 6377 observations from 1312 individuals are included in this sample. The second sample, which we refer to as the 'stable

⁵The data on shocks are collected in the Self-Completion Questionnaire (SCQ) which is provided to all respondents and collected at a later date or returned by post. The SCQ is not filled out by approximately 10% of individuals. We examine whether the propensity of responding is related to experiencing our two economic shocks and, once we control for individual fixed effects, find no relationship.

single – women' sample, is defined similarly and contains 8663 observations from 1643 individuals. The third sample, which we refer to as the 'stable couple' sample, contains all prime-age individuals who have the same partner (who also is in the restricted sample discussed above) for at least two consecutive waves at any point in HILDA. Overall, 20,904 observations from 3569 couples are included in this sample.

Our analysis focuses on these three samples and thus examines the impact of economic shocks only on individuals who do not change their couple status over the time period being examined. This is done to isolate the direct impact of the shocks, since changes in couple status can be both a consequence and cause of other economic shocks. Much of the literature only focuses on stable couples (e.g. Stephens 2001) and hence our analysis sample is defined in a similar manner as in these articles. Individuals are then classified as being either Australian-born or Immigrants based on their country of birth. Couples are classified as Australian-born only when both members are Australian-born. Overall, 21% of the stable single – men sample, 19% of the stable single – women sample and 34% of the stable couple sample are immigrants.

Sample characteristics

In Table 1, we present summary statistics for key variables used in the analysis calculated for each of the three analysis samples pooled over time. The top panel contains the statistics for single men as a group and also separately by immigrant status. The first two rows contain the means of the two shock (indicator) variables used in our analysis: (1) job displacement (fired or made redundant) and (2) serious health problem (serious personal injury or illness).⁶ Single immigrant men are 0.6% more likely to experience job loss but are 0.4% less likely to experience a serious health problem relative to native-born men. The former difference is consistent with immigrants facing challenges

becoming established in the labour market and perhaps being employed in jobs with less stability. The latter could be due to the selective nature of immigration. Specifically, the medical tests that an applicant must pass prior to being admitted as a permanent resident in Australia means that the immigrant is less likely than the typical native-born person to face a serious health problem.

The next set of variables relates to hours of work,⁷ income and food expenditure.⁸ The income and expenditure items are expressed in 2001 dollars. Single immigrant men have lower annual hours of work than their single male native-born counterparts, with the difference being less than 1 h per week. However, incomes of single immigrant men are higher than those of the equivalent Australian-born with the difference being \$4814 at the individual level and \$5448 at the household level. Similarly, single immigrant men have \$532 higher annual expenditure on food than single native-born men. The final set of variables relates to the respondent's age and the number of children present in the household by age grouping. Single immigrant men are on average 1.2 years older than single Australian-born men. The immigrant men are as likely to have children under the age of 5 but are less likely to have children older than age 5 than are single Australian-born men.

The next panel of Table 1 contains the equivalent sample means but for single women. Single immigrant women have very similar rates of job loss and serious health problems as Australian-born single women. Single immigrant women have on average 142 fewer hours of work per year, \$2633 less personal income, \$276 more household income and \$682 more annual household food expenditure than do single Australian-born women. Single immigrant women are 3.7 years older and are less likely to have children under the age of 12 and somewhat more likely to have children over the age of 12 than are single Australian-born women.

The final panel of Table 1 contains the equivalent sample means but for stable couples.

⁶It is worth noting that the prevalence rates for these shocks are quite similar to those for the full sample of single men, single women and couples before the limiting to 'stable' relationships (see Appendix).

⁷The annual hours of work variable are calculated based on usual hours on all jobs per week multiplied by our estimate of the percentage of the previous tax year spent employed. The latter is calculated using the per cent of time spent in jobs in the last financial year multiplied by the number 52.14, with this product rounded to the nearest integer.

⁸Real annual food expenditure includes household annual expenditure on groceries and food eaten out.

Table 1. Summary statistics for stable singles and couples.

	All	Australian-born	Immigrants
Stable singles – men			
Fired or made redundant	5.4%	5.3%	5.9%
Had a serious personal injury/illness	10.5%	10.6%	10.2%
Annual hours worked	1595	1603	1564
Real total annual personal income	41,715	40,768	45,582
Real total annual household income	50,975	49,904	55,352
Real annual food expenditure	6982	6879	7401
Age	43.8	43.5	44.7
Number of kids aged 0–5	0.02	0.02	0.02
Number of kids aged 6–12	0.06	0.06	0.04
Number of kids aged 13–15	0.04	0.04	0.03
Observations	6377	5123	1254
Individuals	1312	1041	271
Stable singles – women			
Fired or made redundant	3.4%	3.4%	3.5%
Had a serious personal injury/illness	10.2%	10.1%	10.4%
Annual hours worked	1169	1197	1055
Real total annual personal income	34,778	35,288	32,655
Real total annual household income	43,415	43,361	43,637
Real annual food expenditure	7208	7076	7758
Age	45.6	44.9	48.6
Number of kids aged 0–5	0.13	0.14	0.09
Number of kids aged 6–12	0.26	0.27	0.22
Number of kids aged 13–15	0.13	0.13	0.15
Observations	8663	6985	1678
Individuals	1643	1329	314
Stable couples			
Male fired or made redundant	3.4%	3.2%	3.8%
Male serious personal injury/illness	7.4%	7.3%	7.5%
Female fired or made redundant	2.2%	2.0%	2.5%
Female serious personal injury/illness	6.7%	6.7%	6.7%
Male annual hours worked	1998	2057	1877
Female annual hours worked	1105	1109	1098
Male real total personal income	57,019	57,228	56,591
Female real total personal income	30,073	29,569	31,107
Real total annual household income	92,155	91,695	93,101
Real annual food expenditure	10,974	11,007	10,907
Male age	45.4	44.4	47.3
Female age	43.1	42.4	44.5
Number of kids aged 0–5	0.37	0.39	0.33
Number of kids aged 6–12	0.44	0.46	0.38
Number of kids aged 13–15	0.20	0.21	0.18
Observations	20,904	14,063	6841
Couples	3569	2372	1197

Real values are in 2001 dollars.

Immigrant men in couples have a 0.6% higher probability of experiencing a job displacement and have similar rates of serious health problems than do their Australian-born counterparts. The immigrant/non-immigrant differences are similar for women in couples but with lower rates of these events than is the case for men in couples. Immigrant husbands and wives work fewer hours than do their Australian-born counterparts. Immigrant husbands have lower income than do Australian-born husbands while immigrant wives have higher income than do Australian-born wives. Overall, average household income is higher

for immigrant couples. Finally, immigrant husbands and wives are older than their Australian-born counterparts and are less likely to have children in each of the age ranges.

III. Empirical methodology

Following Stephens (2001), we estimate reduced form regression models of the impact of job displacement and serious health problems on hours of work, personal income, household income and household food expenditure.⁹ The general specification for each outcome is

⁹Singles may live with other household members who are not their spouse/partner; hence, household income will often differ from personal income even for singles.

$$Y_{it} = \alpha_i + X_{it}\beta + \sum_{j=1}^T \gamma_j \text{year}_j + \sum_{k=k_l}^{k_u} \eta_k D_{it}^k + \varepsilon_{it} \quad (1)$$

where Y_{it} is an outcome for individual or household i in year t . X_{it} is a vector of time-varying regressors that represent each individual or household's preferences, in particular age in quadratic form, and the number of children in three age groups. The year_j term is intended to capture macro-level year-specific effects, the D_{it}^k indicator variables capture the impact of a particular shock on the outcome and ε_{it} represents the unexplained component in the outcome. Since the error term for a given household is likely to be serially correlated across time, we employ Huber–White SEs to account for arbitrary forms of serial correlation within individuals and households over time, as well as heteroscedasticity across households.

The longitudinal nature of our data allows us to employ a fixed effects or within estimator. Importantly, this means that the impact of either job displacement or a serious health problem is identified by comparing outcomes after the event occurs to those prior to the event occurring for the *same individual*. Individuals who do not experience a particular event only contribute to the estimation in so far as helping to identify the relationship between the preference shifters (age and number of children) and each outcome, as well as the macro-level trends in outcomes. This approach will produce unbiased estimates of the impact of each economic shock as long as all unobserved characteristics (e.g. individual heterogeneity) that are correlated with both the likelihood of experiencing a job displacement or serious health problem and each of our outcome variables that are time-invariant.

Furthermore, a distributed lag model is employed to allow the impacts of each shock to change over time since experiencing the event. To allow for potential ‘anticipation’ effects, we also include a control variable for the event occurring 1–2 years in the future. The impact of each shock is hence measured

by comparing outcomes at a particular time to those for the same individual or household 3 years or more prior to the event occurring. In general, we do not find evidence of anticipation effects which is consistent with our (and the literature’s) a priori decision to focus on job displacements and serious health problems as these are the shocks that are most likely to be exogenous to individuals.

IV. Results

Impacts of shocks on singles

In Table 2, we present estimates of the impact of job displacement (upper panel) and serious health problem (lower panel) on the well-being of single men. We pool the sample of immigrant and native-born single individuals and interact immigrant status with each of the ‘shock’ variables. Level differences in outcomes by immigrant status are already captured by the individual fixed effect. The left panel of the table shows the coefficients on five variables that measure the time distance since experiencing one of the shocks and the right panel lists the coefficients of the corresponding variables interacted with the immigrant indicator variable. Hence, these results provide a direct test of whether shocks have differential impacts on the native-born and immigrants. These impacts are relative to the baseline of the outcome for each person 3 or more years prior to experiencing one of the shocks.¹⁰

First, examining the impact of job displacement on Australian-born single men, we find a large drop in annual hours worked in the year of displacement (a 40% decline) and in the following year (a 24% decline) with a corresponding drop in personal (a 12% decline) and household income (a 11% decline) in the year following displacement.¹¹ There is some evidence for these negative impacts persisting 2–3 years after job displacement but at a much smaller scale and, by 4 years after the event, outcomes are nearly back to where they were prior to displacement. We also find no evidence that job displacement leads to reductions in food expenditure for this group. One might expect a reduction

¹⁰We began by estimating an even more unrestricted distributed lag model and then used these results to decide on useful aggregations for the longer run impacts of each shock.

¹¹Because our annual hours of work measure relies on the information on usual hours worked at the time of the interview, which is by definition after the event occurred, impacts on hours worked will show up earlier than impacts on income which cover the entire tax year of the event likely including time before the event occurred.

Table 2. Impacts of economic shocks on well-being for stable single men by immigrant status.

	Australian-born men – 5123 observations, 1041 individuals			Interaction: immigrant men – 1254 observations, 271 individuals		
	Annual hours worked	Real total personal income (1000s)	Real total household income (1000s)	Annual hours worked	Real total personal income (1000s)	Real total household income (1000s)
Impact of being fired or made redundant						
1–2 years ago	63.2 (82.7)	0.83 (1.63)	-0.45 (2.22)	135.0 (193.0)	11.60 (7.28)	10.60 (8.23)
Current wave	-637*** (95.1)	-2.08 (1.80)	-3.32 (2.14)	-122.0 (193.0)	2.18 (5.69)	2.81 (6.04)
1 year later	-318*** (84.9)	-5.00*** (2.08)	-5.38** (2.60)	186.0 (180.0)	-7.00 (6.96)	-10.50 (7.68)
2–3 years later	-173* (91.7)	-2.68 (2.12)	-2.85 (2.50)	81.4 (187.0)	-6.53 (7.51)	-5.57 (8.18)
4+ years later	-101.0 (118.0)	-1.90 (2.99)	-1.10 (3.40)	6.86 (224.0)	2.02 (8.40)	6.64 (8.70)
Impact of having a serious injury/illness						
1–2 years ago	58.9 (38.4)	1.08 (1.41)	1.79 (1.63)	-178** (86.4)	-7.99* (4.10)	-7.24 (5.75)
Current wave	-112** (47.1)	0.83 (2.10)	1.10 (2.30)	-167* (89.5)	-7.66 (5.27)	-8.06 (5.99)
1 year later	-64.2 (50.5)	-1.21 (1.42)	0.25 (1.68)	-242** (101.0)	-9.18** (3.62)	-11.5*** (3.94)
2–3 years later	-98.5* (54.0)	0.14 (2.46)	0.74 (2.65)	-36.0 (113.0)	-6.43 (4.54)	-8.61* (5.05)
4+ years later	-85.8 (81.8)	2.25 (2.54)	2.55 (2.78)	-44.6 (138.0)	-0.48 (6.38)	-1.61 (6.80)
Mean outcome	1603	40.8	49.9	1564	45.6	55.4

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. All impacts are relative to 3 years or more prior to the event. Real values are in 2001 dollars. Robust SEs clustered at the individual level are in parentheses. Age, number of children in different age groups, survey year and individual fixed effects are controlled for but not reported.

in food expenditure if households are unable to access either credit markets or use assets to smooth the loss in income.¹² Hence, the results suggest that Australian-born single men do have the ability to smooth consumption when faced with a short-run decline in income.

Next, examining the interaction terms for immigrants, we find no evidence that the impact of job displacement is different for immigrant single men than it is for the Australian-born. Overall, likely because of the strong economy during our sample period, job displacements seem to have limited impacts on either Australian-born or immigrant single men besides short-run reductions in working hours and income.

The story is quite similar for Australian-born single men when examining the impact of a serious health problem, with only small short-run declines in annual hours of work (of around 7%) found with no corresponding declines in either income or expenditure. However, for immigrant single men, the impact of a serious health problem is significantly larger and longer lasting. In the year of the health problem, hours of work drop by 18%. Impacts are even larger 1 year later with a 20% decline in hours work, 23% decline in personal income and a 20% decline in household income. Similar to the impact of job displacement, there do not appear to be longer run impacts of serious health problems or impacts on food expenditure by immigrant single men.

Table 3 presents analogous results for single women. Compared to Australian-born single men, the impacts of job displacement for Australian-born single women are quite similar in the short run with a 44% decline in work hours in the year of job loss and a 13% decline in personal income in the year after job loss. However, unlike for men, these declines in labour market attachment and income persist in the longer run; after 4 years, work hours are down by 14%, personal income by 17% and household income by 15%. Furthermore, household food

expenditure is also down by 10% in the long run. The negative impact of job displacement is even larger for immigrant single women. For example, in the 2–3 years after displacement, their work hours are down by 28% and their household income by 26%. In the longer run, the impacts are not statistically significant. Hence, unlike for single men, it appears that job displacements have large long-term consequences for single women, perhaps because of their general lower levels of labour market attachment.

Next, turning to the impact of the onset of serious health problems, the results for Australian-born single women are quite similar to those for Australian-born single men, with a 9% (6%) decline in hours worked in the year of (after) the event and a 3% decline in personal income and 7% decline in household income in the year after the event. As for men, we find no evidence of longer run impacts or impacts on household expenditure. However, unlike for single men, the impacts of serious health problems on immigrant single women appear to be the same as that for Australian-born women.

Impact of shocks on couples

In Table 4, we examine the impact of job displacement on married/de-facto couples. We examine shocks to both members of the couple (husband and wife for short) and consider the labour supply and income responses of both the person who experiences the job displacement and that person's spouse since the spouse could raise his/her hours of work to at least partially offset the loss in income.¹³ In the upper panel, the results presented are for the case of the husband experiencing the displacement. Job displacement for the husband has significant negative impacts on his hours of work in the year of the displacement (a 28% decline) and also over the next 3 years (a 14 and 8% decline, in 1 year and 2–3 years later, respectively). Job displacement for the husband also

¹²However, food expenditure may not be as responsive to the loss in income as other forms of expenditure (such as luxury goods). That said, food expenditure includes both food purchased for consumption at home and food bought at restaurants. The latter would be more expensive and so one response that households might make to a job displacement would be to reduce the amount of food purchased at restaurants and replace it with more meals made at home. This would be expected to reduce the food expenditure variable and may represent an important part of a household's optimal response to job displacement in the absence of assets or credit which could be used to fully smooth consumption.

¹³The age of each spouse as well as the number of children in the three age groups and year dummies are all included as control variables along with couple fixed effects in each model.

Table 3. Impacts of economic shocks on well-being for stable single women by immigrant status.

	Australian-born women – 6985 observations, 1329 individuals				Interaction: immigrant women – 1678 observations, 314 individuals			
	Annual hours worked	Real total personal income (1000s)	Real total household income (1000s)	Real food expenditure (1000s)	Annual hours worked	Real total personal income (1000s)	Real total household income (1000s)	Real food expenditure (1000s)
Impact of being fired or made redundant								
1–2 years ago	–34.6 (60.3)	1.55 (1.18)	1.09 (1.59)	0.46** (0.22)	131.0 (148.0)	1.07 (2.54)	–0.19 (3.00)	–0.97* (0.50)
Current wave	–528*** (82.7)	–2.58 (1.69)	–2.76 (1.97)	–0.13 (0.27)	43.7 (170.0)	–0.45 (3.29)	–1.81 (3.95)	–0.55 (0.50)
1 year later	–108.0 (77.7)	–4.48*** (1.64)	–2.72 (1.99)	–0.15 (0.30)	–183.0 (157.0)	–7.04** (3.23)	–8.77** (4.37)	–0.46 (0.66)
2–3 years later	–54.9 (77.9)	–3.79* (1.95)	–3.00 (2.35)	0.36 (0.40)	–302* (172.0)	–2.79 (3.65)	–9.74** (4.77)	–0.49 (0.68)
4+ years later	–173** (83.4)	–5.96*** (2.10)	–6.57*** (2.46)	–0.73* (0.40)	28.9 (186.0)	3.10 (4.32)	–2.96 (4.30)	–0.31 (0.79)
Impact of having a serious injury/illness								
1–2 years ago	57.5 (37.5)	0.24 (0.76)	–1.77* (0.94)	0.17 (0.14)	–60.9 (68.2)	–1.07 (1.55)	1.28 (2.14)	–0.91** (0.41)
Current wave	–106*** (37.5)	–0.61 (0.84)	–0.49 (1.06)	0.00 (0.15)	–70.9 (86.2)	–1.56 (1.74)	–2.39 (2.37)	–0.44 (0.43)
1 year later	–74.5** (37.5)	–1.22* (0.70)	–2.85*** (0.98)	–0.19 (0.17)	11.5 (73.8)	–2.81* (1.61)	–0.95 (2.54)	0.11 (0.41)
2–3 years later	–67.9* (40.7)	–0.35 (0.86)	0.18 (1.13)	–0.10 (0.17)	40.2 (73.8)	–1.10 (1.78)	1.02 (2.69)	–0.55 (0.42)
4+ years later	–42.3 (56.0)	0.46 (1.27)	–0.32 (1.60)	0.37 (0.32)	9.5 (128.0)	–2.36 (2.33)	–1.14 (2.98)	–0.32 (0.56)
Mean outcome	1197	35.3	43.4	7.08	1055	32.7	43.6	7.76

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. All impacts are relative to 3 years or more prior to the event. Real values are in 2001 dollars. Robust SEs clustered at the individual level are in parentheses. Age, number of children in different age groups, survey year and individual fixed effects are controlled for but not reported.

Table 4. Impacts of job displacement on household well-being for stable couples by immigrant status.

	Both Australian-born: 14,063 observations, 2372 couples						Interaction: At least one immigrant: 6841 observations, 1197 couples					
	Male hours worked	Female hours worked	Male income (1000s)	Female income (1000s)	Hhold income (1000s)	Food expend (1000s)	Male hours worked	Female hours worked	Male income (1000s)	Female income (1000s)	Hhold income (1000s)	Food expend (1000s)
Shocks to men												
1–2 years ago	-37.5 (43.6)	-10.8 (35.6)	5.03** (2.11)	-0.65 (0.98)	3.43 (2.36)	0.07 (0.20)	15.8 (71.9)	-60.1 (70.2)	0.43 (3.80)	-3.03* (1.82)	-2.42 (4.05)	0.08 (0.49)
Current wave	-571*** (53.0)	37.6 (40.3)	-1.55 (1.97)	-0.81 (0.99)	-2.47 (2.30)	-0.01 (0.20)	-94.6 (91.2)	-113.0 (73.4)	2.22 (4.60)	-0.92 (1.96)	-0.53 (5.05)	-0.60* (0.34)
1 year later	-282*** (57.3)	70.8 (45.1)	-12.1*** (2.34)	1.03 (1.20)	-11.7*** (2.73)	-0.16 (0.21)	61.8 (93.9)	-101.0 (79.6)	6.93* (3.79)	-2.90 (2.07)	3.82 (4.71)	0.29 (0.58)
2–3 years later	-167*** (58.5)	125*** (46.0)	-11.9*** (2.27)	2.52** (1.25)	-9.04*** (2.60)	-0.15 (0.24)	57.0 (88.3)	-176** (82.8)	14.7*** (3.79)	-5.66*** (1.98)	7.42* (4.39)	-0.08 (0.43)
4+ years later	-98.4 (76.0)	175*** (60.3)	-11.5*** (2.99)	3.65* (1.92)	-8.16** (3.94)	-0.35 (0.27)	54.6 (127.0)	-254*** (107.0)	12.3** (5.14)	-5.89** (2.93)	6.37 (6.32)	-0.24 (0.47)
Shocks to women												
1–2 years ago	25.8 (49.1)	-7.2 (55.0)	0.03 (1.82)	1.38 (1.22)	1.37 (2.42)	0.22 (0.26)	-2.1 (74.1)	174* (99.8)	1.13 (2.82)	4.58** (2.25)	7.16* (3.91)	0.10 (0.55)
Current wave	58.4 (52.3)	-359*** (63.3)	1.29 (1.99)	-0.23 (1.38)	0.72 (2.63)	-0.17 (0.30)	-116.0 (85.2)	10.4 (130.0)	-0.78 (3.43)	6.29** (2.47)	8.43* (4.70)	0.13 (0.45)
1 year later	58.1 (49.6)	-134** (58.6)	2.35 (2.51)	-4.08*** (1.31)	-1.46 (2.94)	-0.37 (0.27)	-113.0 (98.0)	-1.0 (129.0)	-4.43 (3.61)	2.46 (2.80)	2.12 (4.88)	0.63 (0.47)
2–3 years later	100.0 (62.5)	-125* (69.8)	-1.26 (2.09)	-0.61 (1.63)	-2.59 (2.68)	-0.69*** (0.25)	3.2 (105.0)	205.0 (129.0)	-2.27 (3.42)	1.35 (3.01)	3.00 (4.76)	0.83* (0.46)
4+ years later	208*** (73.2)	-49.7 (85.4)	2.81 (3.78)	0.04 (1.89)	0.93 (4.12)	-0.22 (0.40)	-156.0 (119.0)	32.4 (143.0)	-5.59 (5.15)	2.46 (3.52)	-1.35 (6.34)	0.62 (0.63)
Mean outcome	2057	1109	57.2	29.6	91.7	11.0	1877	1098	56.6	31.1	93.1	10.9

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. All impacts are relative to 3 years or more prior to the event. Real values are in 2001 dollars. Robust SEs clustered at the couple level are in parentheses. The age of both members of the couple, number of children in different age group, survey year and couple fixed effects are controlled for but not reported.

leads to large decreases in their own income of 21% in the year after displacement and 20% in the longer run.

At the same time, we find an increase in hours worked for the wives over the next 2–3 years (an 11% increase) and in the long run (a 16% increase). Along with this, we find a corresponding increase in personal income for wives of 9% over the next 2–3 years and 12% in the long run. Hence, like Stephens (2001), we find evidence of an added worker effect where households adjust the labour supply of other household members to at least partially offset the effect of the husband's job loss on both family income and expenditure. Interestingly, even with the additional income of the wife, household income following job displacement of the husband declines substantially, by 13% in the year after the job loss, 10% in the following 2–3 years and 9% in the longer-run. This occurs because women's incomes make up less than one-third of household income in Australian couples. However, these effected households are able to avoid large declines in food expenditure through other consumption smoothing methods.¹⁴

In the lower panel, the equivalent results are presented but for the case of the wife experiencing the job loss. Similar to what was found for men, wives' hours of work are lowered in the year of the displacement and in the first 3 years after the shock and this translates to a 14% decline in women's income in the year after job loss. However, because women make up a smaller share of household income, we do not find evidence that job loss by the wife impacts household resources. Interestingly, there is some evidence for an added worker among husbands in the longer run as their hours increase by about 10% 4 years after the wife loses her job.

Turning to the results for immigrants, we find little difference in response in immigrant households when women experience job displacement; however, when men experience job displacement, outcomes are very different than those found for Australian-born households. Specifically, while hours of work still decline substantially for

immigrant men in the short run, male income declines by a much smaller amount (9% instead of 21%) in the year after job displacement and return to pre-displacement levels after that. We also find no evidence for an added worker effect among wives. We find no longer run impacts of male job displacement on household income and smaller impacts in the year after displacement than for the Australian-born.

In Table 5, an equivalent set of estimates is presented to those of Table 4 but where the economic shock is experiencing a serious health problem. The upper panel provides the estimates for the models where the health shock occurred to the husband. A serious health shock leads to small declines in hours of work in the year of the shock (3%) and in the year after the shock (5%) and lower personal income in all years after the shock of 6–7%. We do not find any evidence of an added worker effect or any impacts on household income (taken at face value, the estimated coefficients imply small added worker effects and small declines in household income, but neither are significantly different from zero). Turning to the lower panel, we see that serious health shocks to wives have even less impact on household well-being, with just a 9% decline in female income found in the year after the shock and no consistent evidence found of reduced hours or work or impacts on household outcomes. Few of the interaction terms are significant for immigrant households; hence, the impact of serious health problems appears to be the same for the Australian-born and immigrants.

Overall, we find that job displacements for husbands in native-born households have long-run impacts on both personal and household income even though we also find substantial added worker effects for these households. On the other hand, displacements for husbands in immigrant households have little impact on either personal or household income and we find no evidence of added worker effects in these households. While job displacements for wives have large impacts on their hours worked and personal income, these do

¹⁴For example, Browning and Crossley (2009) find that households respond by delaying the purchase of durable consumption goods when faced with income loss due to job displacement.

Table 5. Impacts of having a serious injury/illness on household well-being for stable couples by immigrant status.

		Both Australian-born: 14,063 observations, 2372 couples				Interaction: immigrant hold: 6841 observations, 1197 couples							
		Male hours worked	Female hours worked	Male income (1000s)	Female income (1000s)	Hhold income (1000s)	Food expend (1000s)	Male hours worked	Female hours worked	Male income (1000s)	Female income (1000s)	Hhold income (1000s)	Food expend (1000s)
Shocks to men	1-2 years ago	21.1 (30.9)	7.3 (27.8)	-1.31 (1.35)	0.23 (0.64)	-0.83 (1.61)	0.12 (0.13)	-26.6 (49.1)	-7.7 (44.9)	-3.77 (2.82)	-1.18 (1.14)	-4.35 (3.18)	0.27 (0.34)
	Current wave	-70.5** (32.1)	15.8 (24.7)	1.64 (1.41)	1.05 (0.98)	2.95 (1.95)	0.04 (0.13)	-41.1 (55.8)	-53.9 (45.5)	-3.60 (2.67)	-2.36* (1.30)	-5.31* (3.11)	0.33 (0.34)
	1 year later	-106*** (34.7)	-7.6 (28.6)	-4.08*** (1.35)	1.73 (1.40)	-1.69 (2.12)	-0.08 (0.14)	-18.9 (55.7)	-21.0 (46.3)	3.82 (3.27)	-1.62 (1.80)	2.68 (4.04)	0.30 (0.28)
	2-3 years later	-49.2 (34.8)	14.5 (31.0)	-3.30* (1.79)	0.44 (0.90)	-2.17 (2.27)	0.00 (0.15)	-7.7 (61.0)	-9.2 (57.7)	0.81 (3.67)	-0.85 (1.42)	-0.01 (4.06)	-0.32 (0.29)
	4+ years later	-68.7 (48.0)	58.4 (40.3)	-4.18* (2.35)	0.64 (1.09)	-2.87 (2.96)	-0.20 (0.20)	-22.2 (89.8)	-12.2* (71.9)	3.60 (4.27)	-0.72 (1.66)	3.33 (5.22)	0.09 (0.48)
Shocks to women	1-2 years ago	13.2 (28.4)	19.6 (26.7)	0.67 (2.20)	-0.80 (0.79)	0.63 (2.62)	-0.10 (0.16)	-29.3 (51.4)	73.0 (50.1)	0.39 (2.86)	1.81 (1.18)	1.24 (3.27)	0.15 (0.30)
	Current wave	26.8 (25.0)	-27.1 (27.4)	-0.77 (1.69)	-0.94 (0.79)	-2.64 (2.12)	-0.17 (0.17)	-63.1 (47.2)	-36.4 (48.0)	0.27 (2.84)	0.82 (1.19)	2.43 (3.42)	0.26 (0.31)
	1 year later	8.4 (30.6)	-49.4 (30.2)	-1.44 (1.76)	-2.59*** (0.87)	-4.41* (2.35)	-0.15 (0.16)	-89.0* (52.6)	12.5 (55.8)	3.52 (3.33)	0.77 (1.34)	5.47 (4.02)	0.21 (0.37)
	2-3 years later	-23.5 (35.9)	-18.1 (35.7)	-2.93 (2.19)	-1.51 (1.14)	-4.72* (2.67)	-0.36** (0.16)	34.0 (55.6)	-25.2 (58.7)	3.72 (4.75)	-0.04 (1.58)	5.12 (5.01)	0.52 (0.37)
	4+ years later	-11.3 (48.9)	-26.5 (48.8)	-2.44 (2.03)	0.51 (1.97)	-2.28 (2.73)	-0.28 (0.20)	13.6 (77.6)	-50.3 (82.5)	3.67 (4.20)	-2.98 (2.45)	1.03 (4.74)	0.43 (0.44)
Mean outcome	2057	1109	57.2	29.6	91.7	11.0	1877	1098	56.6	93.1	31.1	10.9	

*** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. All impacts are relative to 3 years or more prior to the event. Real values are in 2001 dollars. Robust SEs clustered at the couple level are in parentheses. The age of both members of the couple, number of children in different age groups, survey year and couple fixed effects are controlled for but not reported.

not lead to declines in household incomes for either native or immigrant households. Unlike in some single households, experiencing a serious illness has little impact on either individual or household outcomes in couples. This suggests that having a spouse can help diminish the impacts of serious health problems.¹⁵

V. Summary and concluding remarks

We find job displacements to have limited impacts on either Australian-born or immigrant single men, but large long-term consequences for single women and, among single women, even larger impacts for immigrants. In general, it appears that the Australian social safety net provides adequate protection for workers with strong attachment to the workforce. On the other hand, it may be that single women have not yet been able to build up a buffer stock of assets, gain access to credit or have other family members living in the home who may expand labour supply to offset the effects of the job loss. This may be especially true for single immigrant women.

For Australian-born couples, displacements for husbands lead to large consequences when the husband is displaced but in immigrant households, the husband's job loss has little impact on either personal or household income. This is surprising at first glance, but it may occur because men in Australian couples have typically lost a relatively high paying job (perhaps through industrial restructuring) while, for immigrant couples, this might not be as large of a permanent shock to the husband's income.

Experiencing a serious health problem generally has smaller impacts than experiencing job displacement, and for couples, we find almost no evidence of negative effects even in the short run. For singles, there are generally small short-run impacts on hours worked and incomes, but these are larger for single immigrant men. Consequently, it appears that the health shocks can for the most part be smoothed in all types of households with the possible exception of single immigrant men.

Overall, our results indicate that individuals in Australia can rely on the receipt of benefits and transfers from the government to mitigate the adverse economic effects of health shocks. Our results suggest that both immigrants and native-born individuals have access to similar institutional and other formal and informal risk-sharing arrangements such that they are able to mitigate shocks against job loss or illness almost equally. This is perhaps surprising but likely reflects the high quality of migrants selected by the immigration system used in Australia, as well as, the generally high-quality public health system and the robust economy during the time period we study.

Our analysis sheds light on our over-arching question of whether households (native-born and immigrant) can cope with job loss and health shocks. We find virtually no evidence that these shocks cause significant declines in food expenditure either at the time of the shock or in the years that follow. This is true even in the case of job loss for Australian-born men in couples where we see large persistent declines in labour income. Taken together, our results suggest that the existing policies related to income maintenance when faced with job loss or health shocks, coupled with family coping strategies, appear to be sufficient for Australian native-born and immigrants to offset most of the negative consequences of these shocks.

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¹⁵We further examined different pathways through which households adjust to shocks such as receipt of benefit income or change in business income, but our estimates are generally imprecise without any consistent patterns.

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Appendix Characteristics of the analysis samples

	% missing shocks in HILDA waves 3–11	% Yes among overall non-missing sample	% Yes in stable samples
Single men			
Fired or made redundant	24.3%	5.5%	5.4%
Serious personal injury/illness	24.3%	10.6%	10.5%
Observations	10,914	8259	6377
Single women			
Fired or made redundant	20.1%	3.6%	3.4%
Serious personal injury/illness	20.1%	10.4%	10.2%
Observations	13,626	10,884	8663
Couples – men			
Fired or made redundant	19.0%	3.7%	3.4%
Serious personal injury/illness	19.0%	7.6%	7.4%
Observations	34,459	27,914	20,904
Couples – women			
Fired or made redundant	17.7%	2.1%	2.2%
Serious personal injury/illness	17.7%	6.9%	6.7%
Observations	37,018	30,472	20,904