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Welfare entry and exit after marital separation among Australian mothers

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INTRODUCTION

A key aim of the welfare system in Australia is to provide a buffer for low-income families against negative income shocks. Relationship separation brings with it a substantial financial shock, in particular, for women with children (Duncan and Hoffman 1985; Amato 2000, Zissimopoulos, Karney and Rauer 2013). Low income mothers rely upon a range of mechanisms to smooth the financial shock of a relationship separation, including income support payments from the government, employment as well as repartnering. A source of continuing debate is how a country's welfare system can balance the goals of supporting mothers during financial hardship while encouraging them towards greater economic independence. A better understanding of the barriers to welfare exit can help to inform targeting efforts and the design of future welfare policies.

This paper examines the patterns of welfare entry and exit after relationship breakdown among Australian mothers. It provides new information on the demographic characteristics associated with welfare exit and introduces evidence on the role of repartnering in welfare exit – an issue that has been given little attention in the previous Australian literature. Around half of women experiencing relationship breakdown repartner within five years (Wu & Schimmele 2005, Skew, Evans & Gray 2009), and it represents an important and distinct channel through which women recover household income (Fisher & Low 2016).

More generally, previous researchers examining the barriers to welfare exit for single mothers have faced considerable empirical challenges. In household panel surveys the numbers of separations are relatively small, the frequency of the surveys are spaced apart in yearly (or longer) intervals, while studies of separating cohorts are restricted to particular types of separations, such as registered divorces. For both types of data, non-response selection and sample attrition during this tumultuous stage of life can lead to estimation bias.

In this paper, we overcome such challenges by relying on a rich and unique administrative data set. Our data follow, on a bi-weekly basis, approximately 50,000 low and middle-income mothers who received income support, including family support, between 2001 and 2006 after separating from their married or de-facto partner. These data provide detailed and representative information on welfare receipt as well as including the information required to identify key disadvantaged population sub-groups – such as mothers who have a history of welfare receipt of face multiple barriers to exit.

LITERATURE REVIEW

A significant body of research documents the significant economic consequences of relationship separation, in particular for women, and the factors that are predictive of more favourable outcomes (see Peterson, 1996, for a discussion of the international literature). In Australia, means-tested income transfer programs partially cushion the income shocks from relationship separation. At the same time, continued receipt of these transfers is an indicator of ongoing economic disadvantage and public expenditures.

Discussions of the determinants of welfare exit for single mothers can be grouped into two broad explanations: personal circumstance and structural factors. Personal circumstance refers to characteristics of the individual herself that might interfere with exiting welfare or finding employment. Whereas some personal characteristics are considered to be beyond the individual's control such as domestic violence (Riger, Staggs and Schewe 2004), physical and mental health problems of the mother or her child (Romero et al. 2002; Nadel, Wamhoff, and Wiseman 2003; Zhu 2016), and ethnicity (Barrett 2002; Bradbury and Chalmers 2004), other characteristics have greater agency associated with them such as substance abuse (Metsch and Pollock 2005), number of children (Moschion 2011; Özcan and Breen 2012; and Zhu 2012), past human capital accumulation (Becker 1964), and history of welfare receipt (Blank 2007).

Structural factors refer to conditions that shape the person's environment and are largely beyond the person's control. Researchers typically measure the impact of structural impediments by exploiting variation in the mother's environment by geographic location and/or across time from reforms to the welfare system or family policies as well as age discontinuities in the policy rules. Key structural impediments identified include: lack of affordable and accessible childcare (Brewer et al. 2014; Sall 2014), and weak local labour markets (Hoynes 2000) combined with limited transportation options to travel to and from work (Smeaton 2006).

While personal and structural barriers are associated with reduced chance of any welfare exit or employment for single mothers, what is unclear is how they may correlate to welfare exits through non-employment channels such as repartnering. In Australia, data limitations have prevented previous researchers from distinguishing the channel through which mothers exit the welfare system (Barrett 2002, Doiron 2004, Gregory, Klug & Thapa 2008). One exception is a recent paper by Fisher and Zhu (2016) who look at the impact of welfare reforms on mother's repartnering behaviour after relationship breakdown. Internationally, the research that has been conducted tends to focus on exits from lone parenthood via marriage and excludes entry or re-entry into cohabitations. This paper builds on this literature by examining the factors that are associated with different types of welfare exits, including an exit through the channel of repartnership.

DATA

We use administrative data based on records of recipients of a near-universal family payment¹ as well as highly targeted income support payments.² By observing individuals whenever they are receiving family payments, we expand our observation criteria significantly beyond that used in previous studies such as Barrett (2002) and Fok and McVicar (2013), which require income support receipt for sample inclusion. A key benefit of

¹ Family payments comprises Family Tax Benefit (FTB) Payments Part A and Part B. In Australia, FTB is paid to the primary carers of around three quarters of children in our target population. Our initial (weighted) sample includes 1,576,135 children aged under 10. The ABS Estimated Resident Population estimate of the population of children aged under 10 is 2,585,761 for June quarter 2001 (ABS, Australian Demographic Statistics, cat no.3103.0). The 2001 Census estimates that 82 per cent of children under 10 live in couple households (ABS, 2001 Census of Population and Housing). We apply this ratio to the ERP estimate to obtain a coverage rate of 74 per cent (for children in couple families). The main reasons for non-receipt are either high family income or assets, though some might choose to not apply for payments if the transaction and stigma costs outweigh the potential economic benefits of receipt

² Income support is targeted at low-income families with approximately one-fifth of working age people in receipt for the analysis period (ABS 2007).

observing this broader population is that it captures mothers from middle income households (receiving no income support, but receiving family benefits) when partnered, throughout any separation, and if they re-enter into a middle income household through employment or repartnering.

The analysis sample consists of women who were (a) partnered and receiving any family payment (FTB(A) or FTB(B)) on 15 June 2001, (b) subsequently separated from their partner within the following 3½ years and (c) had at least one child aged under ten in 2001. We exclude families where the father was designated the primary carer at any point, where the mother re-partnered with their original partner,³ and where either parent was eligible for the Age Pension (aged above 65 for men and 60 for women). See online Appendix A for more information on the sample design.

A separation date is defined as the first fortnight where the customer reports to Centrelink, the welfare payment agency, that she has separated from the partner that she had on 15 June 2001.⁴ We focus on separations occurring between 15 June 2001 and 10 December 2004 although we observe all mothers up until 8 December 2006 (between two and 5.5 years after separation). Since those who separate early might have different characteristics than those who separate later, all the estimation models control for date of separation. We do not have any information for the dates when the mother or father were not receiving any income support or family payments, other than the knowledge that they were not receiving payments during those periods.

If the mother has a post-separation income that places her in the region where the higher rate of FTB(A) phases in (for example, below \$41,899 with two young children in 2001) then she will receive more income support if she reports herself as being separated rather than partnered – so she will have a financial incentive to rapidly report separation. More generally,

³ The administrative data reveals greater relationship volatility patterns than is evident in survey-based studies which collect data either by recall or at less frequent intervals. Of the original sample of around 78,000 separating mothers, we find that 34 per cent re-partnered with their original partners, and that 70 per cent of these mothers re-partnered with their original partner within the first year of separation. Thus, for comparability with previous research we exclude this group.

⁴ Though it is clearly defined in the administrative data (by the class of payment paid to the mother) the actual event of separation is not straight-forward, particularly for de facto relationships. The Social Security Act definition of a de facto marriage during our study period is that a person is in a marriage-like relationship with a person of the opposite gender. A couple is recognized as separated when the ‘couple are living separately and apart on a permanent or indefinite basis’ (FaHCSIA, 2007).

she is required to report to Centrelink within 14 days any changes in her circumstances which might affect payment (such as a partnering).⁵

The sample size for the base population and the sub-samples used in each of the analysis sections is presented in Table 1. The population size of mothers who permanently separated from their June 2001 partners is 49,624. Within this population, we first report the financial conditions of these mothers before and after they separate. Of this group, 3,901 mothers never received income support payments. Our subsequent analysis then excludes these mothers (leaving us with 45,723 mothers) and examines both the hazard of income support exit (with 3,717,202 person-fortnight observations) and the probability of welfare receipt (with 4,748,580 person-fortnight observations).

Table 1: Sample Size

	Sample size
Base population of Separators	77,782
Those who re-partner (with their original partner) anytime between Jun 01 and Dec 06	28,158
Those who did not repartner and never received income support	3,901
Samples used in the following analysis sections	
Analysis 1: Impact of Separation (Tables 2 and 3)	49,624 (77,782-28,158)
Analysis 2: Hazard of welfare exit (number of mothers) (Table 4)	45,723 (49,624-3,901)
Hazard of welfare exit (number of mother-fortnight observations)	3,717,202
Analysis 3: Total burden of welfare (number of mothers) (Table 4)	45,723
Total burden of welfare (number of mother-fortnight observations)	4,748,580
Analysis 4: Competing risk (number of mothers) (Table 5)	45,723
Competing risk (number of mother-fortnight observations)	3,717,202

⁵ The maximum penalty for not reporting such changes can range from imprisonment of between 12 months and 10 years depending upon the charge (though most penalties are only financial). Centrelink reviews the eligibility of around two thirds of all income support recipients each year (usually by cross-verifying reported income with, for example, tax return information), makes adjustments as necessary and pursues prosecution in cases of fraud (Prenzler 2011). Qualitative evidence on the attitudes and behaviour of mothers receiving PPS and other income support payments indicates a desire to truthfully report circumstances coupled with a difficulty in navigating the disparate systems of family payments, income support and child support (Rawsthorne 2006). Complying with all systems truthfully is seen as a burden for these mothers; the information and attention requirements for 'gaming' the system are high.

When following mothers over time, we impute values when there are short spells where the mother is not receiving any payment. These spells typically arise due to failure to report required information to Centrelink. Most imputations are for missing spells of one or two fortnights in length. See online Appendix.

Income support receipt

The primary dependent variable is whether the mother was receiving income support in a given fortnight. For over 96 per cent of separating mothers, this payment is initially Parenting Payment Single (PPS), with all lone parents eligible if their income and assets are sufficiently low. As at mid-2002, the full PPS payment was \$421.80 per fortnight. If a sole parent had a fortnightly income from other sources in excess of \$136.60, the basic payment is reduced until it reached zero at an income of \$1,181 per fortnight. A sole parent working full-time on minimum wages would thus be eligible for part-payment of PPS. Similarly, assets (not counting the family home) over \$283,750 for home owners or \$384,750 for non-home owners would prevent receipt. For most of our study period eligibility for PPS receipt (or level of PPS received) was not dependent on the number of children or the age of the child/ren – though the payment rate was greater for larger families.

The two main welfare exit destinations for lone mothers are thus either an increase of wage income above the threshold or partnering with a man with a sufficiently high income. If they partner with an unemployed man they would transfer to a different income support payment. A small number might leave payment due to loss of custody of children, asset windfalls or exit from Australia.

RESULTS

The impact of separation

How does the economic situation of mothers change after separation? Is this impact different for mothers from poor and middle-income backgrounds? This section compares the situation of mothers immediately after separation with their financial situation at two other time points: June 2001, when all mothers are still partnered (the earliest date for which we have complete data); and two years after the date of separation. These comparisons across time effectively control for all influences on outcomes that remain fixed over time, but not for time-varying factors such as the increasing age of the mother and her children or the improving labour market conditions over the period between 2001 and 2006.

Table 2: Financial situations before and after separation

	1 June 2001	Immediately after separation	Two years from separation
Never received Income support after separation	9.1	9.1	9.1
No Income Support	73.9	26.3	23.2
Income Support	26.1	73.7	76.8
Type of income support			
Unemployment benefit	0.9	0.5	0.5
Disability payments	0.8	0.9	1.1
Lone parenting payment	1.2	71.1	73.0
Partner parenting payment	22.6	0.2	1.6
Carer payment	0.5	0.4	0.4
Miscellaneous	0.1	0.0	0.0
Mother's personal earnings per fortnight			
\$0	24.6	20.6	16.1
\$1-\$200	17.4	13.3	11.1
\$201-\$500	29.6	28.1	27.3
\$501-\$1500	26.5	31.6	31.8
\$1501-\$3000	1.7	5.6	8.0
Missing	0.1	0.7	5.3
Partner's personal earnings per fortnight (for partnered mothers)			
\$0	10.9	n/a	1.3
\$1-\$200	2.1	n/a	1.4
\$201-\$500	14.6	n/a	12.0
\$501-\$1500	45.2	n/a	43.9
\$1501-\$3000	25.3	n/a	39.1
>\$3000	1.9	n/a	2.4
Missing	0.1	n/a	0.0
Amount of child maintenance			
\$0	99.5	75.3	13.9
\$1-150	0.3	10.3	39.0
\$151-\$300	0.1	6.8	21.1
\$301-\$450	0.0	3.9	11.6
>\$450	0.0	3.6	9.9
Missing	0.1	0.0	4.6
Number of Children			
One child	33.8	28.9	32.7
Two children	40.6	45.1	44.3
Three children	18.3	19.2	17.3

Four or more children	7.2	6.8	5.7
Public housing	4.7	4.2	5.2
Partnered	100.0	0.0	7.3
Defacto status	28.4	0.0	6.1
Total number of mothers	49,624	49,624	49,600

Table 2 shows the characteristics of separating mothers at these three time points. The sample is the same at all three points, though around 5 per cent of the sample has missing information for some variables at the two-year point because they have left the family payment system. Income support receipt among mothers sharply increases after separation. When all mothers in our sample were partnered, approximately a quarter were receiving income support – mostly in the form of partnered parenting payments (as noted earlier, the highest income quarter of families are excluded from our sample). Immediately after separation, this rises to almost three-quarters as the majority of mothers begin to receive Parenting Payment Single (PPS). Table 2 also shows that there is little subsequent movement into other types of payments, even two years after separation.

Mother's personal earnings increase after separation, with the fraction of those earning over \$500 per fortnight increasing from 28 to 37 per cent and then to 42 per cent (of the non-missing). The rise in mothers' earnings across time may reflect both mothers' labour supply response to separation as well as improvements in labour market conditions.

Before separation, at June 2001, we see a strong gender differential in the earnings distribution, with many mothers primarily reliant upon their husband's income. Whereas only 13 per cent of partnered men were receiving an income of \$200 or less per fortnight, 42 per cent of mothers were receiving this low rate of earnings. Two years after separation, a small percentage of mothers have found a new partner and of these mothers, the vast majority of them partner with someone who earns an income of over \$500 per fortnight (nominal).

Most mothers do not receive any child maintenance immediately following separation. Two years later, almost all are receiving some, though most mothers (over 70 per cent) receive less than \$300 per fortnight. After separation, mothers were, on average, caring for more children than before separation – mainly reflecting fertility progression (given an average of 18 months have elapsed between 1 June 2001 and separation). Though lone mothers in the general population are much more likely to be living in public housing than partnered

mothers, their entry to public housing is usually due to long-standing disadvantage. Hence, over the period shown in Table 2 there is only a small increase in public housing tenure.

To show the differential impact of socio-economic background on the receipt of income support after separation, Table 3 divides mothers into five approximately equal-sized groups according to an index of the socio-economic status of the postal area in which they live (the ABS SEIFA score, defined by location prior to separation).

Table 3: Impact of separation by neighbourhood status

	June 2001	Immediately after separation	Two years from separation
Panel A: Full population			
Per cent receiving income support			
SEIFA 1 (most disadvantaged)	38.57	78.96	81.71
SEIFA 2	28.86	76.77	79.22
SEIFA 3	25.15	75.30	77.04
SEIFA 4	19.88	72.26	74.98
SEIFA 5 (most advantaged)	16.76	64.23	69.99
Total	26.08	73.73	76.78
Panel B: Excluding families in receipt of Family Tax Benefit Part B in June 2001			
SEIFA 1 (most disadvantaged)	28.69	63.07	72.35
SEIFA 2	18.78	55.33	69.78
SEIFA 3	15.67	67.80	66.86
SEIFA 4	12.61	53.82	64.77
SEIFA 5 (most advantaged)	10.28	50.32	60.28
Total	16.97	57.82	66.72

Panel A of the table shows the fraction of each SEIFA group receiving income support payments in June 2001, immediately after separation and two years later. Panel B shows the same information for the sub-population of mothers who were not receiving FTB(B) in June 2001 (about 42% of the sample). FTB(B) is only paid when one member of the couple (usually the mother) has a low personal income, and so this sub-population is more homogenous with respect to initial labour force participation of the mother.

Focusing on the full population, before separation, 38.6 per cent of mothers living in the bottom SEIFA quintile were receiving income support, compared to 16.8 per cent of mothers living in the top quintile. This gap narrows substantially after separation, as income support receipt increases at a faster rate among those with more advantaged backgrounds. From 22

percentage points the gap falls to 15 immediately after separation, then to 12 percentage points after two years. Though the more advantaged mothers are still less likely to be receiving income support after separation, this convergence illustrates how the Australian income support system provides insurance for both low and middle-income Australian mothers (bearing in mind that our data doesn't include the richest quarter).

Some of this convergence could reflect the fact that more of the families living in the advantaged areas had mothers who were not initially working – and hence more likely to receive income support after separation. Panel B controls for this by excluding families receiving FTB(B) (i.e. excluding families where the mother was not working in June 2001). The pattern of changes is generally similar to that in Panel A; the income support rates of mothers living in rich areas (SEIFA 5) converge with those for mothers living in the poor areas (SEIFA 1), from 18 to 13 to 12 per cent.

Welfare dependence – Exit from the initial spell and overall dependence

Among those mothers who receive income support payments after separation, which characteristics are associated with their exit from this first spell of income support receipt, and also with their longer-term experience of income support receipt?

We first estimate a discrete time spell duration model using the method of Allison (1982). A logistic regression model with one case for each person-fortnight is estimated, starting from the first date of welfare receipt up until the date of exit or censoring at the end of the observation window. The dependent variable takes the value of zero for every fortnight up until the last observation for each individual, at which point it either takes a value of one if they exit from the income support system or zero if they have not yet exited. Allison shows that this structure is equivalent to the maximum likelihood estimation of a discrete-time hazard model with the predicted probability representing the conditional hazard of exit at each fortnight.

The estimation equation includes a set of dummy variables for each of the possible time periods of welfare receipt, permitting a flexible baseline hazard of exit (a total of 104 parameters including the constant, with fortnights 104+ grouped together). The model does not explicitly take account of unobserved heterogeneity. There is some evidence that this might bias the parameter estimates (but not significance levels) towards zero if such heterogeneity exists (Allison, 2010, Gail et al 1984), but this effect is mitigated by our use of a flexible baseline hazard (Jenkins, 2005, Dolton and van der Klaaw, 1995). The estimation

equation also includes a set of dummy variables for the timing of separation, a set of socioeconomic and demographic characteristics measured in the period before mothers separate (as at June 2001), and a set of time-varying characteristics (detailed definitions in Appendix Table A.2).

To describe more generally the factors associated with welfare receipt (including repeated spells) welfare, we also examine the overall probability of welfare receipt from time of separation to the end of the analysis period in December 2006 (the ‘total burden’). This model is estimated in a similar way, except that here every available fortnight observation is included and the dependent variable is reversed (equal to one if they are receiving benefit in a given fortnight, zero otherwise). This model includes observations both before and after the first spell of welfare receipt and includes mothers who do not have any welfare receipt after separation. We model the temporal correlations between the observations using a random effects logit model.⁶

Figure 1 shows the estimated baseline hazard for exit from welfare. The pattern shown is broadly in line with the findings from the international literature on lone mother’s welfare participation (Blank, 1989, Barrett and Cragg, 1998). The hazard declines slightly in the first two years from the date of separation, then steadies at a hazard rate of around 12 per cent per annum. This is estimated for mothers with the base characteristics as indicated in Table 4 – who tend to be more advantaged than the average mother.

Though the decline in the hazard is statistically significant (see note to Figure 1), in substantive terms it is small, and so provides little support for the hypothesis that longer durations on welfare reduce subsequent exit probabilities – though to make a stronger statement on this would require modelling of any unobserved heterogeneity.

⁶ Using the Stata xtlogit routine. This is not required for the exit model (Allison, 1982).

Figure 1: Baseline hazard for the first 4 years after separation

Notes: Annualized baseline hazard rate for the model reference case in Table 4. Fortnights 104+ grouped into a single baseline hazard (the last point in the figure). The hypothesis that the baseline hazard is constant is strongly rejected ($\Delta 2 \times \text{Log-likelihood} = 286$, $\Delta \text{df} = 103$), as is the hypothesis that the hazard is constant after the first fortnight (222,102). A model including a dummy for fortnight 1, plus a linear function of fortnight has a significantly negative slope (-0.00300 SE: 0.000569).

Table 4 reports the sample means and proportions (column 1), the coefficients of the hazard model and the marginal effect of each characteristic on the expected duration of welfare receipt. This duration impact is only calculated up to 143 fortnights (or observed maximum) and so is likely to be larger if longer spells could be included.

Column 5 of Table 4 presents the coefficients for the model of the probability of welfare receipt, using the random-effects logit model. A positive coefficient in column 5 indicates that mothers with higher values of a variable will be more likely to receive welfare. Column 7 of Table 4 shows the marginal effects associated with these parameters. This increase in probability can be compared with the overall mean probability of receipt of 60 per cent across the person-fortnight observations. For the most part, characteristics with lower exit rates and longer durations also have an increased probability of receipt – we note where this is not the case below.

Patterns of welfare exit vary greatly according to the initial socio-economic characteristics of the mother. In particular, mothers who had been receiving income support when partnered in

June 2001 have an additional 14 fortnights in their first spell of post-separation welfare receipt. Similarly, they are 25 percentage points more likely to receive income support across the full observation window. Receiving a disability related payment adds an additional 7.7 fortnights to the expected duration.

Mothers who lived in relatively poor areas (bottom SEIFA quintile) had longer first spell durations than mothers who lived in relatively well-off neighbourhoods (even when controlling for the other socio-economic characteristics). While the previous section shows that separation leads to a social class convergence in outcomes; here we show that subsequent exits act to re-establish that divergence.

Table 4 Hazard of welfare exit and probability of welfare receipt

	Hazard of exit			Welfare receipt (total burden)			Average marginal effect (approx.)
	Mean (%)	est.	s.e.	Impact on duration (fortnights)	est.	s.e.	
Intercept		-5.17	0.09		-0.05	0.01	
Time-invariant characteristics							
Indigenous	3.0	-0.08	0.06	2.1	0.3	0.09	0.07
Overseas born	22.6	-0.01	0.02	0.2	0.1	0.03	0.02
Pre-separation characteristics (at June 2001)							
De facto	29.3	-0.12	0.02	3.3	0.11	0.03	0.03
Received some income support at June 2001	29.1	-0.52	0.03	14.2	1.06	0.04	0.25
SEIFA quintile (base case: middle quintile)							
1st (bottom) SEIFA quintile	21.1	-0.11	0.03	3.1	0.24	0.04	0.06
2nd SEIFA quintile	20.6	-0.05	0.02	1.4	0.15	0.04	0.04
4th SEIFA quintile	19.7	0.03	0.02	-0.9	-0.05	0.04	-0.01
5th (top) SEIFA quintile	17.1	0.18	0.03	-4.9	-0.46	0.05	-0.11
Level of FTB (base case: low income, mother not working)							
Low income, mother working	12.9	0.28	0.03	-7.5	-0.6	0.05	-0.14
Med income, mother not working	17.1	0.16	0.03	-4.2	-0.17	0.04	-0.04
Med income, mother working	24.4	0.53	0.02	-14.5	-1.35	0.04	-0.32
High income, mother not working	1.5	0.42	0.06	-11.4	-0.51	0.12	-0.12
Disability payment receipt	3.1	-0.28	0.06	7.7	0.50	0.09	0.12
Time-varying characteristics							
Age of mother (base case: 0-29 years)							
30-34 years	26.8	-0.1	0.03	2.8	0.19	0.01	0.05
35-39 years	24.9	-0.28	0.03	7.5	0.24	0.02	0.06
>40 years	21	-0.52	0.04	14.0	0.26	0.02	0.06
Age of father (base case: 0-29 years)							
30-34 years	23.3	-0.03	0.03	0.8	-0.1	0.02	-0.02
35-39 years	25.1	-0.05	0.04	1.4	-0.1	0.02	-0.02
>40 years	33.3	-0.05	0.04	1.4	-0.09	0.03	-0.02
Child maintenance received	32.6	-0.28	0.02	7.5	1.62	0.01	0.39
Partnered	0.0	2.17	0.03	-58.8	-5.56	0.01	-1.33
Number of children (base case: 0 or 1 child)							
Two children	45.1	-0.18	0.02	5.0	0.26	0.01	0.06
Three children	19.5	-0.28	0.03	7.6	0.29	0.02	0.07
Four or more children	7.0	-0.47	0.04	12.7	0.1	0.03	0.02
Age of youngest child (base case: 1-2 years)							
Under 1 (or no child)	9.4	0.21	0.04	-5.6	0.32	0.01	0.08

3-4 years	21.9	0.21	0.03	-5.6	-0.03	0.01	-0.01
5-6 years	15.9	0.4	0.03	-10.9	-0.21	0.01	-0.05
7 years or more	26.4	0.4	0.03	-10.8	-0.35	0.02	-0.08
Public housing	4.5	-0.68	0.05	18.4	0.54	0.03	0.13
State of residence (base case: NSW or ACT)							
Vic	23.8	-0.08	0.02	2.1	0.14	0.03	0.03
QLD	21.4	0.21	0.02	-5.7	0.22	0.03	0.05
SA	7.6	0.03	0.03	-0.7	0.05	0.04	0.01
WA	10.8	0.19	0.03	-5.3	-0.11	0.04	-0.03
Tas	2.5	0.07	0.05	-1.9	-0.01	0.06	0.00
NT	1.3	0.55	0.07	-15.1	-1.53	0.06	-0.37

Notes: The population is separating mothers who did not repartner with their original partner and who received income support at some point after separation. Additional variables included but not shown are number of fortnights since separation (dummy variables for each fortnight, where fortnights after 4 years are grouped into a single baseline hazard, date of separation (third-order polynomial function of days after 15 June 2001), and month of separation (11 dummy variables). The mean (%) column describes the mother's situation in the first fortnight receiving benefit. The impact on duration shows the predicted marginal effect of the characteristic on the mean fortnights to exit (up to fortnight 143 – the maximum in our data). This is calculated by first calculating the marginal effect on the hazard for each person for fortnights 1 to 143 (with post-exit RHS variables other than the baseline hazard parameters held at their values at the time of exit). These effects are then summed to calculate the survivor function, the mean duration and the impact on the mean of marginal changes to each characteristic. These changes can be compared to the mean predicted duration (of spells up to 143 fortnights) of 108 fortnights.

The patterns associated with prior FTB receipt shown in Table 4 similarly show that mothers with a weaker attachment to the workforce when they were partnered have longer durations of income support receipt after separation. Durations decrease both with family income and with mother's employment. For example, among the low income families (receiving the higher rate of FTB(A)), those where the mother was working (i.e. not receiving FTB(B)) have an additional 7.5 fortnights duration on welfare compared to the reference case of not working.

Since demographic characteristics feature prominently in the targeting of income support, it is important to assess how exit and payment receipt rates vary with these. This is particularly relevant in Australia where, since 2006, income support policies for lone mothers assume greater workforce engagement among mothers with school-aged children.

Indeed, we do generally find increasing exit rates and shorter durations as the age of the youngest child increases past two years. (The higher exit rate for the under age 1 group reflects the inclusion of mothers with no resident children in this group – about 0.7% of the person-fortnights. This occurs when the mother loses custody of the child and exits from benefit.) Among those with older children, the exit rate levels out once most children start

school at age 5, with durations about 5 fortnights longer than for the pre-school children. The same pattern can be seen with overall welfare receipt patterns.

The variation of exit rates with family size, however, is almost as large as the variation with child age, with those with four or more children having an expected duration of almost 13 fortnights more than those with one child. (However, the effect on the likelihood of welfare receipt is negligible.) Mother's age also has a large impact on rates of exit, with those over 40 having durations 14 fortnights longer.

In the Appendix, we show the estimates for an exit model which models the interactions between age of youngest child and family size. The predicted rates of exit from this interaction are shown in Figure 2. As noted above, mothers with no children are grouped with the one child under 1 group – we do not include the combined group in the figure because the high exit rate of the former group due to loss of custody or child mortality represents a very different type of exit. For the family types shown in the figure exit rates generally increase with the age of youngest child - the exception being with only one child where exit rates actually decrease after age 7.⁷

While the pattern of generally increasing exit rates with age is broadly supportive of policies that place greater job search obligations on mothers with older children, it is noteworthy that exit rates also vary substantially between small and large families. It is generally considered that mothers of toddlers (age 1-2) face considerable workforce impediments, however the exit rates for mothers with a single toddler are actually higher than those of mothers with four or more children where the youngest is starting school.⁸ Though there are possible associations with unobserved skill levels that we cannot rule out, this pattern is a plausible response to the additional caring burdens associated with large families. These detailed exit rate patterns suggest that a simple targeting based on age of youngest child alone is unlikely to identify those mothers who are most able to engage with employment and exit from welfare receipt.

⁷ $p=0.0014$.

⁸ Though not significantly different, $p=0.08$.

Figure 2 Exit hazard rates by the number of children and age of youngest child

Notes: Predicted annualised hazard rates derived from Appendix Table B.1. Derived as $1 - (1 - h)^{26}$ where h is the predicted fortnightly hazard rate and $h = 1/(1 + e^{-X\hat{\beta}})$ and X is held at the reference categories in Appendix Table B.1.

Turning to other demographic characteristics which are more likely to be associated with earnings capacity rather than with caring burdens, we find that mothers born overseas have similar patterns of welfare exit to Australian born mothers (Table 4). Indigenous mothers have slightly lower rates of welfare exit (not statistically significant) and slightly total higher welfare receipt.⁹ This contrasts with Barrett (2002) who finds a higher exit rate for Indigenous mothers and argues that Indigenous single mothers tend to have multiple short spells on income support. However, our sample differs from that of Barrett in that we restrict attention to lone mothers who were previously partnered.

After separation, mothers can partner again and continue to be eligible for an income support payment if the new partner has an income below the income threshold. Nonetheless, Table 4 shows that mothers who find new partners are much more likely to exit welfare than mothers who are single. In the time frame for this analysis, only a small proportion of mothers partnered (14.1 per cent at the end of the data window). In the next section we examine these exits more closely.

⁹ Though this is significant when controlling for the interaction terms in Appendix Table 1.

Receiving child maintenance is associated with 7.5 fortnights longer duration. This is consistent with child maintenance receipt reducing labour supply (or new-partner search efforts) via an income effect.

Mothers residing in the mining boom States/Territories of NT, QLD and WA have shorter spell durations than mothers living in non-mining locations (NSW, Vic, SA, Tas). Corresponding to this, the probability of welfare receipt is lower in WA and (especially) NT than in NSW. However, the pattern in QLD is reversed, with a higher probability of receipt accompanying the higher exit rate (implying more repeat spells).

These high exit rates in the mining boom states suggest a role for labour demand in influencing mother's exit from benefit. This was tested more explicitly by re-estimating the exit model while including state-specific trends in the female unemployment rate as an additional predictor. This variable had a significant association with exit rates in the expected direction¹⁰, but the impact of state of residence remained much the same (though now SA joins Victoria as having significantly lower exit hazards than NSW). Hence we do not have a clear explanation for the higher exit rates WA, NT and Queensland, though it is possible that the unemployment rate does not fully capture the impact of the mining boom on labour demand.

Though only 5 per cent of newly separated mothers are in public housing, their exit rates are much lower than those who are not in public housing – reflecting the fact that entry to public housing is generally conditional on a long history of disadvantage.

The Appendix Table B.1 also examines the interaction between public housing and state of residence. Barrett (2002) argues that the high housing costs in NSW (and especially Sydney) may provide additional incentives for public housing residents in this State to remain on welfare because they might lose entitlement to public housing. We also find that being in public housing leads to a significantly lower exit rate in NSW/ACT than in Queensland or Western Australia.

Towards the end of our observation window in mid-2006, welfare reforms placed new lone parents into the Newstart program, an unemployment benefit that provides a lower rate of payment than Parenting Payment Single, after their youngest child turned eight. Existing recipients were 'grandfathered' or excluded from this change (though they did face other

¹⁰ The variable was the June female unemployment rate in their State in the respective year (percentage points). The NSW rate was used for our combined NSW/ACT group. Estimate = -0.168, standard error 0.035.

changes such as increased part-time job search requirements). This ‘grandfathering’ produced an incentive for mothers with older children to not exit from payment – as mothers who exited but later returned to payment would be considered as ‘new’ recipients and thus receive a reduced level of income support.

To test any impact of this, the interaction model in the Appendix Table B.1 also includes two additional variables – a dummy indicating if the current period was after July 2006, and interactions between this variable and the youngest child categories. We find a reduction in the exit hazard for mothers with youngest child aged under 5, but no change for those aged 5-6 or aged 7 years or older. Possibly this reflected a contemporaneous redirection of administrative encouragement of exit towards mothers with older children, but we have no direct evidence of this. Certainly, we find no evidence of a behavioural response to the incentives described in the previous paragraph.

Employment versus partnering exits

What is the relative importance of employment and partnering for lone mother welfare exit? Exit associated with the former usually stems from an increase in the mother’s own earnings, while the latter usually occurs when the mother finds a new partner who has sufficient earnings to preclude receipt of income support. This section explores how the rate of welfare exit via these two channels varies with socio-economic and demographic characteristics of the mother and the household.

To compare the relative prevalence of these welfare exit states, Figure 3 presents the Cumulative Incidence Functions (CIF) for welfare exits that arise while the mother remains single, while she is partnered, when she simultaneously leaves the family payment system (in which case we do not know her marital status), or when her data is censored due to reaching the end of the observation window. As for the previous analysis, this is shown for the population of separating mothers who receive income support at some stage after separation, with the CIF showing the probability that one of these exit events happens to a person before time t , and that this exit event was of a particular type.

Following the design of our observation window, almost all mothers have at least 730 days after their first income support receipt post-separation before they reach the end of the observation window. The small number of exceptions are those who start income support some time after separation. Thereafter, increasing fractions of the sample reach the end of the

observation window, so that among those with 5.5 years of data, 70 per cent have not yet left the income support system.

Among those who exit, exiting welfare while single (usually because of employment) is more prevalent than exiting welfare via finding a new partner, though this gap starts to close by the end of the observation period (reaching 14 and 11 per cent respectively by the end).

Figure 3: Cumulative Incidence Function by type of welfare exit

Table 5 shows the association between socio-economic and demographic characteristics and the probability of welfare exits to these different destinations. These results are estimated as a ‘competing risk’ hazard model (Cox et al., 1984; Kalbfleisch et al., 2011). This is estimated by using a standard hazard model for each exit destination, while treating all other exit destinations as censored. For small absolute parameter values these are approximately equal to the proportionate increase in the hazard associated with a one-unit increase in the variable.¹¹

If exiting via these four destinations represented independent processes, then we could interpret these hazard estimates as the impact of characteristics on the timing of exit to each destination, given that the person was still receiving income support. However, there are reasons why these might not be independent. For example, women with particular characteristics might have a greater desire to leave welfare. If they do not find a partner they

¹¹ $e^{\beta} - 1$ is a better approximation when β is large.

might then increase their job search effort. This higher job search effort will be shown in the model estimates, but we cannot assume that this applied uniformly across their duration on welfare. Hence we cannot use these estimates to calculate the overall impact of this particular characteristic on time to exit in a particular fashion. Nonetheless, we can interpret the results at their face value, as the probability of exit to a particular destination conditional on not already having exited via other means.¹²

A more specific problem with our data is that a significant number of mothers leave the family payment system (stop receiving FTB(A) or FTB(B)) at the same time as they leave welfare. Since we have no information on them when they are not receiving any payment, we are unable to clearly categorise these mothers as either exiting when single or partnered. If the exit patterns for these mothers are different from those who we can classify, then their exclusion from our sample might give a misleading estimate of the overall patterns of exit. For example, if mothers who partner with high income men are more likely to leave the family payment system because of the family income test, then our estimates for the patterns of behaviour of those partnering mothers who we can clearly identify will only describe the patterns of those who partner with low-middle income men.

Other reasons for leaving FTB include they may have moving overseas; losing custody of the child(ren); or unrecorded mortality. Appendix Table A.1 shows that of the mothers who leave the family payment system, just under half return to the system later within our observation window. Of these, around one-third return as partnered, with the remainder returning as single parents. However, conceivably some of those returning as single parents might have been partnered during the period they were not receiving benefits, only reapplying for family payments when their relationship ended (again). We thus have reasonable grounds to suppose that those who return as partnered did leave income support while partnered, but weaker grounds to similarly categorise those who return as single as leaving income support when single.

As a sensitivity test we thus also assigned those who exited the family payment system, but returned later as partnered, to the exit category of partnered. These results are shown in online Appendix Table B.2. The results are very similar to our main results shown in Table 5 – with the exception of the association between family size and exit via partnering. We discuss this further below.

¹² Modelling dependence among these distinct exit states requires the imposition of parametric restrictions on the shape of the hazard functions, which can itself heavily affect the results (Allison, 2012).

The coefficients on the independent variables in Table 5 differ significantly between the single and partnered exits. The hazard of exit via finding a new partner is strongly and negatively associated with: being Indigenous; being born overseas; being on disability payments and being older. On the other hand, the hazard of exit while single has either the opposite or a relatively weaker and statistically insignificant association with these characteristics.

As the magnitudes of the intercept estimates are similar across the three exit states, we can compare the coefficients to gauge the relative strength of associations. For example, Indigenous and overseas-born women are less likely to exit via partnering than non-Indigenous, Australian-born women, and similarly for disabled and older women. Note however, that partnering per se does not necessarily imply welfare exit. This is probably the reason for the low partnered exit rate for Indigenous women, who might be more likely to partner with men who are themselves receiving income support.

Living in a relatively advantaged neighbourhood is associated with a strong and statistically significant increase in the probability of exit while single (i.e. due to employment).

Table 5: The association between characteristics and different welfare exit destinations

	Single at welfare exit		Partnered at welfare exit		Left family payment system	
	Coefficient	SE	Coefficient	SE	Coefficient	SE
Intercept	-5.96	0.14	-6.61	0.17	-6.47	0.19
Time-invariant characteristics						
Indigenous	0.21	0.08	-0.81	0.13	0.25	0.10
Overseas born	-0.05	0.03	-0.30	0.04	0.34	0.04
Pre-separation characteristics (at June 2001)						
De facto	-0.15	0.03	-0.19	0.04	-0.02	0.04
Received some income support at June 2001	-0.65	0.04	-0.51	0.04	-0.41	0.05
SEIFA quintile (base case: middle quintile)	0.00	0.00	0.00	0.00	0.00	0.00
1st (bottom) SEIFA quintile	-0.13	0.04	-0.11	0.05	-0.14	0.06
2nd SEIFA quintile	-0.11	0.04	-0.03	0.04	-0.07	0.05
4th SEIFA quintile	0.06	0.04	-0.04	0.04	-0.01	0.05
5th (top) SEIFA quintile	0.29	0.04	-0.10	0.05	0.22	0.05
Level of FTB (base case: low income, mother not working)						
Low income, mother working	0.72	0.03	0.35	0.04	0.50	0.05
Med income, mother working zero to few hours per week	0.42	0.04	0.17	0.05	0.26	0.06
Med income, mother working	0.07	0.04	0.28	0.04	0.19	0.05
High income, mother working zero to few hours per week	0.37	0.09	0.44	0.11	0.58	0.12
Disability payment receipt	-0.01	0.10	-0.44	0.12	-0.47	0.14
Time-varying characteristics						
Age of mother (base case: 0-29 years)						
30–34 years	-0.04	0.05	-0.15	0.05	-0.07	0.06
35–39 years	-0.11	0.05	-0.41	0.06	-0.27	0.07
>40 years	-0.15	0.06	-0.98	0.07	-0.59	0.08
Age of father (base case: 0-29 years)						
30–34 years	-0.02	0.05	-0.11	0.05	0.04	0.07
35–39 years	-0.07	0.06	-0.14	0.06	0.11	0.07
>40 years	-0.03	0.06	-0.15	0.06	0.12	0.08
Child maintenance received	-0.32	0.04	0.20	0.05	-0.67	0.04
Partnered	-1.73	0.29	3.23	0.04	0.54	0.11
Number of children (base case: 0 or 1 child)						
Two children	-0.19	0.03	0.02	0.04	-0.46	0.04
Three children	-0.29	0.04	0.01	0.05	-0.61	0.05

Four or more children	-0.51	0.07	-0.14	0.07	-0.87	0.10
Age of youngest child (base case: 1-2 years)						
Under 1 (or no child)	-0.06	0.07	-0.26	0.07	0.95	0.08
3-4 years	0.14	0.04	0.24	0.05	0.14	0.07
5-6 years	0.24	0.05	0.40	0.05	0.43	0.07
7 years or more	0.24	0.05	0.31	0.06	0.56	0.07
Public housing	-0.68	0.09	-0.73	0.10	-0.58	0.10
State of residence (base case: NSW or ACT)						
Vic	-0.13	0.04	-0.01	0.04	-0.14	0.05
QLD	0.09	0.04	0.30	0.04	0.25	0.05
SA	-0.02	0.05	0.25	0.06	-0.29	0.08
WA	-0.01	0.05	0.35	0.05	0.20	0.06
Tas	-0.06	0.09	0.31	0.08	-0.07	0.13
NT	0.57	0.10	0.53	0.15	0.64	0.12

Notes: The population is separating mothers who did not repartner with their original partner and who received income support at some point after separation. Additional variables included but not shown are number of fortnights since separation (dummy variables for each fortnight, where fortnights after 4 years are grouped into a single baseline hazard, date of separation (third-order polynomial function of days after 15 June 2001), and month of separation (11 dummy variables).

By contrast, these characteristics are negatively associated with the hazard of exit from finding a new partner – though those bottom quintile locations also have a low probability of partnering. The positive relationship between neighbourhood advantage and employment driven welfare exits could be because better-off neighbourhoods have better employment opportunities and transport systems, or because those with higher levels of unobserved human capital tend to congregate in relatively wealthy neighbourhoods. The variation in partnering rates across locations remains a puzzle. Women in richer areas are more likely to exit by leaving the family payment system – probably because they are more likely to find a high income partner (the last two columns). The lower exit rate for partnering with middle-income men might thus be a residual impact of this. However, our sensitivity test in the Appendix produces essentially the same result as in Table 5.

Single exit increases with the age of the youngest child, as we might expect on the basis of labour supply effects. Table 5 also shows variation across risks in the parameters for the number-of-children variables. Mothers with more children are less likely to exit welfare when single while the relative impact is less for partnered exit. The former pattern may reflect the lower net returns to an employment-led exit as mothers with more caring responsibilities face greater time limitations. Those with more children may also have experienced more time out of the workforce and have lower actual or perceived skills. However, this might also

represent a selection effect, with women placing more emphasis on their social role of mother both choosing to have more children and less employment (Hakim, 2006).

In this case, the pattern for partnered exit is sensitive to how we treat the mothers who leave the family payment system. Once we merge some of these mothers into the category of those who are partnered at exit, the positive association between having more children and exiting via partnering reduces and becomes statistically insignificant (online Appendix B: Table B.2).

Table 5 shows that the high rate of welfare exits for mothers residing in the mining States of QLD and WA found in the previous section can be seen here to arise from partnered exit. Table 5 also shows that mothers who are in public housing are less likely to exit welfare through any channel compared to mothers who are not in public housing.

DISCUSSION AND CONCLUSION

Several key findings arise from this analysis of administrative data on welfare entry and exit after separation: (1) income transfers in Australia perform a classic insurance role for middle income women as they enter and then leave the benefit system at faster rates than poorer women; (2) family size is just as important a predictor of benefit exit as is age of youngest child; (3) the characteristics associated with exit from benefit via employment are different from those associated with exit via partnering.

After separation, the proportion of mothers receiving an income support payment sharply increased. When all mothers in this sample were partnered, approximately a quarter were receiving income support, mostly in the form of partnered parenting payments. Immediately after separation, this rises to almost three-quarters as the majority of mothers begin receiving Parenting Payment Single (PPS). It is important to remember, however, that our results are for a selected sub-population: mothers initially in traditional gender role families, with young children, not receiving any child maintenance prior to separation, and receiving Family Tax Benefit. The high-income quarter of families with children not receiving Family Tax Benefit would be much less likely to be receiving income support after separation. Including these in the denominator would substantially reduce the measured rate of income support receipt.

Because they start off with much lower rates of receipt, separation leads to a greater increase in income support for mothers in more socio-economically advantaged neighbourhoods – an illustration of the social insurance role played by income support. These more advantaged women also have faster exit rates from benefit, with higher exit rates for younger women,

those with smaller families and older children, and those not receiving public housing assistance. We also found region of residence, child maintenance receipt, and partnership status to influence the speed of welfare exit.

Age of youngest child is used as a key targeting feature in the Australian lone parent income support program, and we do find exit rates increasing with child age. However, the variation with family size is just as important.

The ranking of the associations between these various characteristics and welfare dependency measures is largely preserved when we compare results across two models – one that models the time until exit from the first spell of welfare after separation and the second that models the probability of welfare receipt across the whole observations window.

Although we infer that certain characteristics may act as barriers to welfare exit, our results do not automatically reflect causal relationships. However, they do indicate the groups of mothers who are at higher risk of staying on income support payments for longer after separation. One policy implication from these results is that more services or resources, which have been shown to mobilise greater welfare exits, can be directed at these more at-risk groups. Regardless of the origin of their disadvantage, more directed targeting efforts can help to reduce overall welfare burdens.

The characteristics associated with welfare exit differ with the type of exit. The likelihood (hazard) of income support exit through the channel of finding a new partner is strongly and negatively associated with Indigenous status; being born overseas and being on disability payments. It decreases as the mother ages, and has a concave relationship with the age of the youngest child – whereby it increases as the child ages – until age 5-6 years before decreasing with child age. On the other hand, the hazard of income support exit via employment (i.e. single at welfare exit) has the opposite (or a statistically insignificant) association with these characteristics.

Finding differential impacts of explanatory variables across different types of welfare exit has policy implications. In particular, the contrasting direction of the impacts for certain variables suggests that new partnership and employment driven exits are distinct, and that the factors that constrain or facilitate welfare exits stemming from employment do not necessarily apply to exits stemming from finding a new partner. Data describing these patterns are important for policies that seek to facilitate them.

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