A New Look at the Recession and Ireland's Older People:

The Emigration of Adult Children and the Mental Health of their Parents

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November 2014

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ISBN: 978-1-907894-09-1

Summary

Barrett and O'Sullivan (2014) showed that the well-being of Ireland's older people had not suffered over the course of the recent recession. While this may be the case on average, recent demographic research suggests that this aggregate view may have missed an important channel through which a recession can impact on older adults. Specifically, Antman (2010, 2011 and 2013) has shown how parents can suffer declines in mental health as a result of the emigration of their children. Given the high rates of emigration from Ireland as a result of the recession, it is important to explore if this effect has occurred. Using data from the first two waves of The Irish Longitudinal Study on Ageing (TILDA), we explore whether the mental health of parents who saw children emigrate between 2009 and 2013 declined relative to parents whose children stayed in Ireland. Looking across three measures of mental health – depressive symptoms, self-rated mental health and indicators of loneliness – we find general and robust evidence of mental health declines for the mothers of emigrants. There is less evidence of fathers being affected with one exception – older fathers appear to experience a greater sense of loneliness as a result of the emigration of their children. We do not find evidence of the effect differing with the characteristics of the children, such as whether they are male or female or whether they lived with their parents immediately prior to emigration.

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1 Introduction

A recent paper by Barrett and O'Sullivan (2014) showed that people in Ireland aged 50 and over experienced large declines in wealth as a result of the recession. Using data from the Survey of Health, Ageing and Retirement in Europe (SHARE) which was collected in 2007 and data from The Irish Longitudinal Study of Ageing (TILDA) which was collected around 2010 and 2012, they showed that mean net assets fell by 45 percent between 2007 and 2012. Despite this collapse in wealth, the authors also showed that measures of health and well-being among the over 50s did not change over the period in question.

While the results in Barrett and O'Sullivan (2014) may reflect the average impact of the recession on the well-being of Ireland's over 50s, recent demographic research points to a possible route through which Ireland's recession may have impacted upon a sub-set of the over 50s. Using data from Mexico, Antman (2010, 2011 and 2013) has shown how parents can suffer declines in mental health as a result of the emigration of their children. The recession in Ireland has led to a re-emergence of emigration and so the possibility exists that parents in Ireland have suffered in the same way as their Mexican counterparts.

In this report, we present results from research in which we explore whether the mental health of parents in Ireland suffered as a consequence of the emigration of their children during the recession. Using data from the first two waves of The Irish Longitudinal Study on Ageing, we can identify parents who saw at least one child emigrate between the two waves (2009/11 and 2012/13) and parents whose children remained in Ireland. We have information on different measures of mental health for each parent in both waves and so we are able to see if the parents of emigrants saw declines in the measures of mental health. We also have information on other events that might have impacted on mental health over this period such as bereavement and physical health declines. By accounting for these other events in the analysis, we can further isolate the effect of the children's emigration.

The report is structured as follows. In Section 2, we provide some background to the current study by showing how the TILDA data have been used to study the direct impact of earlier waves of emigration on TILDA respondents. We also provide some details on the

recent wave of emigration which has given rise to the outflow of the TILDA participants' children. In Section 3, we describe the TILDA data more fully and discuss the variables that are used in the analysis. In Section 4, we describe the statistical method which we use in the analysis and present the results. In Section 5, we offer some conclusions. We should note here that the results are also presented in Mosca and Barrett (2014) but a greater focus is given in that paper to discussing the merits of the statistical approach and in situating the analysis in the international literature on the economics of emigration. Our focus here is on the impact of the recession on older people in Ireland, through the emigration of their children.

2 Emigration from Ireland

Emigration has been a feature of Irish life since the Famine, and even before that, so it was to be expected that the impact of emigration would be evident among TILDA participants. Barrett (2005) shows how net outward migration was at its highest level in the 1950s in a data series dating back to the 1870s. This outflow would have been occurring when the older TILDA respondents were young adults and so would have been part of the socio-demographic circumstances in which they lived and made decisions. High rates of net outflow also arose in the 1980s and this would have been the Ireland in which the younger TILDA respondents found themselves.

Barrett and Mosca (2013a, 2013b) examined the impacts of emigration on the TILDA respondents. According to Barrett and Mosca (2013a), 24 percent of men and 21 percent of women in the TILDA sample have lived abroad for at least six months. Forty six percent of the male return migrants and 43 percent of female return migrants have lived abroad for at least 10 years. Sixty seven percent of men and 74 percent of women left Ireland for the first time when aged 16-24. In the paper, Barrett and Mosca (2013a) sought to explore whether the experience of emigration had had a negative psychological impact based on findings in other papers that emigration can be stressful and was often associated with mental health difficulties. They did this by comparing the return migrants with those TILDA respondents who had lived in Ireland continuously since birth.

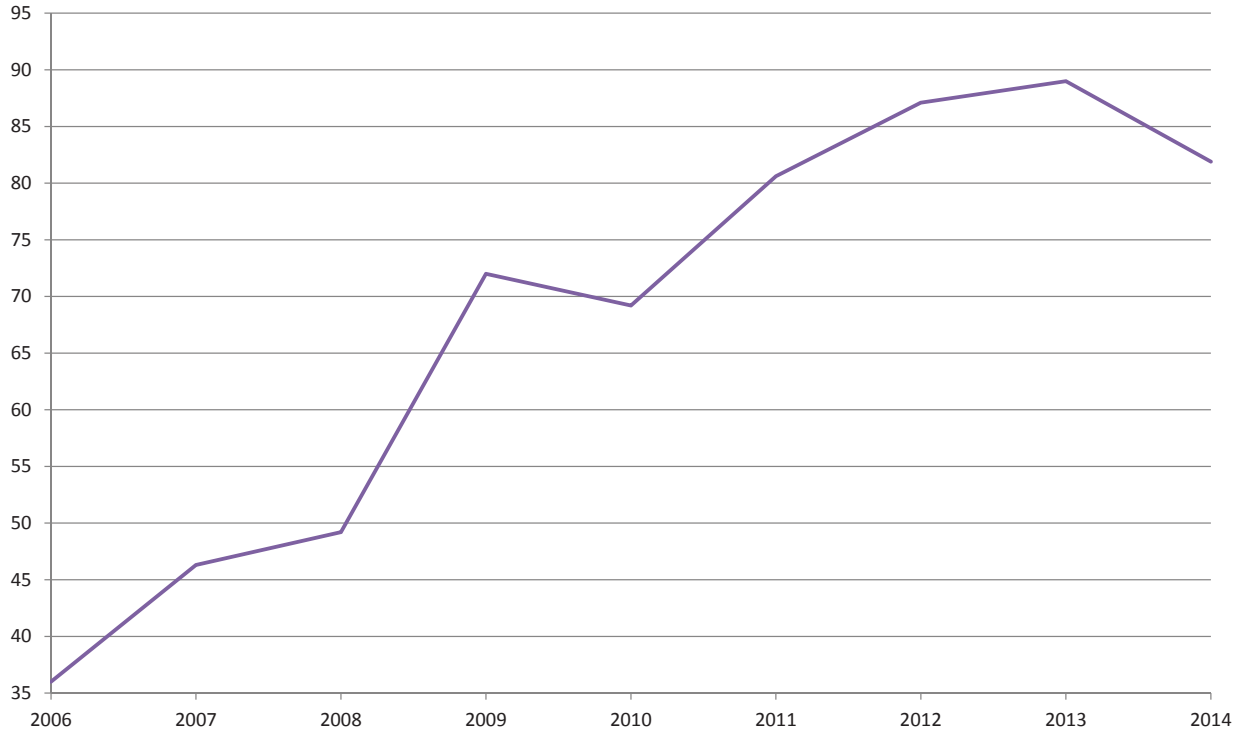
Using alcohol problems as an indicator of psychological stress, Barrett and Mosca (2013a) found that male return migrants generally showed higher rates of alcohol problems and this was taken as being evidence of the psychological stress of emigration. Among women, a more complicated picture emerged. Women who had lived away for a short time showed the same pattern as men. However, women who had lived outside of Ireland for ten years or more showed lower rates of alcohol problems compared to women who had remained in Ireland. The authors interpreted this as showing that emigration had been positive for this group of Irish women, providing them with, for example, financial independence.

In Barrett and Mosca (2013b), the authors looked at the experiences of returned migrants after their return. Some qualitative studies in the sociology literature had shown how former emigrants often had difficulties re-adjusting to life in the countries which they had left but these experiences had not generally been identified in quantitative studies. Barrett and Mosca

(2013b) showed that return migrants exhibited higher levels of social isolation and that the extent of such isolation was related to the length of time that the emigrants had spent away. Somewhat surprisingly, Barrett and Mosca (2013b) also showed that feelings of loneliness were not higher among return migrants, in spite of the higher degree of social isolation. The authors hypothesised that this might have been the result of coping mechanisms developed as a result of emigration.

Unlike the emigration of the 1950s and the 1980s, the recent wave of emigration has generally not led to the emigration of the TILDA respondents themselves but it has impacted upon their children. In Figure 1, we provide data on the scale of the emigration in recent years. It can be seen that in the year ending April 2006, 36,000 people emigrated from Ireland. By 2009, when data collection for TILDA began, this number had doubled to 72,000. Reflecting the severity of the recession, the rate of outflow remained elevated through the rest of the period shown in the figure, peaking at 89,000 in 2013. These high rates of outflow mean that a large number of TILDA respondents saw their children emigrate and this group is the focus of our analysis below.

Figure 1: Estimated emigration (persons in April) by year, all nationalities, both sexes (thousands)



Source: CSO

3 The TILDA data, the variables and the sub-sample used

3.1 The TILDA data

TILDA is a study through which data is being gathered on a large-scale, nationally representative sample of people aged 50 and over and living in Ireland. The TILDA study has been modelled on similar studies in other countries such as the Health and Retirement Survey (HRS) in the US, the English Longitudinal Study on Ageing (ELSA) and the pan-European Survey of Health, Ageing and Retirement in Europe (SHARE). A crucial feature of all of these studies, TILDA included, is that sample participants are interviewed at baseline and then re-interviewed periodically, typically every two years. In this way, data on the same people are built up over time thereby providing insights into the process of ageing at the level of the individual.

The first wave of TILDA was collected between late 2009 and mid 2011. Over this period, data was gathered on 8,504 respondents: 8,175 aged 50 and above and 329 younger spouses/partners of eligible individuals. The data were collected in three ways. First, a computer-aided personal interview (CAPI) was conducted in the person's home, covering topics such as income, wealth, demographics, health and healthcare use. Second, a self-completed questionnaire (SCQ) was left with participants and they were asked to return this by post. The SCQ covered more sensitive topics such as quality of relationships and abuse suffered during childhood. Third, participants were invited to undergo a health assessment in dedicated centres in Dublin and Cork[1]. The overall response rate (measured with reference to the CAPI) was 62 percent.

The second wave of TILDA was collected between 2012 and 2013. The original sample was contacted again and almost 90 percent agreed to participate in wave 2. Unlike wave 1, there was no health assessment undertaken but both CAPIs and SCQs were administered. Wave 3 of TILDA, which is currently in the field, includes both a CAPI and SCQ, as well as a health assessment.

The fact that the same people are tracked over time is critically important for our study, as we are able to observe the mental health of respondents at wave 1 and whether their children emigrated between wave 1 and wave 2. We are then able to observe their mental health again at wave 2 and so we can assess whether it has improved, deteriorated or stayed the

1 In cases where a visit to a centre was not possible, a shortened version of the health assessment in the home was offered to participants.

same. By comparing the parents who saw at least one child emigrate with those whose children remained in Ireland, we have the potential to produce strong statistical evidence of a causal relationship between emigration and mental health. In contrast, if we only observed people at a single point in time, we might observe correlations between a parent's mental health and the emigration of their children but we could not say anything about causation.

3.2 The variables used in the analysis

Our interest is in exploring whether the emigration of children between waves 1 and 2 had an impact on the mental health of parents so we will now discuss our measures of mental health. Later, we discuss how we construct our main explanatory variable (emigration of children) and also the other explanatory variables which are used.

We have three measures of mental health: depressive symptoms; self-rated emotional/ mental health and loneliness feelings.

3.2.1 Depressive symptoms

In TILDA, the 20-item Center for Epidemiological Studies Depression Scale (CES-D) is used to measure the degree to which respondents have experienced a wide variety of depressive symptoms in the week prior to the interview (Radloff, 1977). The test includes questions on negative feelings (like having the blues, experiencing life as a failure, feeling lonely or sad, having crying spells), on positive thoughts (as being hopeful about the future, feeling happy, enjoying life), on somatic activity (like losing appetite, suffering from a restless sleep, talking less), and on social contacts (experiencing other persons as unfriendly). Each of the 20 items is measured on a four point scale leading to a total score of 60, with higher scores indicating higher depressive symptoms. A cutoff score of ≥16 is used to determine clinically significant depressive symptoms (Radloff, 1977).

Changes in depressive symptoms are obtained by subtracting the CES-D score at wave 1 from the CES-D score at wave 2. Positive changes indicate that depressive symptoms have increased between the two interviews. Negative changes indicate that depressive symptoms have decreased.

3.2.2 Self-rated mental health

In both waves, respondents are asked whether they rate their mental/emotional health as: excellent, very good, good, fair, or poor. The responses are then coded from 1 to 5, with 1 being excellent and 5 being poor. Changes in self-rated mental health between waves are obtained by subtracting the self-rated mental health values at wave 1 from the values at wave 2. Positive (negative) changes indicate that self-rated mental health has deteriorated (improved) between the two interviews.

3.2.3 Loneliness

Loneliness is measured using a modified version of the University of California Los Angeles (UCLA) Loneliness Scale (Russell, 1996). Four negatively worded and one positively worded question are used: How often do you feel a lack of companionship? How often do you feel left out? How often do you feel isolated from others? How often do you feel lonely? How often do you feel in tune with the people around you? The frequency of the outcome variable is assessed as: 'Hardly ever or never'; 'Some of the time'; or 'Often'. The responses to the five questions are summed and the final score ranges from 0 (not lonely) to 10 (extremely lonely).

As with depressive symptoms and self-rated mental health, changes in loneliness feelings are obtained by subtracting the loneliness score at wave 1 from the loneliness score at wave 2. Positive (negative) changes indicate that loneliness feelings have increased (decreased) between the two interviews. Finally, because loneliness feelings are measured in the self-completed questionnaire in TILDA, the loneliness model is based on a smaller sample size as compared to the other two models.

3.2.4 Child emigration

Our main explanatory variable is the emigration of a child (or children) and this is constructed in the following way. In each wave of TILDA, respondents are asked a set of questions about their children, including whether they live with their parents, elsewhere in Ireland or outside of Ireland. We select our sample to be parents whose children were all living in Ireland at wave 1. If we observe in the wave 2 data that a child now lives outside of Ireland, this parent is coded as having seen a child emigrate. The fact that the observations on where the children live are contemporaneous with the other data collected at wave 1 and wave 2 provides an advantage over migration data that is recall biased. We should note that although we know that children are living outside of Ireland, we do not have information on what country they are living in.

3.2.5 Other explanatory variables

Although our main interest is in the possible existence of a causal relationship between the emigration of a child and the mental health of parents, there are clearly a range of other events that could have happened between waves 1 and 2 of TILDA which would impact on mental health. By controlling for as many of these events as possible, we can become more confident that we are isolating the relationship between children's emigration and parents' mental health. The events which we can control for based on the data are as follows.

3.2.5.1 Demographic and socioeconomic changes

The demographic events included in our model are widowhood and loss of close friends and relatives. The death of the spouse and the loss of close friends or relatives have regularly been shown as important sources of psychological stress (Choi and Bohman, 2007; Dykstra et al., 2005; Theeke, 2009).

Because changes in labour market status and changes in income may also affect mental health (Lindeboom et al., 2002; Dave et al., 2008; Mandal and Roe, 2008; Tiedt, 2013), we include retirement and becoming unemployed as regressors and also control for changes in weekly individual gross income. In TILDA, information on individual income is collected through a series of questions covering labour income and income from social welfare, pensions, investment incomes and other sources (O'Sullivan et al., 2014).

3.2.5.2 Physical health changes

The evidence collected in the medical literature shows that disability, new medical illness and poor (self-perceived) health are significant risk factors for depression and mental health difficulties (Cole and Dendukuri, 2003; Choi and Bohman, 2007; Schoevers et al., 2000). Because TILDA includes a wide battery of questions on health status, we are in the fortunate position of knowing the extent to which the health status of TILDA respondents has changed or deteriorated between the two survey interviews.

Focusing first on the onset of disease, respondents are asked whether since the last interview they have been diagnosed with one or more cardiovascular condition or chronic illness. Examples of cardiovascular conditions are high blood pressure, high cholesterol, heart attack or stroke. Examples of chronic illnesses are asthma, arthritis, osteoporosis or cancer.

For the purpose of assessing functional capacity, respondents are asked about any difficulties they have in carrying out a range of activities. These activities fall into two groups: activities of daily living (ADLs), which are the basic tasks of everyday life, such as eating, bathing, dressing, toileting, and moving about; and instrumental activities of daily living (IADLs), which are the activities performed in order to live independently in a community setting, such as managing money, shopping, using the telephone, housekeeping, preparing meals, and taking medications correctly. In our model, loss of functional capacity is measured by an increase in the number of ADLs and IADLs respondents have difficulties with.

Finally, we include two variables capturing whether respondents perceive that their physical health has deteriorated between the two survey waves. Self-rated physical health is measured using five response options "excellent, very good, good, fair, or poor". We classify respondents by whether they have experienced a deterioration of one or two or more points in their physical health.

3.2.5.3 Changes in children's conditions

Turning then to changes in children's conditions, other than emigration, we include two dummy variables capturing whether respondents have seen one or more of their children (a) become unemployed or (b) become widowed, separated, divorced or single between the two waves of the survey. As with the emigration variable, these variables are constructed by looking at the responses in both waves and by coding as 1 changes in circumstances and 0 where no change occurred. We are interested in these variables partly by way of seeing whether there is evidence that other changes in child circumstances impact on parental mental health, in addition to emigration.

3.2.5.4 Changes in quality of social relationships

In the loneliness model we include two regressors capturing changes in respondents' quality of social relationships. These are derived from a number of questions asked in the self-completion questionnaire aimed to assess the extent to which respondents receive 'social support' or are affected by 'relationship strain' (Ailshire and Crimmins, 2011; Schuster et al., 1990; Stafford et al., 2011).

Social support is captured by three items covering empathy, dependability and confiding which are asked of respondents four times to capture relationships with: spouse or partner; children; other immediate family and friends. Relationship strain is captured by four items covering criticism, demands, annoyance and being let down, which are also asked of respondents for each relationship type. The items are summed to create a social support scale and a relationship strain scale for all types of relationship combined. [2] Positive changes in the social support scale indicate that social support has increased. Positive changes in the relationship strain scale indicate that relationship strain has increased.

3.3 The sub-sample used

Although the TILDA data contain information on over 8,500 people, we only look at parents and so the sub-sample used in the analysis is less than 8,500. In addition to restricting the sample to parents, we also restrict the sample to parents for whom all their children were resident in Ireland at wave 1 and whose children were aged over 16. This leaves a sample of 2,911 parents. In Table 1, we present descriptive information on the sample, distinguishing between parents who saw at least one child emigrate between waves 1 and 2 and those

2 Social support is measured with the following three items: How much do they really understand the way you feel about things? How much can you rely on them if you have a serious problem? How much can you open up to them if you need to talk about your worries? Relationship strain is measured with the following four items: How much do they make too many demands on you? How much do they criticize you? How much do they let you down when you are counting on them? How much do they get on your nerves? Possible responses for each type of relationship are: 'A lot' (coded as 3); 'Some' (coded as 2); 'A little' (coded as 1) or 'Not at all' (coded as 0). The social support scale ranges from 0 (no support) to 36 (extreme support); the relationship strain scale ranges from 0 (no strain) to 45 (extreme strain).

that did not. We first show all mothers and fathers combined but then differentiate between the two.

The first point to be taken from Table 1 is that of the 2,911 parents in the sample, 361 saw at least one child emigrate. This represents a remarkably high rate of emigration but is consistent with the national-level figures on emigration between 2009 and 2013, as shown in Figure 1.

Turning to the variables of greatest interest, we look first at the change in CES-D scores. For parents (mothers and fathers combined) whose children did not emigrate, the CES-D score fell by 0.518 thereby suggesting a decline in depressive symptoms on average and hence an improvement in mental health. By contrast, the score for parents of emigrants rose by 0.151 which is consistent with a rise in depressive symptoms and a decline in mental health. However, the difference between these averages is not statistically significant. A similar picture arises with respect to the other two measures of changes in mental health. Both groups show positive average changes with respect to the two other measures of mental health (self-reported mental health and loneliness feelings) with the changes being larger for the parents of emigrating children. However, the difference between these averages is again not statistically significant.

When we look at mothers and fathers separately, an interesting pattern emerges. For mothers, we see a decline in the average CES-D score where no child emigrated and a rise where emigration did occur. In this case, the difference is statistically significant and so evidence is emerging of a link between adult child emigration and the mental health of mothers. This is supported by the pattern that emerges when we look at self-rated mental health and loneliness where there are statistically significant differences between the mothers who have, or have not, seen a child emigrate.

For fathers, we find no statistically significant differences in the changes in our measures of mental health. Hence, this suggests a different reaction of mothers and fathers to the emigration of their children but it is important to undertake multivariate analysis before being too definitive. We report on such analysis in the next section but before that, we present some additional information on our sample.

Table 1 provides information on other events between waves 1 and 2 of TILDA which impacted upon our sample. It is important to recall at this point that our interest is in looking at how changed circumstances (including the emigration of a child) might have led to changes in mental health. Taking this perspective allows us to derive stronger conclusions from our data compared to a situation where we only looked at current circumstances. As mentioned above, Mosca and Barrett (2014) contains a fuller discussion of the statistical issues.

Table 1 shows how the parents of the emigrating children were more likely to have suffered losses in functional capacity, as measured by ADLs and IADLs. Regarding changes in labour market status, the proportion of parents of emigrating children who became

unemployed was lower than the other group (1.1 percent versus 2.8 percent). Table 1 also contains information on the changing circumstances of the children. One interesting point is the differences between parents and children in terms of the proportions who became unemployed between waves 1 and 2. The proportions are much higher for the children and this is consistent with official data showing a stronger negative impact of the recession on the labour market outcomes of younger people.

Table 1: Parental descriptive statistics by children's migration status - outcome and explanatory variables used in empirical models

	Mothers and Fathers		Mothers Only		Fathers Only	
	No children emigrating	1+ children emigrating	No children emigrating	1+ children emigrating	No children emigrating	1+ children emigrating
Outcome Variables						
Change in CES-D score, mean	-0.518	0.151	-0.612	0.482*	-0.395	-0.208
Change in self-rated mental health score, mean	0.135	0.166	0.135	0.286*	0.136	0.035
Change in loneliness score, mean	0.029	0.226	-0.009	0.456***	0.071	-0.008
Explanatory variables						
Demographic changes:						
Widowhood	1.5%	0.3%	1.7%	0.6%	1.2%	0.0%
Loss of close relatives/friends	43.8%	47.3%	44.0%	45.4%	43.5%	49.3%
Health changes:						
Loss in functional capacity (new ADL)	4.2%	1.4%**	5.3%	1.3%**	2.9%	1.5%
Loss in functional capacity (new IADL)	5.6%	1.1%***	7.0%	1.3%**	3.8%	0.8%
Onset of cardiovascular disorder	21.9%	21.7%	20.9%	24.9%	23.3%	18.4%
Onset of chronic illness	26.6%	22.7%	32.6%	30.3%	18.6%	14.3%
1-point deterioration in self-rated health	19.8%	18.2%	18.8%	19.6%	21.1%	16.6%
2+-point deterioration in self-rated health	4.8%	4.0%	5.1%	4.3%	4.4%	3.7%
Economic changes:						
Retirement	4.6%	6.3%	3.4%	6.9%**	6.1%	5.7%
Unemployment	1.1%	2.8%**	0.5%	1.6%**	2.0%	4.0%
Change in weekly individual gross income, mean	1.458	-15.755	6.208	3.467	-4.758	-36.611
Changes in children's conditions:						
Child's unemployment	11.6%	10.1%	12.1%	12.1%	10.9%	8.0%
Child's marital breakdown/ widowhood	5.1%	5.1%	5.2%	4.3%	4.9%	5.9%
N	2,550	361	1,498	208	1,052	153

Differences between parents with 'no child emigrating' and 'parents with children emigrating' significant at: *** 1% level; ** 5% level; * 10% level

Although the focus of our statistical analysis is on the changes that occurred for individuals between waves 1 and 2, it is interesting to compare the parents of the emigrating and non-emigrating children across a range of time-invariant characteristics (i.e., characteristics such as age or education that do not change over time), and we do this in Table 2. As can be seen, there are a number of differences between the two groups of parents. Firstly, the parents of the emigrating children are younger on average than the parents of the children who remained in Ireland (60.5 years versus 66.3). Second, the parents of the emigrating children are more highly educated, having higher rates of both medium and higher levels of education. Third, the parents of the emigrants had better mental and physical health at wave 1, as measured by the CES-D score and self-rated physical health.

The fact that the parents of emigrating children are younger, more educated and healthier to begin with might suggest that they were in a good position to withstand any possible mental health effects of the emigration of their children. The simple comparison of average mental health score changes suggests that mothers of emigrants suffered in spite of this. However, it is important to undertake the more formal statistical analysis and to control for the events shown in Table 1.

Table 2: Parental descriptive statistics by children's migration status – selected characteristics

	Mothers and Fathers		Mothers Only		Fathers Only	
	No children emigrating	1+ children emigrating	No children emigrating	1+ children emigrating	No children emigrating	1+ children emigrating
Age at wave 2, mean	66.3	60.5***	66.5	60.5***	66.1	60.5***
Educational attainment at wave 2:						
Low	41.5%	22.7%***	41.0%	21.6%***	42.3%	24.0%***
Medium	43.8%	52.1%***	45.1%	54.5%**	42.3%	49.5%*
High	14.7%	25.2%***	14.0%	23.9%***	15.5%	26.5%***
CES-D score at wave 1	6.07	4.68***	7.09	5.38***	4.74	3.91
CES-D score at wave 1	1.60	1.47	2.72	1.28***	1.46	1.59
Self-rated mental health at wave 1	2.22	2.17	2.26	2.12	2.17	2.21
Self-rated mental health at wave 1	2.67	2.47**	2.65	2.47*	2.69	2.48*

Differences between parents with 'no child emigrating' and 'parents with children emigrating' significant at: *** 1% level; ** 5% level; * 10% level

4 Statistical analysis

As discussed above, our research question is whether mental health of a parents changes in response to the emigration of a child. For this reason, the outcome variables in the regression which we run are: change in CES-D score, change in self-rated mental health and change in loneliness score. The explanatory variable of greatest interest is whether or not a child emigrated and our other explanatory variables are those listed in Table 1. We employ ordinary least square (OLS) regression methods to examine these changes[3].

In Table 3, we present the results with respect to the changes in CES-D scores. Looking at our key variable for mothers and father combined, we see that the emigration of at least one child leads to an increase in the CES-D score of 0.809 (a rise in depressive symptoms) controlling for the other factors such as widowhood, physical health declines, etc. This estimate of the effect is statistically significant (at the 10 percent level of confidence). From Table 2, we know that parents whose children did not emigrate had a baseline CES-D score of 6.07 at wave 1 and so the coefficient of 0.809 can be viewed relative to that to get a sense of the size of the impact.

3 As discussed in Mosca and Barrett (2014), OLS regression models on differenced variables are equivalent to fixed effects models and so our models have the associated desirable properties.

Table 3: Results of ordinary least square (OLS) regression. Outcome variable is change in CES-D score between waves

	Mothers and Fathers		Mothers Only		Fathers Only	
	Coeff.	*t stat.*	*Coeff.*	*t stat.*	*Coeff.*	*t stat.*
Widowhood	5.156***	(3.88)	5.136***	(2.89)	5.001***	(3.20)
Loss of close relatives/friends	0.731**	(2.42)	1.165***	(2.88)	0.128	(0.33)
Loss in functional capacity (new ADL)	1.828**	(2.00)	2.378**	(2.01)	0.643	(0.53)
Loss in functional capacity (new IADL)	0.544	(0.64)	0.473	(0.45)	0.880	(0.65)
Onset of cardiovascular disorder	0.945***	(2.68)	1.024**	(2.01)	0.838**	(2.05)
Onset of chronic illness	0.546	(1.58)	0.808*	(1.75)	0.0946	(0.19)
1-point deterioration in self-rated health	0.944***	(2.87)	1.760***	(3.80)	-0.0973	(-0.23)
2+-point deterioration in self-rated health	2.024***	(2.97)	1.363	(1.51)	3.080***	(2.81)
Retirement	1.072***	(2.65)	1.179*	(1.80)	0.821*	(1.71)
Unemployment	0.634	(0.49)	-2.660	(-1.03)	1.980	(1.50)
Change in income (000s)	-0.031	(-0.46)	-0.0563	(-0.41)	-0.0225	(-0.20)
Child's emigration	0.809*	(1.78)	1.229**	(2.06)	0.292	(0.54)
Child's unemployment	0.305	(0.69)	0.418	(0.71)	0.0508	(0.09)
Child's marital breakdown/ widowhood	0.965	(1.22)	1.011	(0.96)	0.725	(0.86)
Constant	-1.799***	(-7.67)	-2.380***	(-7.05)	-1.019***	(-3.27)
N	2911		1706		1205	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Differences between parents with 'no child emigrating' and 'parents with children emigrating' significant at: *** 1% level; ** 5% level; * 10% level

When we look at the results for mothers and fathers separately, an interesting contrast emerges. For mothers, we still see a statistically significant increase in the CES-D score where at least one child emigrated but this is not the case for fathers. The estimated effect for men (0.292) is positive but it is not statistically different from zero.

By looking at the other estimated effects in Table 3, we can get a sense of what other events affected mental health (as measured by CES-D) and how the effects compare to those of an emigrating child. Widowhood stands out as the most traumatic event, for both men and women. Declines in physical health also have negative impacts, as does retirement. We not do find any effect on the parents of a child becoming unemployed or of the child becoming divorced, separated or widowed. This offers an interesting contrast to the effect of the child's emigration.

In Table 4, we present regression results again but this time the outcome variable is the change in self-rated mental health. Essentially, with respect to our key explanatory variable, we see the results of Table 3 repeated. The emigration of a child is seen to have a statistically significant effect on the self-rated mental health of mothers but not of fathers. Once again, there seems to be no effect on parental mental health if a child becomes unemployed but we find some evidence here of a mental health impact for mothers of a child becoming divorced, separated or widowed.

Table 4: Results of ordinary least square (OLS) regression. Outcome variable is change in self-rated mental health score between waves

	Mothers and Fathers		Mothers Only		Fathers Only	
	Coeff.	*t stat.*	*Coeff.*	*t stat.*	*Coeff.*	*t stat.*
Widowhood	0.359*	(1.86)	0.365	(1.46)	0.338	(1.16)
Loss of close relatives/friends	0.0123	(0.30)	-0.00512	(-0.10)	0.0345	(0.55)
Loss in functional capacity (new ADL)	0.0719	(0.59)	0.0809	(0.51)	0.0711	(0.42)
Loss in functional capacity (new IADL)	0.0544	(0.49)	0.0717	(0.51)	0.0177	(0.10)
Onset of cardiovascular disorder	0.0130	(0.26)	0.00740	(0.11)	0.0122	(0.17)
Onset of chronic illness	0.0877*	(1.91)	0.113**	(2.05)	0.0443	(0.54)
1-point deterioration in self-rated health	0.439***	(8.48)	0.419***	(5.98)	0.449***	(6.44)
2+-point deterioration in self-rated health	0.930***	(8.53)	0.871***	(6.54)	1.020***	(5.69)
Retirement	0.178**	(2.26)	0.0717	(0.64)	0.261**	(2.45)
Unemployment	0.204	(1.14)	0.203	(0.81)	0.224	(0.99)
Change in income (000s)	-0.0198	(-1.32)	-0.00082	(-0.03)	-0.0251	(-1.31)
Child's emigration	0.0505	(0.92)	0.166**	(2.20)	-0.0738	(-0.93)
Child's unemployment	0.0309	(0.45)	0.117	(1.44)	-0.0930	(-0.88)
Child's marital breakdown/ widowhood	0.0776	(0.75)	0.188*	(1.67)	-0.0592	(-0.41)
Constant	-0.0569	(-1.61)	-0.0677	(-1.44)	-0.0436	(-0.87)
N	2911		1706		1205	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In Table 5, we look at our third measure of mental health, namely, changes in the loneliness score. Once again, we see that the emerging pattern is confirmed with respect to the impact of children's emigration. We find a positive and significant effect of children's emigration on the loneliness scores for mothers but not for fathers, controlling for a range of events.

Table 5: Results of ordinary least square (OLS) regression. Outcome variable is change in UCLA loneliness score between waves

	Mothers and Fathers		Mothers Only		Fathers Only	
	Coeff.	*t stat.*	*Coeff.*	*t stat.*	*Coeff.*	*t stat.*
Widowhood	0.936	(1.52)	0.495	(0.65)	1.712*	(1.94)
Loss of close relatives/friends	0.0989	(1.15)	0.167	(1.47)	0.0468	(0.36)
Social support	-0.0695***	(-5.78)	-0.0940***	(-5.56)	-0.0504***	(-3.21)
Relationship strain	0.0553***	(5.11)	0.0595***	(4.10)	0.0517***	(3.69)
Loss in functional capacity (new ADL)	-0.126	(-0.30)	-0.480	(-0.88)	0.574	(0.94)
Loss in functional capacity (new IADL)	-0.229	(-0.78)	-0.136	(-0.40)	-0.200	(-0.33)
Onset of cardiovascular disorder	-0.115	(-1.03)	-0.213	(-1.40)	0.00918	(0.06)
Onset of chronic illness	0.108	(0.96)	0.244*	(1.76)	-0.243	(-1.28)
1-point deterioration in self-rated health	0.112	(1.01)	0.252*	(1.70)	-0.0500	(-0.30)
2-point deterioration in self-rated health	0.0891	(0.52)	0.446*	(1.67)	-0.277	(-1.18)
Retirement	-0.0748	(-0.59)	-0.0707	(-0.33)	-0.0696	(-0.39)
Unemployment	0.317	(1.07)	0.0838	(0.13)	0.506	(1.34)
Change in income (000s)	-0.0388	(-0.91)	-0.164**	(-2.29)	0.0135	(0.41)
Child's emigration	0.203	(1.48)	0.432***	(2.78)	-0.0320	(-0.14)
Child's unemployment	0.0331	(0.21)	-0.203	(-1.01)	0.362	(1.49)
Child's marital breakdown/ widowhood	0.0286	(0.14)	-0.00888	(-0.04)	0.127	(0.40)
Constant	-0.0293	(-0.39)	-0.0945	(-0.89)	0.0338	(0.33)
N	1732		983		749	

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The loneliness model is based on a lower number of observations, as the loneliness questions are in self-completion questionnaire.

Our analysis suggests that the mental health of mothers is affected by the emigration of their children. The fact that this result holds across our three measures of mental health strengthens the conclusion that there is a causal link, especially when combined with the fact that we are using a relatively powerful statistical tool (fixed effects modelling, as discussed in Mosca and Barrett, 2014). We have found no statistically significant effect for men. While it might be argued that our measures of mental health may not be good at capturing changes in men's mental health, a review of Table 3 shows that the fathers' mental health did change in response to widowhood, the onset of cardiovascular disease and retirement.

We performed a range of additional analyses to test the robustness of these findings, the results of which are reported in Mosca and Barrett (2014). Here we will present a summary of these other analyses.

Proportion of emigrating children

We estimated a series of regression models in which the main explanatory variable was changed from whether at least one child emigrated or not to the proportion of children who emigrated. The pattern of Tables 3, 4 and 5 was largely repeated with no statistically significant effect found for fathers but with effects for mothers in terms on CES-D scores and self-rated mental health. We also found that mothers who saw all of their children emigrate suffered the most.

Age of parents

We explored whether younger or older parents were more likely to be affected by the emigration of their children. One interesting result to emerge was that older fathers (aged over 65) experienced increases in symptoms of loneliness due to the emigration of their children. This was the only category where men seemed to show a mental-health reaction related to the emigration of a child.

Emigration history among the parents

We know from the data whether the parents in our sample had lived abroad for six month or more and so were themselves emigrants. When we factor this information into the analysis we find that the feelings of loneliness which result from the emigration of children are lower for mothers who had themselves been emigrants previously.

Characteristics of children

We undertook a range of analyses to see if the effects on parents differed according to whether the children leaving were male/female, younger or older than 25, had lived with the parents immediately prior to emigrating and whether the children had children (i.e. grand-children of the TILDA participants). No statistically significant results emerged but it should be noted that the number of observations gets small at this level of detail thereby making it more difficult to uncover statistically significant results.

5 Conclusion

We began this report by referring to Barrett and O'Sullivan (2014) which had suggested that Ireland's older people had been relatively insulated from many of the negative effects of the recession. The analysis in this report has shown that Barrett and O'Sullivan (2014) missed a channel through which the recession affected older people. We have presented evidence that the mental health of mothers suffered as a result of the emigration of their children. Fathers tended not to exhibit the same reaction with the exception of older fathers who showed greater levels of loneliness after at least one child had emigrated.

The results have a number of implications. First, while emigration is often discussed in terms of the people who leave, this paper shows that there are real impacts on the people left behind. In the Irish case, this is an important finding. While the suffering of parents as their children leave is often referred to, this is the first time that the effects have been identified in a nationally-representative dataset. For this reason, the paper provides a much stronger insight into the impact of emigration on parents. The results are also relevant beyond Ireland and point to the impact of emigration on parents in any emigrant-sending country or region.

Second, to the extent that mental health difficulties can lead to subsequent physical health difficulties, there are public health implications from the large-scale exodus from Ireland in recent years. The recession has impacted directly on the younger generation in terms of unemployment and mortgage default and so much of the discussion of recession-related health impacts have focussed on younger people. The analysis here suggests that we need to be cognisant of the pressures which older people have faced through emigration.

Finally, if people anticipate that their emigration could have a negative effect on the mental health of their parents, they may decide against going. This reinforces the view that emigration can be a family-level decision process as opposed to a purely individual-level choice, thereby altering our view on how decisions are made on international moves. It could also imply that people may have remained in Ireland despite a desire to leave with the corresponding potential for frustration and resentment.

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