The Economic and Social Review, Vol. 48, No. 3, Autumn, 2017, pp. 337-364

POLICY PAPER

Valuing Informal Care in Ireland: Beyond the Traditional Production Boundary

Paul Hanly*
National College of Ireland

Corina Sheerin
National College of Ireland

Abstract: Measures of economic output captured by traditional national account metrics emphasise the importance of paid work over unpaid work which can lead to inefficient policy decision making. We utilise Irish census data to measure the economic value of informal care in Ireland. Our results reveal the considerable value of informal care in Ireland ranging between €2.1 and €5.5 billion, depending on valuation approach. They also show a gendered distribution of informal care activities and the consequences of transposing market-based gender compensation asymmetries directly onto non-market activity. We discuss evidence of best practice in long-term care policy across Europe, which involves a combination of income supports for informal carers and substantial investment in formal home care provision. We also discuss apparent incongruences in current Government policy, which appears to prioritise a formal residential care model over more community-based care models, contradicting previously stated policy objectives and best practice in Europe.

I INTRODUCTION

Projected future demographic changes in Europe reveal a "greying" population (European Commission, 2015). Ever greater gains in life expectancy are increasing the number of people living well beyond retirement age. In Ireland, for example, the old-age dependency ratio is expected to double by 2046 (Central Statistics Office, 2013). Ageing demographics heighten the demand for both formal and informal care services. Concurrently, constrained public finances limit expenditure on formal long-term care services (Rogrigues *et al*., 2013), placing

Acknowledgements: We would like to thank Susan Butterly from the Census Enquires Section in the CSO for her help in sourcing carer data from the Census Bill of Health.

* Corresponding author Paul.Hanly@ncirl.ie

greater pressure on informal care provision. This is occurring at a time when fertility rates continue to decline (Hoffmann and Rodrigues, 2010) and when family and community ties are becoming ever looser (OECD, 2011), limiting the supply of informal care.

The number of carers providing informal care is a multiple of those providing formal care in Ireland (Gannon and Davin, 2010) and across Europe (Triantafillou *et al*., 2010). According to the latest Irish Census 187,112 people identified themselves as unpaid carers, 61 per cent of whom were women (Central Statistics Office, 2012), which represents a rise of 16 per cent since 2006. This trend is set to continue and reflects national policy developments initiated in 2001 when the government's Primary Care Strategy underlined a shift away from hospital to community-based care (Department of Health, 2012a). Recent funding decisions, however, have delivered a mixed message (Timonen *et al*., 2012), outwardly encouraging home-based care while simultaneously undermining its value from a funding perspective.

From a national accounting perspective, informal care can be considered a form of unpaid work whose importance, but not value, has been recognised since the 1930s (Kuznets, 1934). Unpaid work includes the production of goods or services that are consumed by those within or outside a household but not for sale in the market (OECD, 2011). Traditional economic measures, including the System of National Accounts (1993), omit large elements of unpaid work due to a range of technical issues focused on definitions of the "production boundary" (Goldschmidt-Clermont, 1998; Goldschmidt-Clermont, 2000). This omission can lead to incorrect inferences with regard to changes in national wellbeing and economic activity over time (Ferrant *et al*., 2014). Efforts have been made to identify and classify various forms of unpaid work through Time Use Surveys (for example: Eurostat, 2004) and, following the recommendations of the Stiglitz-Sen-Fitoussi Commission (Stiglitz *et al*., 2009), to monetarily quantify this type of economic activity through the construction of satellite accounts (Office for National Statistics, 2016); however gaps still remain.

When measuring the value of informal care it is especially important to consider gender. Women are more likely than men to provide informal care at all life stages (Ferrant *et al*., 2014), and in particular, women of working age (Hoffmann and Rodrigues, 2010). In Ireland, women spend almost five times longer on caring activities per weekday than men. This disparity, while falling, remains apparent for women in full-time employment (McGinnity *et al*., 2005). Such systematic gender asymmetries creates a "double burden" whereby women increase their labour market participation due to increasing opportunities without trading off their household duties bestowed by social norms. This is contrary to the predictions of bargaining theory (Chen *et al*., 2007).

This paper begins by providing an overview of informal care prevalence and the related current policy landscape across Ireland and Europe. A discussion of the dominant informal care valuation approaches in the literature follows. The next section applies two of these informal care valuation approaches to Irish Census data (CSO, 2012) and examines the gendered distribution and age distribution of the derived results. Discussion is subsequently undertaken of informal care's place within the general production boundary, disparities in approaches to valuation, gendered distributional issues and the future of Irish long-term care policy.

II INFORMAL CARING IN IRELAND AND EUROPE – AN OVERVIEW OF PREVALENCE AND POLICY

In line with population trends and ageing demographics, the number of informal carers in Ireland has risen by almost a quarter from 2002 to 2011 since the initiation of comparative data collection. In the 2011 census 187,112 individuals reported providing unpaid care equating to just over 4 per cent of the population. Of these, 61 per cent were female. Since 2006, the number of male carers has increased proportionately more than female carers (20 per cent compared with 14 per cent), perhaps indicative of fewer labour market opportunities in traditionally male dominated sectors. The most common age category for female and male carers in 2011 was 45-49 years (15 per cent of all carers), although a substantial number of carers were in older age groups beyond retirement age (greater than 65 years of age) (13 per cent). Indeed, older age groups experienced the largest increases across all age groups since 2006 (38 per cent for carers greater than 65 years compared to 7 per cent for carers aged 15-64) indicating an ageing profile of carers which has the potential to impact greatly on the value of informal care depending on the costing methodology applied (as described later).

Nearly two-thirds of all informal carers were participating in the labour force (59 per cent) in 2011, although this rate declined with increasing hours of care provided. For example, carers reporting one to 14 hours unpaid help per week had a 71 per cent labour force participation rate compared to a 38 per cent rate for carers reporting 43 or more hours per week. Female informal carers operating in the labour force were mainly employed in clerical roles (9 per cent) and personal services and childcare work (13 per cent), whereas male carers were primarily employed in farming, fisheries and forestry work (11 per cent) and building and construction (11 per cent). Among those not in the labour force, over two-thirds were women and this cohort indicated that they were also involved in work within the home.

Current policy approaches to support informal carers in Ireland primarily consist of direct income supports. For those eligible, this includes either a means-tested carer allowance, or a newer form of social insurance benefit (dependent on

employment related eligibility conditions). A half carer's allowance is also available for people in receipt of another social welfare entitlement. These payments represent a form of income support rather than payment for caring, and do not represent the market value of the labour provided (Rodrigues *et al*., 2013). Full time carers are also eligible to receive the carer's support grant from the Department of Social Protection (previously titled the respite care grant), while married couples or civil partners where one spouse or civil partner works in the home caring for a dependent person can apply for a home carer's tax credit. Underpinning this range of supports is the *Carer's Leave Act, 2001*, which entitles employees to unpaid leave to provide full-time care and attention for a dependant up to a maximum of 104 weeks (Barry, 2010; Department of Social Protection, 2017).

In addition to direct income supports for informal carers, formal home-based care support is also offered in Ireland. This is in line with recent evidence (Donnelly *et al*., 2016) suggesting that the primary desire for those that require care is to receive that care in their home. Such support also accords with best practice in a number of European countries that use a combination of income supports and formal home help to relieve the burden on employed informal carers and facilitate them in remaining in employment if desired (Hoffmann and Rodrigues, 2010). Currently, home-based support in Ireland consists primarily of home help and home care packages offered by the Health Service Executive who provide a package of care which includes additional home-help hours, nursing services and therapeutic services (Care Alliance Ireland, 2015). Since 1 September 2016 only approved organisations that meet specified national standards are selected to provide these services, of which there are 32. Additional formal supports can include respite care and transitional care.

In Europe, like Ireland, a blend of long-term care provision policy supports are provided. Indeed, a growing complexity of interaction between family and state in the provision of care exists across Europe. This is a reflection of the role of government, family, and the market in each Member State as opposed to simply a consequence of the number of those in need of informal care (Triantafillou *et al*., 2010). Despite the complexity, trends have emerged.

Informal caring by a family member is far more common in Nordic Europe than Southern Europe. The nature of the care, however, is considered far more intensive in the Southern states (Hoffman and Rodrigues, 2010). Persons engaged in caring, regardless of gender or age, are less likely to participate in the labour market than non-carers. Exceptions to this include Sweden, Norway, Finland, France, Hungary, Latvia and Slovenia. In recent years the demographics of care provision have been changing across Europe with a move towards the "outsourcing" of care to migrant carers. Such an approach has developed in order to assist households to balance employment and caring responsibilities.

Across Europe, income supports are the primary means of supporting informal carers. Approximately 66 per cent of EU Member States provide cash benefits to finance informal care (Riedel and Kraus, 2011). Over 50 per cent of all countries provide a cash benefit to the recipient of care with slightly more providing the benefit directly to the informal carer (Riedel and Kraus, 2011). In the case of care recipients, half of the countries provide payments without means testing. Cash benefits are on average 30 per cent below the average wage rate (Hoffman and Rodrigues, 2010).

Regulations governing the amount of care payments, duration of payment, as well as recipient of payment differ significantly across Europe. For example, Germany and Austria choose to provide informal care support to the carers primarily through cash benefits as opposed to support services. This has allowed informal caring to become a legitimate paid (albeit at less than the market rate) occupation outside of the labour market. This contrasts with the Scandinavian model where informal care is seen as the responsibility of the state and as such these countries provide public provision of care services more so than cash allowances (Rodrigues *et al*., 2013). In cases where carers are provided with incomes comparable to traditional labour market rates, for example in Denmark, almost all are based on the extent of care required and are for a finite time.

Almost 80 per cent of EU countries offer leave arrangements (statutory) for the informal care of dependent relatives (Rodrigues *et al*., 2013). In the majority of cases, leave is unpaid and for a limited and specified time period. In a number of countries including Holland, France, Austria and Belgium, the state encourages carers to reduce their participation in the labour market rather than opt out. In the Austrian case, in 2002 the Familienhospizkarenz policy was introduced to allow informal carers to take work leave, change jobs or change working hours in order to care for a family member for a six-month period (Riedel and Kraus, 2011).

A range of non-monetary benefits exist across Europe which support informal carers. For example, in Austria in 2004 a telephone-based counselling service was set up to care for informal carers. In addition, an internet-based information hub for carers to connect with each other and exchange information and feedback was established (Riedel and Kraus, 2011). In 2006, the Austrian government introduced the "counselling voucher" to enable recipients of care to have a nurse visit and advise them on benefits, care-led issues, etc. (Leichsenring *et al*., 2009). Similarly, in Germany, informal carers have the option to attend training and information sessions as well as avail of counselling services.

In a number of countries across the EU, the options of respite care, day care centres, and home care for those individuals in need of informal care exist. The rate of provision of home care is higher in Scandinavia than Southern Europe. Informal care is, as a consequence, often more readily and easily provided by family members as the burden of care is manageable given that home care is likely to have addressed

more demanding care tasks. This is a particularly pertinent issue for women who have traditionally been the main carers. As the educational attainment and labour force participation of women has increased, so too the average age of starting a family has extended. This has the effect of creating the "sandwich generation" where women are raising a family and providing informal care simultaneously (Miller, 1981). Such a model is not sustainable and supplementing informal care may be a way forward.

The funding for home care services derives from a range of finance mechanisms across Europe. For example, in Germany and the Netherlands a compulsory long-term insurance and co-payments system is employed, whereas in Scotland and Sweden home care is funded through national and local taxes with small co-payments (Health Research Board, 2017). A key feature noted by a recent Health Research Board (2017) review across European countries included a trend towards increasing co-payments combined with tightening eligibility requirements and the encouragement of increased informal care by relatives to fill the formal home care gap, in line with rising demand and limited funding.

Overall, it is apparent that attempts have been made across Europe to compensate informal carers with income support schemes such as cash-for-care benefits which are paid directly to carers (carer allowances), or those in need of care (attendance allowances) (Hoffmann and Rodrigues, 2010), similar to Ireland. Nevertheless, criticism of such schemes abound, particularly concerning the risk of perpetuating social roles and trapping women in unwanted roles, a process termed "refamiliarisation" of care (Kroger and Silipa, 2005). The following sections provide an illustrative estimate of the economic value of this ongoing informal care in the case of Ireland from a societal perspective, and therefore help to invigorate the policy debate from a monetary perspective.

III INFORMAL CARE VALUATION APPROACH

Although various definitions of informal care permeate the literature, for the purposes of this study we follow the definition employed by the Irish Census of Population. A carer is someone who

> provides regular, unpaid personal help for a friend or family member with a long-term illness, health problem or disability (including problems which are due to old age). Personal help includes help with basic tasks such as feeding and dressing (www.census.ie).

This closely accords with the simplest definition in the literature where informal care is care provided by people from a care recipient's social network: family,

friends, acquaintances or neighbours (Brouwer *et al*., 2001). It is also important at this point to highlight the composite nature of this non-market activity, which consists of heterogeneous parts produced (paid or unpaid) by one or more members of the social environment of the care recipient as a result of the care demands of the care recipient (van den Berg *et al*., 2004). The latter interpretation is important as it emphasises the diversity embedded in the provision of informal care which may entail a wide range of caring activities such as personal care for people with limited autonomy, household work, administrative tasks, supervision, and emotional support (Oliva-Moreno *et al*., 2016).

Informal care valuation approaches can be divided into two main categories: revealed preference methods including the opportunity cost approach and the replacement cost approach; and stated preference methods including contingent valuation and conjoint analysis (van den Berg *et al*., 2004). Stated preference methods use willingness to pay or willingness to accept questions and discrete choice experiments to elicit a monetary value for non-market activities from participants (Hoefman *et al*., 2013). For example, in the case of the willingness to accept approach, informal caregivers are asked how much monetary compensation they minimally require to provide an additional hour of informal care (van den Berg *et al*., 2005). It has been argued that stated preference approaches are more sensitive to the preferences and circumstances of informal caregivers compared to revealed preferences approaches and that they, in theory, can capture a broader impact of providing care on carers' lives (Garrido-Garcia *et al*., 2015). In particular, stated preference methods can potentially account for the utility or disutility that carers may experience due to the act of caring (van den Berg and Ferrer-i-Carbonell, 2007) which is ignored by revealed preference approaches. This can include the physical and psychological burden that can be associated with care (Garrido-Garcia *et al*., 2015), in addition to potential positive feelings derived from caring for a family member, friend or relative. Nevertheless, stated preference approaches exhibit a number of drawbacks focused on inconsistencies between an individual's preferences and their wellbeing. Problems involve respondents being uncomfortable indicating monetary compensation for caregiving, the measurement of intention rather than revealed preference, strategic answers and double counting (Koopmanschap *et al*., 2008). Stated preference approaches can also be affected by biases such as anchoring effects (Van Exel *et al*., 2006). Consequently, revealed preference methods dominate the literature and have been chosen to value informal care here.

In the absence of market transactions, and therefore market prices, to value unpaid production, key assumptions have to be made when employing revealed preference valuation methods. If it is assumed that the time spent on unpaid work reduces the time available to undertake paid work and is therefore a cost, we can

follow the opportunity cost approach (OCA) (Becker, 1965). This entails valuing each hour of unpaid work according to the value of the foregone time in paid labour. Opponents note that the OCA yields different values depending on who is undertaking the task, and that values can be driven by the socio-economic characteristics of the population under study (van den Berg *et al*., 2004; Koopmanschap *et al.,* 2008; Giannelli *et al*., 2011). In addition, the opportunity to choose paid working hours is often constrained under real world economic conditions, therefore the OCA has been criticised for not being consistent with macro-level concepts of national accounts (European Commission, 2003; Giannelli *et al*., 2011). In practice, explicit assumptions are necessary with regard to valuing employed workers and those not in paid employment, those in the labour force and those outside the labour force etc. These issues have been examined in this paper through implementing various OCA "scenarios" as outlined below.

In theory, a further extension of the revealed preference methods could be undertaken through application of the friction costs approach (FCA). This approach can be applied only to employed carers as leisure time is essentially treated as costless. The FCA is based on the assumption that an ill individual, or in this case a person caring for someone who is ill, can eventually be replaced by another worker, if involuntary unemployment is present in the economy (Krol and Brouwer, 2014). Following the "friction period", productivity is assumed restored and the length of the friction period is predicated on the underlying level of unemployment and is therefore transient. This approach discriminates further against non-working carers without overcoming the substantive issues surrounding the OCA discussed above. In addition, the FCA is highly data intensive and requires detailed estimates of friction period length and a measure of the elasticity of annual labour versus annual labour productivity (Krol *et al*., 2015; Hanly *et al*., 2012). For these reasons, we have chosen not to employ the FCA here.

The alternate revealed preference approach traditionally applied in the literature is referred to as the replacement cost approach (RCA) or the proxy good approach (Krol *et al*., 2013). This approach assumes that households save money by undertaking household tasks such as caring themselves, instead of buying the market equivalent (in this case formal care, for example residential care). Consequently, the value of unpaid work is the value of the closet market substitute. In practice, this could entail applying a separate value or specific wage to each unpaid task (such as financial help, personal care etc.), however, generally, researchers tend to use the generalist replacement approach which apportions a fixed cost price such as the wage of a home help or domestic worker (Krol *et al*., 2015). The RCA is not without criticism, with concerns arising over the fact that productivity levels and working conditions of the paid worker in the market may not be representative of those of the unpaid worker.

Employing both the OCA and the RCA in this paper will facilitate an investigation of key differences in the valuation of a heterogeneous service provided by a population exhibiting age and gender asymmetries.

IV DESCRIPTION OF DATA SOURCES AND VALUATION APPROACHES

Census data from 2011 (CSO, 2012) were used to derive information on informal caring in Ireland. We abstracted information on the number of carers and the number of hours of care per week in 2011 by age group and gender. Time spent caring was classified into six classes including 1-14 hours per week, 15-28 hours, 29-42 hours, 43-84 hours, 85-167 hours and 168 hours per week. We subsequently applied a threshold value of 16 hours caring per day following common practice in the literature (Yabroff and Youngmee, 2009; Hanly *et al*., 2013). Carer ages were classified into 5-year age groups: 15-19 years, 20-24 years, 25-29 years, 30-34 years, 35-39 years, 40-44 years, 45-49 years, 50-54 years, 55-59 years, 60-64 years and 65 years and over.

Carer-specific labour force participation rates and employment rates were calculated based on the responses to the principle economic status question in the census, and were classified by sex and by age group. Median wage data were sourced from the Structure of Earnings Survey (SES) for 2010 (Structure of Earnings Survey, 2010) and stratified by sex and age for use with the OCA, and by occupation for use with the RCA. Wage rates are reported in gross form, prior to the deduction of tax, PRSI, and superannuation. Wages were subsequently adjusted to 2011 values using Irish CPI data. A summary of wage rates and labour market data used in the analysis is provided in Table 1a and 1b.

In order to value informal care time we applied the OCA and the RCA. Specifically, we multiplied the number of carers in each age category by the midpoint of hours spent caring in each class to calculate the total number of hours caring (subject to the threshold of a 16-hour day as outlined previously). This total was subsequently multiplied by the median national gross wage in Ireland in 2011 (€18.70) in the base case OCA (OCA_{BC}).

Three alternative scenarios for the OCA were employed. In the first scenario, we applied gender- and age-specific national median wages to informal care time estimates (OCA_1) where female wage rates ranged from €14.10 to €19.51 per hour and male rates ranged from €13.82 to €23.22 per hour. The second scenario incorporated OCA_1 and extended this to apply gender- and age-specific carer labour market information including labour force participation rates and employment rates (OCA_2). Informal carers outside of paid employment were valued at a "zero" cost. The third OCA scenario (OCA_3) incorporated the wage and labour market characteristics of OCA_1 and OCA_2, but also applied a minimum wage to encompass

Table 1a: Summary of Wage Rates and Carer Labour Market Data (2011) Applied in the Analysis (Totals)

Both sexes	*Median unit cost per hour (€2011)*
All age groups (OCA_{BC})	18.70
All age groups (RCA_1)	14.63
All age groups (RCA_3)	16.79

Table 1b: Summary of Wage Rates and Carer Labour Market Data (2011) Applied in the Analysis (by Age)

Age Group	*Median Unit Cost Per Hour (OCA_1) (€2011)*	*Median Unit Cost Per Hour (RCA_2) (€2011)*	*Carer Labour Force Participation Rate*	*Carer Employment Rate*
		Males		
15–19 years	13.82	11.15	0.47	0.49
20–24 years	13.82	11.15	0.47	0.49
25–29 years	13.82	11.15	0.80	0.71
30–34 years	19.44	13.68	0.80	0.71
35–39 years	22.40	15.71	0.76	0.66
40–44 years	22.40	15.71	0.76	0.66
45–49 years	22.40	15.71	0.76	0.66
50–54 years	23.22	14.96	0.71	0.78
55–59 years	23.22	14.96	0.71	0.78
60–64 years	23.22	14.96	0.71	0.78
65 years and over	19.75	16.44	0.11	0.96
		Females		
15–19 years	14.10	10.90	0.41	0.55
20–24 years	14.10	10.90	0.41	0.55
25–29 years	14.10	10.90	0.47	0.79
30–34 years	18.60	12.51	0.47	0.79
35–39 years	19.51	13.28	0.49	0.83
40–44 years	19.51	13.28	0.49	0.83
45–49 years	19.51	13.28	0.49	0.83
50–54 years	19.10	13.64	0.51	0.87
55–59 years	19.10	13.64	0.51	0.87
60–64 years	19.10	13.64	0.51	0.87
65 years and over	16.76	10.44	0.06	0.95

Source: Structure of Earnings Survey; Central Statistics Office.

all "potential workers" (i.e. unemployed carers, in addition to employed carers). A minimum wage rate of €8.65 in 2011 was applied.

Three variants of the RCA were applied. In Scenario 1, the wage of a generalist worker was used to value hours of informal care (RCA_1). Specifically, we applied an "elementary occupation" (International Standard Classification of Occupations, ISCO-08:9) average hourly wage of €14.63 (CSO, 2011). Tasks performed by workers in elementary occupations include those by domestic cleaners and helpers. Scenario 2 adjusted the generalist wage in RCA_1 for age to produce age-specific estimates of informal care valuation (RCA_2). The third scenario employed the wage rate of home helps or domestics as employed by the public health service (Health Service Executive) in Ireland (RCA_3).

V RESULTS AND DISCUSSION

Table 2 presents the number of carers, the total number of hours of care undertaken per week, and the average hours of care provided by gender and age group. In total 182,884 persons above the age of 15 provided unpaid informal care. Combined, they accounted for 5,468,685 hours of care per week (with a threshold applied) or 33.9 hours per week on average. Females provided two-thirds of total caring hours spending more time caring than males across every age category (average hours of care for females: 35.4 versus 30.4 for males).

Table 2: Number of Carers and Hours of Care in Ireland 2011, by Gender and by Age

Age Group	*No. of carers*	*No. of hours of care per week*	*Average hours of care per week*
		Both sexes	
15–19 years	4,244	61,691	17.3
20–24 years	5,761	103,250	21.3
25–29 years	8,153	176,550	25.6
30–34 years	11,972	312,735	30.3
35–39 years	17,127	477,983	31.5
40–44 years	23,089	647,879	31.4
45–49 years	27,504	753,645	30.3
50–54 years	25,993	728,929	30.9
55–59 years	20,180	621,302	34.2
60–64 years	14,115	497,308	39.9
65 years and over	24,746	1,025,725	49.2
All ages	182,884	5,468,685	33.9

Table 2: Number of Carers and Hours of Care in Ireland 2011, by Gender and by Age (Contd.)

Age Group	*No. of Carers*	*No. of Hours of Care Per Week*	*Average Hours of Care Per Week*	*Male Hours Caring as a % of Total Caring Hours*
		Males		
15–19 years	2,024	29,143	14.4	47.2
20–24 years	2,523	40,542	16.1	39.3
25–29 years	3,240	59,695	18.4	33.8
30–34 years	4,657	99,371	21.3	31.8
35–39 years	6,551	149,628	22.8	31.3
40–44 years	8,797	218,529	24.8	33.7
45–49 years	10,273	253,066	24.6	33.6
50–54 years	9,642	250,013	25.9	34.3
55–59 years	7,654	214,359	28.0	34.5
60–64 years	5,421	168,434	31.1	33.9
65 years and over	10,143	392,310	38.7	38.2
All ages	70,925	1,875,088	30.4	34.3
		Females		
				Female Hours Caring as a % of Total Caring Hours
15–19 years	2,220	32,549	14.7	52.8
20–24 years	3,238	62,708	19.4	60.7
25–29 years	4,913	116,855	23.8	66.2
30–34 years	7,315	213,364	29.2	68.2
35–39 years	10,576	328,355	31.0	68.7
40–44 years	14,292	429,350	30.0	66.3
45–49 years	17,231	500,579	29.1	66.4
50–54 years	16,351	478,916	29.3	65.7
55–59 years	12,526	406,943	32.5	65.5
60–64 years	8,694	328,874	37.8	66.1
65 years and over	14,603	633,416	43.4	61.8
All ages	111,959	3,531,907	35.4	65.7

Source: Central Statistics Office.

In the base case (OCA_{BC}), unpaid informal care was valued at €5.3 billion (Table 3). This equated to an average value of €32,593 per informal carer in 2011. Informal care costs increased with age, peaking at €47,870 per carer 65 years of age and over on average.

Table 3: Cost (€millions) of Informal Care in Ireland by Age Group and Costing Approach for 2011

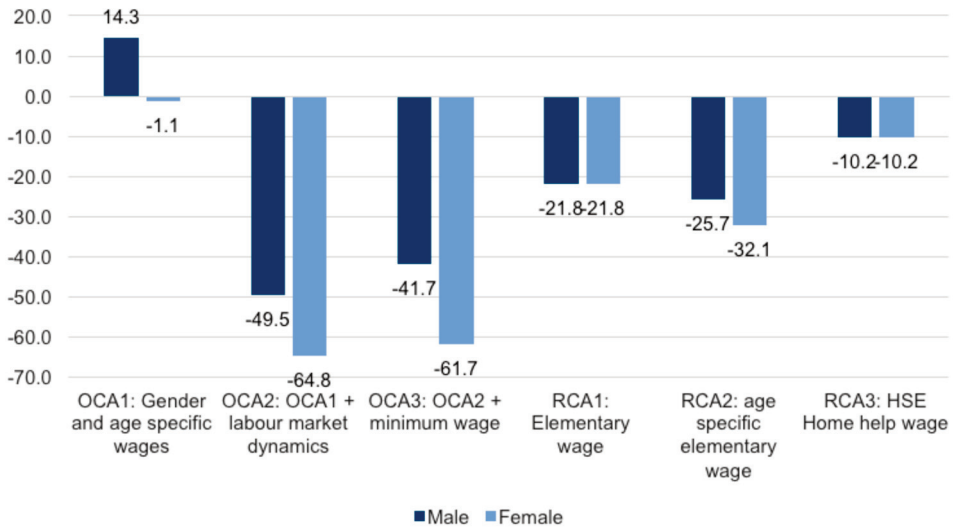
	Opportunity Cost Approach				*Proxy Good Approach*		
Age Group	*OCABC: General Wage (Average Costs)*	*OCA1: Gender And Age Specific Wages*	*OCA2: OCA1 + Labour Market Dynamics*	*OCA3: OCA2 + Minimum Wage*	*RCA1: Elementary Wage*	*RCA2: Age Specific Elementary Wage*	*RCA3: HSE Home Help Wage*
			Both sexes				
15–19 years	60.0 (16,813)	44.8	10.2	16.0	46.9	34.3	53.9
20–24 years	100.4 (20,701)	75.1	17.1	26.7	78.5	57.1	90.1
25–29 years	171.7 (24,920)	128.6	56.2	66.3	134.3	98.4	154.1
30–34 years	304.1 (29,439)	306.8	133.7	153.5	237.9	203.8	273.0
35–39 years	464.8 (30,671)	507.4	222.9	252.6	363.6	338.3	417.3
40–44 years	630.0 (30,495)	690.1	304.8	346.3	492.9	459.1	565.7
45–49 years	732.8 (29,484)	802.6	354.4	402.6	573.3	533.9	658.0
50–54 years	708.8 (30,078)	777.5	378.2	410.1	554.5	517.4	636.4
55–59 years	604.2 (33,290)	663.0	322.7	349.9	472.7	441.4	542.4
60–64 years	483.6 (38,814)	530.0	257.6	279.2	378.3	353.3	434.2
65 years and over	997.4 (47,870)	954.9	74.0	75.6	780.3	650.3	895.5
All ages	5,257.8 (32,593)	5,481.0	2,131.7	2,378.7	4,113.4	3,687.3	4,720.7
			Males				
15–19 years	28.3 (16,699)	20.9	4.8	8.0	22.2	15.9	25.4
20–24 years	39.4 (19,091)	29.1	6.7	11.1	30.8	21.5	35.4
25–29 years	58.0 (21,475)	42.9	24.4	30.6	45.4	32.2	52.1
30–34 years	96.6 (24,475)	100.5	57.1	67.4	75.6	65.0	86.8
35–39 years	145.5 (25,370)	174.3	87.4	104.8	113.8	111.6	130.6
40–44 years	212.5 (27,331)	254.5	127.7	153.1	166.2	162.6	190.8
45–49 years	246.1 (27,021)	294.8	147.9	177.3	192.5	188.2	220.9
50–54 years	243.1 (28,365)	301.9	167.2	184.7	190.2	177.7	218.3

Table 3: Cost (€millions) of Informal Care in Ireland by Age Group and Costing Approach for 2011 (Contd.)

	Opportunity Cost Approach				*Proxy Good Approach*		
Age Group	*OCABC: General Wage (Average Costs)*	*OCA1: Gender And Age Specific Wages*	*OCA2: OCA1 + Labour Market Dynamics*	*OCA3: OCA2 + Minimum Wage*	*RCA1: Elementary Wage*	*RCA2: Age Specific Elementary Wage*	*RCA3: HSE Home Help Wage*
			Males (Contd.)				
55–59 years	208.4 (30,680)	258.8	143.3	158.4	163.1	152.8	187.2
60–64 years	163.8 (34,848)	203.4	112.6	124.5	128.1	120.0	147.1
65 years and over	381.5 (44,885)	402.9	42.5	43.3	298.5	306.4	342.5
All ages	1,823.3 (29,602)	2,084.0	921.6	1,063.2	1,426.5	1,353.9	1,637.1
			Females				
15–19 years	31.7 (16,916)	23.9	5.4	8.1	24.8	18.4	28.4
20–24 years	61.0 (21,895)	46.0	10.4	15.6	47.7	35.5	54.7
25–29 years	113.6 (27,145)	85.7	31.8	35.7	88.9	66.2	102.0
30–34 years	207.5 (32,509)	206.4	76.6	86.1	162.3	138.8	186.3
35–39 years	319.3 (33,899)	333.1	135.5	147.8	249.8	226.7	286.7
40–44 years	417.5 (32,405)	435.6	177.2	193.2	326.6	296.5	374.9
45–49 years	486.8 (30,908)	507.8	206.5	225.3	380.8	345.7	437.0
50–54 years	465.7 (31,057)	475.7	211.1	225.3	364.3	339.7	418.1
55–59 years	395.7 (34,852)	404.2	179.3	191.5	309.6	288.6	355.3
60–64 years	319.8 (41,216)	326.6	144.9	154.7	250.2	233.3	287.1
65 years and over	615.9 (49,926)	552.0	31.5	32.3	481.9	343.9	553.0
All ages	3,434.4 (34,440)	3,396.9	1,210.1	1,315.6	2,686.9	2,333.4	3,083.6

Alternative valuation approaches, in the main, tended to decrease the value of informal care (from 10 per cent to 60 per cent below the base case) (Figure 1). For example, applying elementary wage rates to value carer time according to RCA_1 resulted in an informal care cost of €4.1 billion, 22 per cent below the base case. Indeed, all alternative valuation approaches lowered costs compared to the base case, except for OCA_1 which applied gender and age specific wages. In the extreme case of OCA_2, which employed gender- and age-specific wage and labour market data, the costs of informal care were reduced by 59 per cent (to €2.1 billion).

Figure 1: Percentage Change of Informal Care Cost (Total: 2011) from the Base Case by Valuation Approach



Overall, females accounted for almost two-thirds of the total cost (65.3 per cent: €3.4 billion versus 34.7 per cent: €1.8 billion for males) in the base case. This equated to €34,440 on average per female informal carer compared to €29,602 per male informal carer. The proportion of male to female costs, however, changed according to valuation type. In the extreme case, female costs as a percentage of total costs fell from 65.3 per cent to 55.3 per cent based on applying gender- and age-specific wage, labour market rates and the minimum wage (OCA_3) to hours of care. This decrease in the female proportion of total costs was shown wherever valuation adjustments were made for gender and age labour market data.

Further assessment of the gender aspects of informal care costs was undertaken in Table 4. According to these results, the major divergence in male/female costs in comparison to male/female hours does not occur until after 30 years of age. In subsequent age groups, females provided an average of almost twice as many hours

of care as males; however, the value of this care is only 1.7 times the male value on average. Indeed, in the 65 years and over age group, females provide 1.6 times as many hours of care as males, but this care was valued at 1.4 times the male value.

Table 4: Female-to-Male Ratios of Hours of Informal Care and Costs of Informal Care by Age Group

Age Group	*Female to male care hours*	*Female to male care costs (based on OCA_1)*
15–19 years	1.12	1.14
20–24 years	1.55	1.58
25–29 years	1.96	2.00
30–34 years	2.15	2.05
35–39 years	2.19	1.91
40–44 years	1.96	1.71
45–49 years	1.98	1.72
50–54 years	1.92	1.58
55–59 years	1.90	1.56
60–64 years	1.95	1.61
65 years and over	1.61	1.37

5.1 Informal Care's Place Within the General Production Boundary

Knowledge of the value of informal caring is important in understanding the true societal value of work in the economy. Despite its societal importance, this work (and unpaid work more generally) has been marginalised and undervalued due to its existence outside of the System of National Accounts (SNA) production boundary and conventional statistics (Beneria, 1999). While the general production boundary implicitly assumes a "third party criterion" (Reid, 1934), which judges activity productive if it can be delegated to someone else (European Commission, 2003), a criterion met by informal care, the SNA production boundary is more limited and explicitly excludes many non-market activities such as informal caring (European Commission, 2003). Focusing solely on market activity provides a biased picture of living standards, especially when economic activity appears to increase but is simply the result of a shift from household production to the market provision of similar goods and services (Stiglitz *et al*., 2009). Such an occurrence arises when increased workforce participation leads to a reduction in informal caregiving and more reliance on formal care provision. Consequently, the estimates of informal care provided here illuminate an often hidden resource in society with considerable economic value and supports calls to broaden income measures in the macroeconomy to non-market activities (Stiglitz *et al*., 2009).

The estimated value of informal care in Ireland (€5.3 billion: OCA_{BC}) far exceeded the expenditure by Government on home-based long-term care (€1.34 billion: 2013) or long-term residential facilities (€2.69 billion: 2013) in Ireland (CSO, 2015), and equated to 3.8 per cent of Irish GNP in 2011. This is a conservative estimate and does not include the hours of care of those carers who failed to state an informal care time estimate in the census (allocating a mean number of care hours to this additional subgroup resulted in a total OCA_{BC} estimate of €6.0 billion). This finding accords with similar values for informal care estimated internationally. For example, the value of informal care in the US has been estimated between 1.4 per cent and 4.0 per cent of GDP in 2012 using the OCA and RCA (Chari *et al*., 2015), while in Spain it ranged between 1.7 per cent and 4.9 per cent of GDP (Oliva-Moreno *et al*., 2015). It should be noted here that the comparison of a non-market good, like informal care, with GNP or GDP is only used for comparative purposes with similar studies in the literature. As discussed previously (Chisholm *et al*., 2010), the valuation of non-market production alters the macroeconomic metric of interest as national accounting statistics aggregate only market-based activity. Therefore direct comparisons between both metrics are limited. Regardless of approach, the estimated value of informal care is considerable, and given recent demographics trends, the demand for this resource is anticipated to increase further. Given recent evidence that points to informal care acting as a substitute service for formal care, and not complementary as previously hypothesised (Van Houtven and Norton, 2004), this development may have serious implications for the future burden of care in Ireland across formal and informal sectors.

5.2 Approaches to Valuing Informal Care

The OCA is the dominant approach to informal care valuation in the literature (Goodrich *et al*., 2012; Oliva-Moreno *et al*., 2016), although its appropriateness is debated widely (Krol *et al*., 2013). Recommendations, for example from a review of methods to cost non-market household production in the EU for household satellite accounts, advocated the use of the "output approach" or RCA to value informal care (European Commission, 2003). Both valuation approaches have limitations. For the OCA, problems exist over the imputation of different values for the same service depending on who undertook the task (European Commission, 2003; Koopmanschap *et al*., 2008), which also has distributional and equity issues (Krol *et al*., 2013). Market wage rates can be difficult to apply to informal carers not engaged in market activities necessitating assumptions concerning a "reservation wage" – a wage rate for which the informal caregiver is willing to supply at least one hour of paid labour (Koopmanschap *et al*., 2008) or imputing wage rates of similar individuals. Often carers in paid employment are not free to choose their number of working hours as assumed by the OCA due to labour market

constraints (Giannelli *et al.*, 2011). For the RCA, difficulties arise when the productivity of the carer is significantly different from that of the market equivalent (European Commission, 2003) or where there is a distinct difference in utility for the carer or care recipient between formal and informal care (Koopmanschap *et al*., 2008). Nevertheless, the RCA is regarded as agreeing more with household own account production as valued in the core national accounts, especially when the generalist approach is applied (European Commission, 2003).

In our study, the base case OCA (OCA_{BC}) produced the second largest valuation of informal care amongst all the approaches employed. Application of the RCA reduced valuation between 10 per cent and 30 per cent, depending on the wage rate applied. Consequently, the recommendation concerning use of the RCA above appears a more conservative approach to informal care valuation, and one which exhibits less variability across derived values compared to the OCA.

Our results revealed that normative assumptions regarding the treatment of carers not employed in the paid market sector impact significantly on OCA valuation estimates. The value of informal care according to OCA_2 was between 50 per cent and 65 per cent below the base case due to apportioning zero opportunity cost to carers not participating in market-based employment. The allocation of minimum wage rates to non-paid carers resulted in estimates that remained between 42 per cent and 62 per cent below the base case (OCA_3). The treatment therefore of "potential workers" – those that are employed or could potentially take up employment – and issues concerning the valuation of leisure time in the OCA can be contentious (Giannelli *et al.*, 2011) and are generally avoided by the more simplistic RCA.

Gender related issues (discussed in more detail below) arise more explicitly in versions of the OCA than the RCA. A large majority of the decrease in the value of informal care in OCA_2 was a direct consequence of the application of gender-specific labour force participation rates. The ratio of female to male informal care costs, compared to hours, grew wider in the 30-34 age group and older. This is due to lower labour force participation rates in Ireland for females aged 30 and over compared to men (O'Farrell, 2014), which coincides with a female's primary childbearing years (Elborgh-Woytek *et al*., 2013). The role of child-related career breaks is evidenced by the higher percentage of female informal carers in this study (29 per cent) who indicated looking after the home family compared to males (5 per cent). Such disparities exacerbate differences in OCA valuation when accounting for labour market dynamics.

A further bias was introduced due to gender wage gaps in the economy. Although the gender wage gap in Ireland (13.9 per cent) (European Commission, 2013) is smaller than across the average of EU countries (16 per cent) (OECD, 2012), it is still noteworthy and remains intact across almost all sectors. In fact, the horizontal segregation of women and men in Ireland is more distinct than the EU27

(European Commission, 2013) with both men and women more likely to be found in gender typical occupations than other EU Member States on average. Female employment tends to be concentrated in the services sector (Elborgh-Woytek *et al*., 2013), and especially education, human health and social work activities (O'Farrell, 2014); sectors exhibiting an above average pay gap. The consequences for informal care valuation are apparent. The estimate OCA_1 applied gender- and age-specific wage rates to carer hours and resulted in an increased value for male care of 14 per cent, but a decreased female equivalent value of 1 per cent. Use of the OCA therefore can lead to gender labour market issues being transferred directly into the unpaid sectors of the economy. While gender specific labour market issues are also present in the RCA, this is to a lesser degree, hence its recommended use elsewhere.

5.3 Gendered Distributional Issues in Informal Care Valuation

National accounts systematically underrepresent the value of the unpaid economy due to their existence outside the market system (Stotsky, 2006). Women traditionally undertake proportionately more unpaid work than men (Hammer *et al*., 2015; Marshall, 2006), therefore the contribution of women to economic activity has been misrepresented in conventional measures. For example, in Ireland, females spend five times more time on care compared to males and two and a half times more time on household production (McGinnity *et al*., 2005). In fact, summing both unpaid and paid work time across females and males closes the gender difference in work time to almost zero in Ireland (McGinnity *et al*., 2005), similar to other OECD countries (OECD, 2012). In our sample, the majority (almost two-thirds) of all care was provided by females. This has important implications for the perceived economic value of female activity from a national policy perspective, and their contribution to societal wellbeing.

Calls for policies and incentives to increase the labour force participation rate particularly amongst women have been made, which would help mitigate the effects of an ageing population and a declining fertility rate on the labour force (Elborgh-Woytek *et al*., 2013; Aguirre *et al*., 2012). In the EU, a target labour force participation rate of 75 per cent for women aged 20 to 64 has been set by the end of this decade (Joint Report, 2011). With the majority of informal carers being women, and of working age (Hoffmann and Rodrigues, 2010), this targeted increase in female labour force participation should be understood within a broader societal perspective of what constitutes "production", and the entire gender distribution of work in the economy (Hammer, *et al*., 2015). Our use of traditional, albeit underutilised, valuation techniques in this study provides a monetary valuation of informal care. Given women account for a considerable majority of this care, attempts to broaden the extant narrow view focused on paid work are essential to avoid exacerbating issues such as the "double burden" of additional market activity with no commensurate reduction in household production and the "sandwich

generation" where women are raising a family and providing informal care simultaneously (Miller, 1981).

Greater involvement of women in paid work, and therefore a greater number of income tax paying individuals, may alleviate temporary public finance shortfalls in relation to welfare provision (Hammer *et al*., 2015); however, this may represent a false economy. Time is a scarce resource, and consideration should be taken of the reduction in unpaid work time that ensues from a reorientation out of household production into market participation. A wider perspective on national output would recognise the significance of activities such as informal caring and the consequences of a reduction in unpaid work. This is not to suggest that such a reorientation is negative, particularly with regard to increased female opportunities for labour force participation, but to point out the opportunity cost involved, which is far from minimal, of a reallocation of resources from the household to the market sector. In the case of informal care, such reallocation will put greater pressure on public and private provision of formal care, which is not currently developed enough, or in receipt of sufficient funding, to accommodate such large scale reallocation.

5.4 Irish and European Informal Care Policy: Lessons to be Learned?

At its core, the provision of community-based care entails the combination of complementary resources; formal public home care provision and informal carers who are primarily composed of family members and friends. In reality, by far the largest proportion of care provided is by informal carers. Estimates range as high as 90 per cent for care provided by family carers to community dwelling older adults in Ireland (Care Alliance Ireland, 2015; Donnelly *et al*., 2016) and 80 per cent across the EU (Care Alliance Ireland, 2015). A dichotomy exists, however, between the supply of home-based care and demand for this service. The reserve of informal carers is anticipated to decrease based on social trends including reduced family sizes and greater female participation in the labour force (Triantafillou *et al*., 2010). Concurrently, demand side developments are on a permanent upward trajectory. Each year there is an approximate 3.1 per cent increase in those aged over 65 and a 4.5 per cent increase in those aged 85 and over, which represents a particularly vulnerable group (Care Alliance Ireland, 2015). Consequently, dependency ratios in Ireland are projected to rise from 45.7 in 2006 to 52.8 in 2021 (Barry, 2010). Such long-term trends will render the current informal care model unsustainable (Wren *et al*., 2012). A key policy question therefore arises: With increasing numbers of informal carers entering employment, or attempting to combine care provision with employment, can current informal care resources be maintained?

The stated aim of Irish Government health care policy is to prioritise care to dependants in the home or in the community to as large an extent as possible. The rhetoric underlying this has, if anything, intensified over the years with successive

published strategies emphasising a shift away from hospital to community-based care since 2001 (e.g. Primary Care Strategy (DOHC, 2001), National Carers Strategy (DOH, 2012a); Future Health: A Strategic Framework for Reform of the Health Service 2012-2015 (DOH, 2012b)). This objective also reflects current thinking on ageing policy described as "ageing-in-place" (Donnelly *et al*., 2016). Providing the resources necessary to ensure that people remain in their homes and communities for as long as possible ensures that the utilisation of the relatively cost intensive alternative option of residential care can be minimised (Fox *et al*., 2015). Rather than being solely a cost reducing exercise, care in the home also accords with care recipient wishes generally (Hoffmann and Rodrigues, 2010; Donnelly *et al*., 2016).

As discussed in Section II, current policy approaches to support people ageing in the home include direct income supports for informal carers and formal home-based care. Despite this, formal home-based care has been underfunded to date according to recent analysis, even though it acts as a complementary support mechanism to informal care. HSE funding for formal home-based care was 3 per cent lower in 2015 compared to 2008, despite a 25 per cent increase in the population aged 65 years and over (Donnelly *et al*., 2016). While the volume of hours provided by home help and home care packages was largely static between 2011 and 2015, the number of hours per dependant appears to have fallen over time by 40-50 per cent since 2000 (Care Alliance, 2016a). This problem is further exacerbated by the Nursing Home Support Scheme introduced in 2009, establishing publically funded subsidised residential care on a statutory basis (Wren *et al*., 2012), without providing a similar legal footing to guarantee access to community-based care (Care Alliance Ireland, 2016b). This has resulted in 4.5 per cent of older people living in long-term residential care in Ireland, 40 per cent above the EU average (Donnelly *et al*., 2016). The carer policy focus therefore appears incongruent to stated Government aims most recently outlined in the first National Carers' Strategy (Department of Health, 2012a). The Strategy's vision states that:

> Carers will be recognised and respected as key care partners. They will be supported to maintain their own health and well-being and to care with confidence. They will be empowered to participate as fully as possible in economic and social life.

Despite the variety of initiatives available to support informal care in Ireland, there is a dearth of supports for carers to combine their care work with paid work in the market (Barry, 2010). Evidence supports the view that a combination of funded formal home-based support, in addition to supplementary income supports for informal carers, can not only facilitate higher levels of labour force engagement amongst carers (Hoffmann and Rodrigues, 2010), but also accords with the care

recipient's wishes and appears more cost effective when compared to formal institutional care (Donnelly *et al*., 2016; Genet *et al*., 2011). For example, the most effective model in reducing the care burden and facilitating carers, particularly women, in combining care and labour force participation across Europe, has been implemented in Scandinavian countries. Here, investment in, and rates of, formal home care provision is greater than in other European countries. Such provision helps to alleviate the informal care burden, while minimising trade-offs between care and employment (Hoffmann and Rodrigues, 2010). Supplementary measures may then include the provision of respite care and measures such as the issuing of "counselling vouchers" (Leichsenring *et al*., 2009) to reduce the care burden further, combined with policies to promote flexible informal care working arrangements. Such a model is at odds with current Irish policy in this arena which has failed to prioritise funding to formal home-help services (Timonen *et al*., 2012). This is a particularly acute issue for Ireland given the results outlined in this paper where the highest cost category of informal care, and most common economic status grouping among informal carers, was paid employment.

Looking ahead, a recently announced Government consultation process has indicated an intention to place the provision of formal home-based care on a statutory basis (Department of Health, 2017). In time, this may overcome the current bias towards the Nursing Home Support Scheme, although a range of issues still remain which include inconsistency in delivery, quality assurance issues, problems with working hours and career development in the sector etc. (Care Alliance 2017; HRB, 2017). Some of these features are the focus of a recent report by the Health Research Board (HRB, 2017) into approaches for the regulation and financing of formal home care services in Europe. Following their review of evidence from Scotland, Netherlands, Germany and Sweden, the authors reported that each of the four countries had developed quality/performance indicators related to their national quality standards for formal home care services, except in the case of Sweden, and that random inspections and surveys are carried out to ensure standards are adhered to. The key principle noted across the countries was transparency as a guiding principle to facilitate informed choice for home care recipients and equity of access through service provision based on standardised health needs assessments and means adjusted payments. Issues remain, however, concerning the financial sustainability of these schemes in the future.

Authorities could also look to developments in the use of complementary technological supports in home care as a means of supporting traditional approaches. As discussed (Section II), such approaches have already been employed in Austria in the form of internet-based information hubs for carers, but could also be expanded to include medical monitoring equipment in the home or assistive technology to aid with mobility (Care Alliance, 2017; Lindberg *et al*., 2013). Growing evidence exists that information and communication technology tools,

including the use of text messaging and video technology, gathering and monitoring data, diagnosis and treatment at distances, and retrieving electronic health records can successfully augment home care services (Lindberg *et al*., 2013). The growing number of smartphone users and associated range of monitoring sensors, in addition to the proliferation of health apps, offer opportunities to support care provision in the home and could potentially facilitate informal carers staying in work and achieving a more equitable work-life balance. Concerns remain, however, with regard to quality, reliability, and privacy issues, in addition to education and training in the use of new technologies, all of which must be overcome before such practices become prevalent (European Commission, 2012; Deloitte, 2015).

As highlighted by the Stiglitz-Sen-Fitoussi Commission (Stiglitz *et al*., 2009), authorities tend to be guided by formal metrics, and in particular those summarised by monetary aggregates. Lacking this formal monetarisation, non-market activity such as informal care tends to fall outside priority-setting agendas that are supported by financial investment. This paper provides an indication of the monetary value of informal caring in its current state to the Irish economy by applying market values to an erstwhile non-market "informal activity". The estimated sum of €5.3 billion based solely on valuation of the labour apportioned to informal care in Ireland far exceeds the present funding allocated to long-term care in Ireland by the HSE (€988 million) (Donnelly *et al.*, 2016), and funding provided for formal community-based care (€185 million for home help and €135 million for home care packages).

For a sustainable model of care to be achieved, coordinated and effective structures need to be in place that adequately compensate and incentivise informal care, while supporting carers that wish to participate in the labour market and combine care with paid employment. Cuts to income support (recently restored), and statutory support for formal residential care, appear at odds with stated community-based care objectives, and can even undermine short-term financial aims, by discouraging informal carers to remain in the home. Appraisal of the policy landscape across Europe, while equally fragmented, can provide perspective and guidance on efforts to create a sustainable model of informal care.

VI CONCLUSION

Monetary valuation of market output captured by traditional national account metrics tend to inform and direct national policy agendas. Activities lacking explicit valuations are commonly ignored by decision-makers. The results presented here represent a first step in the process of fully recognising the true economic value of unpaid caring activity in national output, and, specifically, the contribution of women to economic activity and societal wellbeing. Through the application of

alternative valuation approaches, we reveal the considerable economic value of informal care in Ireland, and discuss the implications of the changing dynamic between informal and formal care. We discuss evidence of best practice in long-term care policy across Europe, which involves a combination of income supports for informal carers and substantial investment in formal home care provision provided by the state. We also discuss apparent incongruences in Government policy currently, which appear to prioritise a formal residential care model over more community-based care models contradicting stated policy objectives, although we note recent initiatives in the area appear to be reversing this trend.

REFERENCES

Aguirre, D., L. Hoteit, C. Rupp and K. Sabbagh, 2012. *Empowering the Third Billion. Women and the World of Work in 2012*, Booz and Company.

Barry, U., 2010. "Elderly Care in Ireland – Provisions and Providers", *UCD School of Social Justice Working Papers,* Vol 10c, No. 1, pp. 1-34, University College Dublin.

Becker, G. S, 1965. "A Theory of the Allocation of Time", *The Economic Journal,* Vol. 75, No. 299, pp. 493-517.

Beneria, L., 1999. "The Enduring Debate over Unpaid Labour", *International Labour Review*, Vol. 138, No. 3, pp. 287-309.

Brouwer, W. B., F. F. Rutten and M. A. Koopmanschap, 2001. "Costing in Economic Evaluations" in M. Drummond and A. McGuire (eds.), *Economic Evaluation in Health Care: Merging Theory with Practice,* New York: Oxford University Press.

Care Alliance Ireland, 2015. "Analysis of Home Care Supports Funded by the HSE 2008–2016", Available at: http://www.carealliance.ie/userfiles/file/Briefing%20Paper%201%20%3B%20An%20Analysis%20of%20Home%20Care%20Supports%20Funded%20by%20the%20HSE%20200 8-2016%20June%202016.pdf.

Care Alliance Ireland, 2016a. "Family Caregiving in Ireland", Available at: http://www.carealliance.ie/userfiles/file/Family%20Caring%20in%20Ireland%20Pdf.pdf.

Care Alliance Ireland, 2016b. "Pre-Budget Submission for Budget 2017", Available at: http://www.carealliance.ie/userfiles/file/Care%20Alliance%20Ireland%20Pre-Budget%20Statement%20-%20Budget%202017.pdf.

Care Alliance Ireland, 2017. "Discussion Document on the Consultation Process for the Establishment of a Statutory Homecare Scheme", Available at: http://www.carealliance.ie/userfiles/file/Discussion%20Document%20on%20the%20Consultation%20Process%20for%20the%20Establishment%20of%20a%20Statutory%20Homecare%20Scheme.pdf.

Central Statistics Office, 2012. "Census 2011 Profile 8: Our Bill of Health". Available at: http://www.cso.ie/en/census/census2011reports/census2011profile8ourbillofhealth-healthdisabilityandcarersinireland/.

Central Statistics Office, 2013. *Population and Labour Force Projections 2016-2046,* Dublin: Stationery Office.

Central Statistics Office, 2015. *Ireland's System of Health Accounts, Annual Results 2013 (Preliminary*), Available at http://www.cso.ie/en/releasesandpublications/er/sha/systemofhealthaccounts2013/.

Chari A. V., J. Engberg, K. N. Ray and A. Mehrotra, 2015. "The Opportunity Costs of Informal Elder Care in the United States: New Estimates from the American Time Use Survey", *Health Services Research*, Vol. 50, No. 3, pp. 871-82.

Chen, N., P. Conconi and C. Perroni, 2007. "Women's Earning Power and the 'Double Burden' of Market and Household Work", *C.E.P.R. Discussion Papers*, No. 6269.

Chisholm D., A. E. Stanciole, T. Tan Torres Edejer and D. B. Evans, 2010. "Economic Impact of Disease and Injury: Counting What Matters", *BMJ*, Vol. 340, c924.

Deloitte, 2015. "Connected Health: How Digital Technology is Transforming Health and Social Care", available at: https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-connected-health.pdf.

Department of Health and Children (DOHC), 2001. "Primary Care: A new direction", Available at: www.health.gov.ie/wp-content/uploads/2014/03/primcare-report.pdf.

Department of Health, 2012a. *National Carers Strategy*, Dublin: Stationery Office.

Department of Health, 2012b. *Future Health – The Strategic Framework for Reform of the Health Service 2012-2015*, Dublin: Stationery Office.

Department of Health, 2017. http://health.gov.ie/blog/press-release/minister-mcentee-to-launch-consultation-process-on-the-establishment-of-a-new-statutory-homecare-scheme-report-on-the-provision-of-homecare-in-other-countries-to-be-published-shortly/.

Department of Social Protection, 2017. http://www.welfare.ie/en/Pages/carb.aspx.

Donnelly, S., M. O'Brien, E. Begley and J. Brennan, 2016. *'I'd Prefer to Stay at Home But I Don't Have a Choice': Meeting Older People's Preference for Care: Policy, But What About Practice?*, Dublin: University College Dublin.

Elborgh-Woytek, K., M. Newiak, K. Kochhar, S. Fabrizio, K. Kpodar, P. Wingender, B. Clements and G. Schwartz, 2013. "Women, Work, and the Economy: Macroeconomic Gains from Gender Equity", *IMF Staff Discussion Note.*

European Commission, 2003. *Household Production and Consumption Proposal for a Methodology of Household Satellite Accounts*, Luxembourg: Office for Official Publications of the European Communities.

European Commission, 2012. "eHealth Action Plan 2012-2020 – Innovative healthcare for the 21st century", available at: http://ec.europa.eu/health/sites/health/files/ehealth/docs/com_2012_736_en.pdf.

European Commission, 2013. *Tackling the Gender Pay Gap in the European Union*, Luxembourg: Publications Office of the European Union.

European Commission, 2015. *The 2015 Ageing Report*: *Economic and Budgetary Projections for the 28 EU Member States (2013-2060),* European Economy 3, Brussels: European Commission.

Ferrant, G., M. Pesando and K. Nowacka, 2014. *Unpaid Care Work: The Missing Link in the Analysis of Gender Gaps in Labour Outcomes*, OECD Development Centre.

Fox, S., L. Kenny, M. R. Day, C. O'Connell, J. Finnerty and S. Timmons, 2015. *Report on the Housing and Support Needs of Clúid's Older Tenants*. Dublin: Clúid Housing.

Gannon, B. and B. Davin, 2010. "Use of Formal and Informal Care Services among Older People in Ireland and France", *European Journal of Health Economics*, Vol. 11, No. 5, pp. 499-511.

Garrido-García, S., F. I. Sánchez-Martínez, J. M. Abellán-Perpiñán and J.Van Exel, 2015. "Monetary Valuation of Informal Care Based on Carers' and Noncarers' Preferences", *Value Health*, Vol. 18, No. 6, pp. 832-40.

Genet N., W. G. Boerma, D. S. Kringos, A. Bouman, A. L. Francke, C. Fagerström, M. G. Melchiorre, C. Greco and W. Devillé, 2011. "Home Care in Europe: A Systematic Literature Review", *BMC Health Services Research,* Vol. 11: 207.

Giannelli G.C., L. Mangiavacchib and L. Piccolib, 2011. "GDP and the Value of Family Caretaking: How Much Does Europe Care?", *Applied Economics*, Vol. 44, No. 16, pp. 2111-2131.

Goldschmidt-Clermont, L., 1998. *Measuring and Valuing Non-SNA activities, Handbook of National Accounting, Household Accounting: Experiences in the Use of Concepts and Their Compilation – Household Satellite Accounts*, New York: United Nations.

Goldschmidt-Clermont, L., 2000. *Household Production and Issues: Some Preliminary Issues*, Geneva: Bureau of Statistics, International Labour Office.

Goodrich, K., K. Billingsley and H. Al-Janabi, 2012. "The Inclusion of Informal Care in Applied Economic Evaluation: A Review", *Value in Health,* Vol. 15, No. 6, pp. 975-981.

Hammer, B., A. Prskawetz and I. Freund, 2015. "Production Activities and Economic Dependency by Age and Gender in Europe: A Cross-Country Comparison", *The Journal of the Economics of Ageing*, Vol. 5, pp. 86-97.

Hanly P., A. Timmons, P. M. Walsh and L. Sharp, 2012. "Breast and Prostate Cancer Productivity costs: A Comparison of the Human Capital Approach and the Friction Cost Approach", *Value Health*, Vol. 15, No. 3, pp. 429-436.

Hanly, P., A. O´Ceilleachair, M. Skally, E. O'Leary, A. Staines, K. Kapur, P. Fitzpatrick and L. Sharp, 2013. "Time Costs Associated with Informal Care for Colorectal Cancer: An Investigation of the Impact of Alternative Valuation Methods", *Applied Health Economics and Health Policy*, Vol. 11, No. 3, pp. 193-203.

Health Research Board, 2017. "Approaches to the Regulation and Financing of Home Care Services in Four European Countries", Available at: http://health.gov.ie/blog/publications/health-research-board-report-approaches-to-the-regulation-and-financing-of-home-care-services-in-four-european-countries-an-evidence-review/.

Hoefman R. J., J. Van Exel and W. Brouwer, 2013. "How to Include Informal Care in Economic Evaluations", *Pharmacoeconomics*, Vol. 31, No. 12, pp. 1105-19.

Hoffmann, F. and R. Rodrigues, 2010. *Informal Carers: Who Takes Care of Them?* European Centre, Policy Brief, Vienna: European Centre for Social Welfare Policy and Research.

Joint Report, 2011. "Europe 2020 Targets: Employment Rate" Available at: http://ec.europa.eu/europe 2020/pdf/themes/18_employment_target.pdf.

Koopmanschap M. A., J. N. Van Exel, B. van den Berg and W. B. Brouwer, 2008. "An Overview of Methods and Applications to Value Informal Care in Economic Evaluations of Healthcare", *Pharmacoeconomics*, Vol. 26, No. 4, pp. 269-80.

Kröger, T. and J. Silipa, 2005. *Overstretched European Families Up Against the Demands of Work and Care*, Oxford: Blackwell.

Krol, M., W. Brouwer and F. Rutten, 2013. "Productivity Costs in Economic Evaluations: Past, Present, Future", *Pharmacoeconomics*, Vol. 31, No.7, pp. 537-549.

Krol M. and W. Brouwer, 2014. "How to Estimate Productivity Costs in Economic Evaluations", *Pharmacoeconomics,* Vol. 32, No. 4, pp. 335-44.

Krol, M., J. Papenburg and J. Van Exel, 2015. "Does Including Informal Care in Economic Evaluations Matter? A Systematic Review of Inclusion and Impact of Informal Care in Cost-Effectiveness Studies", *Pharmacoeconomics*, Vol. 33, No. 2, pp. 123-135.

Kuznets, S., 1934. *National Income, 1929-1932*, New York: NBER. Available at http://www.nber.org/books/kuzn34-1.

Leichsenring, K., G. Ruppe, R. Rodrigues and M. Huber, 2009. *Long-Term Care and Social Services in Austria*, Vienna: European Centre for Social Welfare Policy and Research.

Lindberg B., C. Nilsson, D. Zotterman, S. Söderberg and L. Skär, 2013. "Using Information and Communication Technology in Home Care for Communication between Patients, Family", *International Journal of Telemedicine and Applications*.

Marshall, K., 2006. "Converging Gender Roles", *Perspectives on Labour and Income*, Vol. 18, No. 3, pp. 7-19.

McGinnity F., H. Russell, J. Williams and S. Blackwell, 2005. *Time-Use in Ireland 2005: Survey Report*, Dublin: The Economic and Social Research Institute.

Members, and Healthcare Professionals: A Systematic Review", *International Journal of Telemedicine and Applications*, Vol. 2013, pp. 1-31.

Miller, D., 1981. "The 'Sandwich' Generation: Adult Children of the Aging", *Social Work*, Vol, 26, pp. 419-423.

O'Farrell R., 2014. "An Overview of the Irish Labour Market", *NERI Working Paper Series*, NERI WP 2014/No 15.

Office For National Statistics, 2016. "Household Satellite Account (experimental)" Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/housing/methodologies/householdsatelliteaccountexperimental.

Oliva-Moreno, J., M. Trapero-Bertran, L. M. Peña-Longobardo and R. Del Pozo-Rubio, 2016. "The Valuation of Informal Care in Cost-Of-Illness Studies: A Literature Review", *Pharmacoeconomics*, (in Press).

Oliva-Moreno J., L. M. Peña-Longobardo and C. Vilaplana-Prieto, 2015. "An Estimation of the Value of Informal Care Provided to Dependent People in Spain", *Applied Health Economics and Health Policy*, Vol. 13, No. 2, pp. 223-31.

Organisation for Economic Co-operation and Development (OECD), 2011. *Help Wanted? Providing and Paying for Long-Term Care*, Paris: OECD.

Organisation for Economic Co-operation and Development (OECD), 2012. *Closing the Gender Gap*: *Act Now*, Paris: OECD.

Reid, M., 1934. *The Economics of Household Production*, New York: Wiley.

Riedel, M. and M. Kraus, 2011. *Informal care provision in Europe: regulation and profile of providers*, ENEPRI.

Rodrigues, R., K. Schulmann, A. Schmidt, N. Kalavrezou and M. Matsaganis, 2013. *"The Indirect Costs of Long Term Care",* European Commission, *Research Note 8/2013.*

Stiglitz, J. E., A. Sen and J.-P. Fitoussi, 2009. "Report by the Commission on the Measurement of Economic Performance and Social Progress", Paris. http://www.stiglitzsen-fitoussi.fr/en/index.htm.

Stotsky, J., 2006. "Gender and Its Relevance to Macroeconomic Policy: A Survey", IMF *Working Paper 06/233* (Washington).

Structure Of Earnings Survey, 2010. Eurostat, Available at: http://ec.europa.eu/eurostat/data/database.

System of National Accounts, 1993. *Inter-Secretariat Working Group on National Accounts: Commission of the European Communities (EUROSTAT),* International Monetary Fund.

Timonen V., M. Doyle, C. O'Dwyer, 2012. "Expanded, But Not Regulated: Ambiguity in Home-Care Policy in Ireland", *Health Soc Care Community*, Vol. 20, No. 3, pp. 310-18.

Triantafillou, J., M. Naiditch, K. Repkova, K. Stiehr, S. Carretero, T. Emilsson, P. Di, S. Rastislav, B.L. Brichtova, F. Ceruzzi and L. Cordero, 2010. *Informal Care in the Long-Term Care System,* European Overview Paper, Athens/Vienna: Interlinks.

van den Berg, B., W. B. Brouwer and M. A. Koopmanschap, 2004. "Economic Valuation of Informal Care: An Overview of Methods and Applications", *European Journal of Health Economics*, Vol. 5, No. 1, pp. 36-45.

van den Berg, B., W. B. Brouwer and M. A. Koopmanschap, 2005. "Economic Valuation of Informal Care: The Contingent Valuation Method Applied to Informal Caregiving", *Health Economics*, Vol. 14, No. 2, pp. 169-183.

van den Berg, B. and A. Ferrer-i-Carbonell, 2007. "Monetary Valuation of Informal Care: The Well-Being Valuation Method", *Health Economics*, Vol. 16, No. 11, pp. 1227-44.

Van Exel, N. J. A., W. B. Brouwer, B. van den Berg and M. A. Koopmanschap, 2006. "With a Little Help from an Anchor: Discussion and Evidence of Anchoring Effects in Contingent Valuation", *The Journal of Socio-Economics,* Vol. 35, No. 5, pp. 836-853.

Van Houtven, C. H. and E. C. Norton, 2004. "Informal Care and Health Care Use of Older Adults", *Journal of Health Economics*, Vol. 23, No. 6, pp. 1159-1180.

Wren, M., C. Normand, D. O'Reilly, S.M. Cruise, S. Connolly and C. Murphy, 2012. *Towards the Development of a Predictive Model of Long-Term Care Demand for Northern Ireland the Republic of Ireland*, Centre for Health Policy and Management, Trinity College Dublin.

Yabroff, K. R. and K. Youngmee, 2009. "Time Costs Associated with Informal Caregiving for Cancer Survivors", *Cancer*, pp. 4362-4373.