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DISCUSSION PAPER SERIES

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ABSTRACT

Gender Difference in Household Consumption: Some Convergence over Three Decades*

The cost-of-living crisis has increased attention on consumption and how it differs for particular societal groups. There is much theoretical evidence that consumption patterns of men and women should differ, but the empirical evidence is scant, due in part to the availability of individual-level consumption data. This paper tackles the question of consumption differentials between men and women over nearly three decades in Ireland. Using harmonised survey data, we show how patterns of consumption of male- and female-headed households have changed over this period of significant economic turmoil and growth.

JEL Classification: E21, J16
Keywords: consumption, gender

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Gender Difference in Household Consumption: Some Convergence over Three Decades.

1. Introduction

Globally, there is a substantial interest in gender differences in consumption (Malghan & Swaminathan, 2021). Gender consumption differentials influence public policy such as the allocation of child benefits to the care giver, which has an implicit gender dimension given that women are predominantly care givers. While much of this literature is focused on developing countries (Case and Deaton, 2003), the question is of increasing relevance in OECD countries. In this paper, gender differentials in consumption over time are considered.

There is a substantial marketing literature on product specific consumption in relation to brands (Tifferet & Herstein, 2012) or segments such as luxury goods (Stokburger-Sauer & Teichmann, 2013). The focus of this paper, however relates to consumption associated with welfare and well-being, so total consumption, savings and broad categories of goods (De Vreyer & Lambert, 2021).

Consumption is strongly related to household income. Within couple households, the relative consumption of spouses has been linked to their relative incomes (Browning et al., 1994; Lundberg et al., 1997). Gender differences in consumption are important in terms of the allocation of resources within households (Lise & Seitz, 2011) and of implications for consumer demand, particularly in relation to issues associated with sustainability (Hawkins, 2012; Bloodhart & Swim, 2020), public health related consumption (Wilsnack & Wilsnack, 2013; Esper & Furtado, 2013) and food & nutrition (Cardoso et al., 2013; Rosenfeld & Tomiyama, 2021). Consumption differentials are also one of the key channels through which gender affects macro-economic outcomes (Stotsky, 2006; Morrison and Morrison, 2007; Elborgh-Woytek. 2014). Consumption differentials have also gained more recent attention in the context of the cost of living crisis and how it affects societal groups differently (Sologon, Doorley, O'Donoghue, & Peluso).

Ireland is an interesting case study given both the significant economic changes that have occurred over the past 40 years and in particular the substantial change in relation to the position and power of women in Irish Society (Sheehan et al., 2017). There are a number of studies of consumption in Ireland. Gerlach-Kristen (2012) looks at aggregate consumption patterns during the period before the financial crash and, although the author conditions on the gender of the head of household, she does not report the results or discuss gender differentials. Some studies focus on the consumption of specific goods. Eakins (2013), in a study of the lottery, reports some gender differentials in relation to asset ownership and the increasing share of female headship. McCormack (2007) looked at healthy eating options and referenced higher male nutrition requirements. Newman et al., (2003) noted a higher consumption profile for female-headed households for prepared meals. Loughrey & O'Donoghue (2012) conditioned on gender within budget share equations within a welfare analysis of prices, but did not review gender differential expenditures in detail. Coffey et al. (2020) considered the impact of the pandemic on expenditures, but did not differentiate by gender. Sheehan et al., (2017) considers the changing role of women in Ireland and assess the implications for marketing and consumption. The study does not quantify the impact, but draws conclusions based upon a review of the literature.

Given the importance of gender in consumption, there seems to be a gap in our knowledge in relation to gender differentiated consumption patterns in Ireland. In terms of approach, clear lessons can be drawn from research in developing countries that study the link between gender

composition and expenditure profiles (Case and Deaton, 2003). In this approach, the gender composition of children is often used for comparisons. In our study for Ireland, it is more interesting to consider the growing economic power of women, in particular as measured by the share of female heads of household, a metric which reflects the degree of asset ownership and earnings of women compared to men.

In exploring this question and taking into account the change in the circumstances of women in economic terms, the full series of publicly available Household Budget Surveys from 1987 until 2015 are utilised. The aim is to consider not only total consumption, income and savings but also the shares of different types of expenditure. From a living standards and inequality point of view, it of interest to explore changing gender differentials for budget shares of particular commodity groups, such as food, for example. As the economic power of women has increased, have these differentials changed?

Our contribution to the existing literature is threefold. First, we document how the number of female-headed households, and their economic position has changed over nearly three decades in a county which underwent tumultuous economic change, coupled with increased female labour market participation and income (Russell et al, 2017). Second, we show how the consumption and savings of male- and female-headed households differs and how this difference has changed over the same time period. Third, we delve into the composition of the consumption baskets of male vs. female headed households and shed some light on the drivers of gender differentials in consumption. Our results have implications for the gender impact of inflation during the cost-of-living crisis, especially given the heterogeneous inflation rates associated with different types of consumption. Our findings may also be useful in terms of the national and global push for more sustainable consumption, by highlighting how the propensity to consume might differ for men and women or, for couple households, how it might vary given the relative income or economic power of spouses.

Section 2 provides a brief theoretical framework in which to inform the model choices, variables used and functional forms. Section 3 describes the data and methodology used. The results are explored in section 4, with section 5 concluding and providing some policy implications.

2. Theoretical Framework

To consider how gender might impact consumption, let us consider the following budget constraint equation assuming n expenditure categories, expressing total expenditure m, as a function of consumption c_i, volume x_i or budget share w_i and price p_i:

$$m = \sum_{i=1}^{n} c_i = \sum_{i=1}^{n} x_i p_i = \sum_{i=1}^{n} m w_i p_i$$

Furthermore it can be expressed in terms of income y and savings s

$$y = s + \sum_{i=1}^{n} x_i p_i = \sum_{i=1}^{n} m w_i p_i$$

The volume of expenditure on a good i depends itself on both income and total expenditure (assuming fixed savings) through the budget elasticity and prices through the price elasticity:

$$y = s + \sum_{i=1}^{n} mw_i(m, p_j | \text{ j} = 1 \dots \text{n}).p_i$$

Case and Deaton (2003) detail some reasons for differences by gender in total consumption. In a development context, they find income, life expectancy and fertility important determinants. Very many studies have considered gender differences for individual consumption groups. Many focus on necessities such as food (Emanuel et al., 2013; Rosenfeld & Tomiyama, 2021) or energy or bads (Yen, 2005) such as alcohol and cigarettes. Men are likely to consumer more energy and red meat (Räty & Carlsson-Kanyama, 2010), and devote less of their budget to energy saving investments (Trotta, 2018). There are significant variations in the consumption of leisure activities (Bihagen & Katz-Gerro, 2000). Men consume more alcohol than women, but with differences in the nature of consumption (more beer) (Dawson, & Archer, 1992). However, this ratio shrinks once differential body weight is taken into consideration.

Furthermore there is likely to be to be a gender difference in savings. This may result from differences in labour market outcomes and incomes (Agunsoye et al., 2022) or be due to gender differences in risk taking (Sunden, A. E., & Surette, 1992). Seguino and Floro (2003) find, for example, that as the income of women increase and their economic power increases, so does the savings rates.

Given these differences it is likely therefore we should consider gender differences in our parameters. Taking f as taste parameter for the relative preference of women versus men, in this model, gender can impact in a number of dimensions:

- The inter-temporal preference for consumption in terms of the differential savings rate $s(f)$
- The budget share and associated budget elasticity, $w_i\big(m(f), p_j | \text{ j} = 1 \dots \text{n}\big)$
- The price responsiveness of the budget share and associated price elasticity $w_i\big(m, p_j(f) | \text{ j} = 1 \dots \text{n}\big)$

Furthermore there is likely to be intra gender heterogeneity to account for differences such as being in-work l and the impact of the presence of children c. We thus further differentiate the model to account for heterogeneity within gender $f(l, c)$.

$$y = s\big(f(l, c)\big) + \sum_{i=1}^{n} m\big(f(l, c)\big).w_i\big(m\big(f(l, c)\big), p_j\big(f(l, c)\big) | \text{ j} = 1 \dots \text{n}\big).p_i$$

In order to assess the heterogeneous gender differential in these parameters, we derive regression based budget share equations and an Engle curve with heterogeous gender interacted with consumption and income respectively. These models contain the chief theoretical drivers of budget shares including consumption, demographic, household and economic characteristics.

3. Data and Methodology

3.1 Data

The Household Budget Survey collected by the Central Statistics Office is the most useful dataset for an analysis such as this. Historically it was collected every 7 years and then later, from 1994/5, every 5 years. From 2024, it will be collected on an annual basis. The 2020 wave was not collected due to the COVID-19 pandemic. The data files that are used in this study are the databases stored by the Irish Social Science Data Archive. The sample size varies from 6-7000 households. Most of the waves collect information over 6 quarters.

The demographic and economic variables that are collected have had a reasonably standard definition over the entire period. Most waves have some variability in how expenditures are classified as a result of changing spending patterns and new spending categories link internet mobile phone services or electric cars that were not available historically or historic expenditures like cassette tapes and DVD rentals that are not so frequent to day. Between 1987 and 2004/5, the changes were relatively minor. However, the 2009/10 had a substantially different classification of expenditures with further changes in 2014/15.

Given both these changes and the need to keep the analysis manageable, this paper describes expenditures in a grouped classification. In particular, the paper uses an adjusted classification of individual consumption by purpose (COICOP), extending international 12 item classification to incorporate some additional expenditure categories of interest such as child care expenditure and disaggregated fuels and rent. This approach enriches the analysis without incorporating the heterogeneity of the more detailed categorisation. The categorisation used here is described in the appendix.

It would be interesting to understand the internal consumption within a household to assess the true gender differential. However, the data does not allow that and is only disaggregated on a gender basis in relation to clothing. The closest we can approximate gender differences in expenditure is via the gender of the head of household or household reference person. The household reference person is the person in whose name the accommodation was owned or rented. Where the mortgage/rent is jointly paid, the respondent with the highest income is taken as the reference person. In cases where household members receive an equal salary, the eldest member is taken as the reference person. As a result, gender-based consumption differences are evaluated from the perspective of gender related head of household. Increased incomes and home ownership are the drivers of changes in headship/reference person and these margins are consistent with the question posed in this research.

Table 1 describes the trend in female-headed households between 1987 and 2015. The share increased from 21.5% in 1987 to a peak of 46.4% during the financial crisis in 2009, before falling back slightly in the 2015. The financial crisis saw the employment rate of women aged 35 and younger exceed that of males for the first time due to the concentration of males, particularly younger males as the construction sector suffered a major contraction. There was a particularly large jump between 1999 and 2004 which may have been due in part to the introduction of National Minimum Wage which benefitted relatively more women than men (Bargain, Doorley, & Van Kerm, 2018) and the partial individualisation of the income tax system, which substantially increased the labour supply of married women (Doorley, 2018) as well as general employment gains associated with the Celtic Tiger (Barrett, Doorley, Redmond, & Roantree, 2022).

There have been consistently more not-married households with a female head than not married households with a male head. This can be attributed to the fact that most lone parents in Ireland are women (Redmond, McGuinness, & Keane, 2023) and women tend to live longer than men, leading to a relatively higher share of widow households compared to widower households.

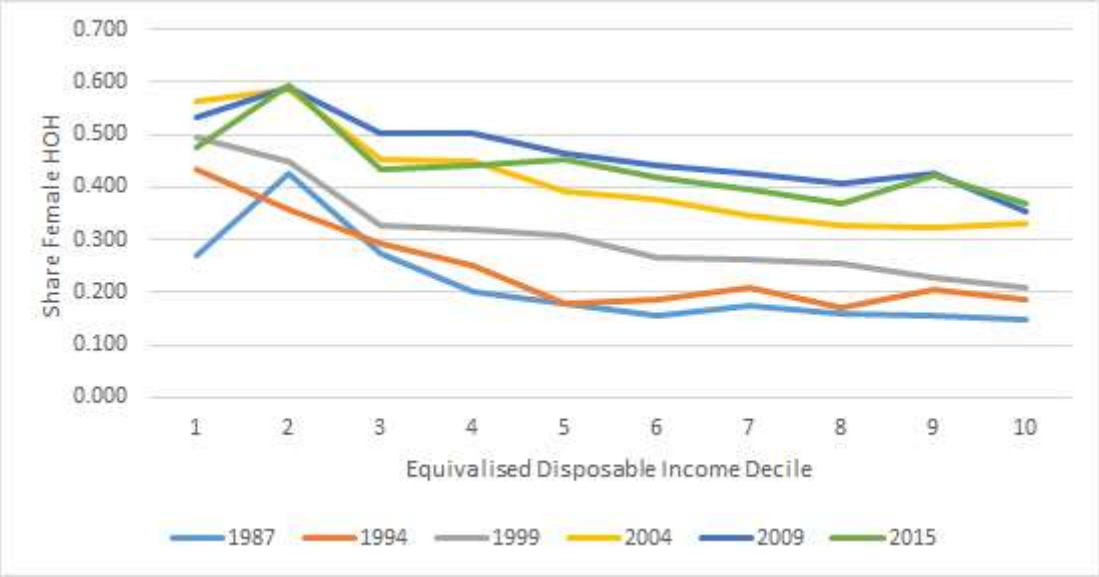
Table 1. Share of Female-headed Households

	1987	1994	1999	2004	2009	2015
HOH not married	0.582	0.577	0.624	0.613	0.604	0.584
HOH married	0.062	0.110	0.177	0.309	0.332	0.324
Total	0.215	0.247	0.312	0.415	0.464	0.438

Note: Own calculations using the HBS data from the Irish Social Science Data Archive

Figure 1 describes the pattern of female-headed households across the income distribution and over time. The pattern across the distribution is similar over time, with a higher share of female-headed households at the bottom of the income distribution, which declines moving up the income distribution. In most years, there is a peak in decile 2, due in part to the fact that many old age pensioners are located in the second decile. With a higher life expectancy, widows form a large proportion of female-headed households. As female employment patterns and home ownership have increased, the share of female-headed households has increased since 1987. However, however the gradient has flattened only slightly, indicating that female-headed households are still disproportionately low-income.

Figure 1. Female-headed Households in the Income Distribution



Note: Own calculations using the HBS data from the Irish Social Science Data Archive. Deciles are constructed using equivalised household disposable income. Income is equivalised using the national scale which assigns a weight of 1 to the first adult, 0.66 to second and subsequent adults and 0.33 to children < 14 years of age.

3.2 Methodology

In line with the theoretical framework, the analysis involves three steps. Firstly, incorporating income, expenditure and savings, the first model is defined as

$$\log c = f(\log y, female, \log y * female, \log y * marr, \log y * marr * female, Z) + \varepsilon_1$$

The functional form contains a female head of household dummy, $female$ to capture the gender differentiated intercept. Interacting with the log of income ($\log y * female$), gives the income gradient for the gender differential, which will allow us to examine how the gradient is influenced by income. Differentiating between married women and other women, the addition of an additional dummy ($marr$) examines whether this gradient varies by marital status.

In addition to total consumption, the budget share for individual expenditure groups is important. Is there a gender differential for the consumption of necessities like food or heating energy or "bads" like alcohol and tobacco. As main expenditure groups have large shares of zero expenditures, this part of the methodology is divided into two components

- the budget share w_i equation conditional on positive expenditure (i.e. no zero expenditures) and
- a discrete choice model (logit) of the presence of the expenditure $I(w_i)$

$$w_i = g(\log c, female, \log c * female, \log c * marr, \log c * marr * female, Z) + \varepsilon_2 \; if \; w_i > 0$$

Where the budget share $w_i$is the ratio of the group consumption c_i, to total consumption C.

$$w_i = \frac{c_i}{C}$$

$$I(w_i) = h(\log c, female, \log c * female, \log c * marr, \log c * marr * female, Z) + \varepsilon_3$$

The next section first profiles male- and female-headed households from an income, demographic and savings perspective. We then report estimates for each of these regressions for the 19 expenditure categories.

4. Results

4.1 Income of male- and female-headed households

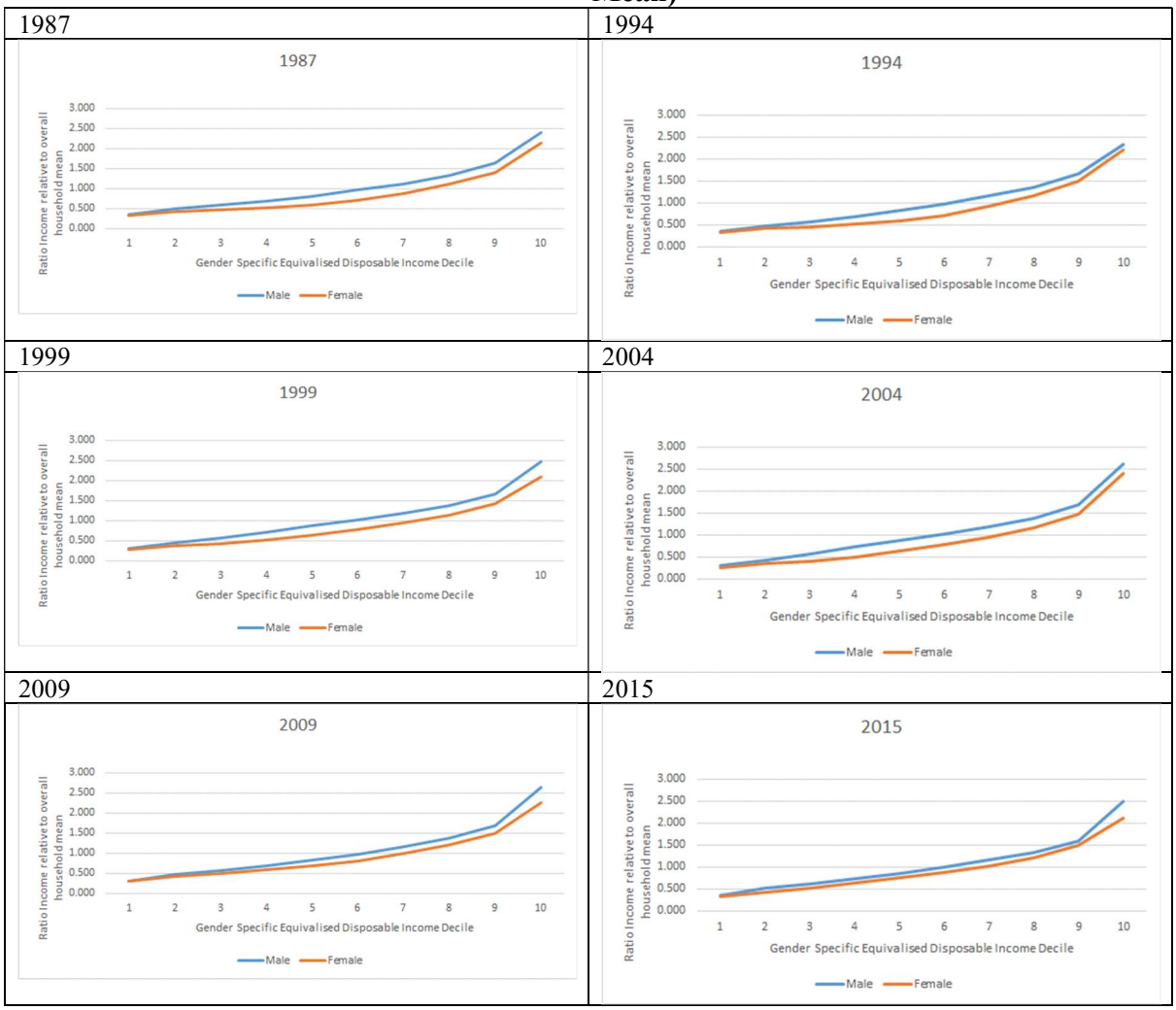
Table 2. Mean Disposable Income of Male-headed Household versus Female-headed Household relative to overall mean

	1987	1987	1994	1994	1999	1999	2004	2004	2009	2009	2015	2015
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Mean	1.04	0.86	1.04	0.88	1.06	0.86	1.08	0.89	1.07	0.92	1.05	0.94
Ratio	1.21		1.18		1.24		1.21		1.16		1.12	

Note: Own calculations using the HBS data from the Irish Social Science Data Archive

Table 2 reports the ratio of the mean disposable income by gender differentiated head of household relative to the overall mean. As the share of female-headed households increased, the relative income of male-headed households increased slightly, but as the weight of the female-headed households increased, so too did their relative income. The net impact was that the ratio between the male and the female average fell from a 21% gap to a 12% gap between 1987 and 2015. However, most of the change occurred between 2004 and 2015. Figure 2 reports how this difference is manifested over the income distribution, with the gap typically narrowest at the bottom and widest at the top (except 1994).

Figure 2. Average Income of Male and Female-headed Households (Relative to Mean)

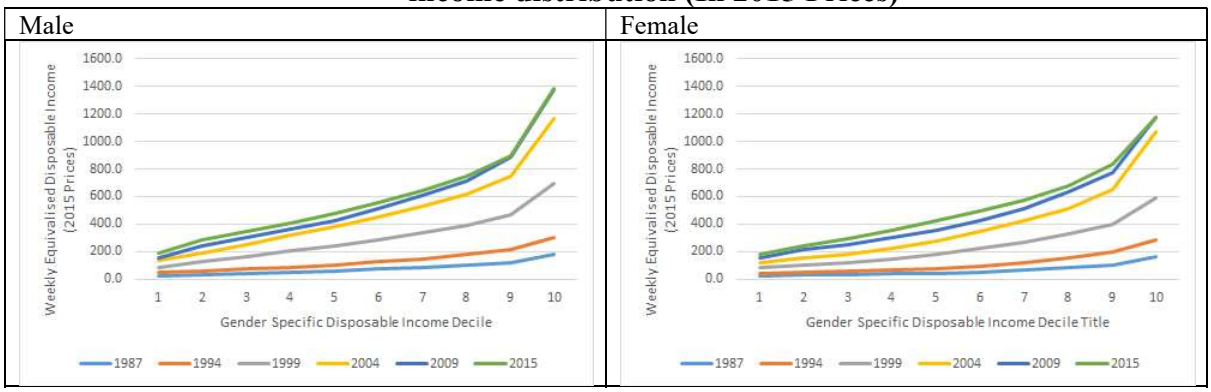


Note: Own calculations using the HBS data from the Irish Social Science Data Archive. Deciles are constructed using equivalised household disposable income. Income is equivalised using the square root of the number of persons..

Figure 3 reports the mean income in real terms across the income distribution over time. We see two trends. While the mean income rises over the distribution, for both male and female-headed households, the real gap between top and bottom has widened over time, with the (90:10) decile ratio increasing over time (Table 3). For male-headed households, this ratio, which captures inequality between the top and bottom decile of income, peaked in 2009, before declining in 2015 to a level similar to that observed between 1994 and 1999. For female-headed households, it peaked in 2004, before also declining in 2015 to a level similar to that observed between 1994 and 1999.

The second trend is that the purchasing power in real terms of the bottom decile in 2015 was higher than that of the top decile in 1987. In 1999, for both male and female-headed households, the average income of the top decline in 1987 was equivalent to the 3rd decile in 2015, jumping to the 8th decile in 1999 and thereafter just marginally below the top decile in 2015. This highlights the significant increase in real living standards by the start of the economic growth period known as the Celtic Tiger between 1994 and 2007. From 2004 to 2015, the biggest change was a reduction in the gap between the top and the bottom of the income distribution.

Figure 3. Average Income of Male and Female-headed Households across the income distribution (In 2015 Prices)



Note: Own calculations using the HBS data from the Irish Social Science Data Archive. Deciles are constructed using equivalised household disposable income. Income is equivalised using the square root of the number of persons..

Table 3. Decile Ratio (90:10) for Male and Female-headed Households

	1987	1994	1999	2004	2009	2015
Male	6.9	6.6	7.8	8.7	8.8	7.3
Female	6.4	6.5	7.3	9.1	7.5	6.6

Note: Own calculations using the HBS data from the Irish Social Science Data Archive. Deciles are constructed using equivalised household disposable income. Income is equivalised using the square root of the number of persons.

4.2 A profile of male-and female-headed households

Table 4. Logit Model Female-headed Household

	1987	1987	1994	1994	1999	1999	2004	2004	2009	2009	2015	2015
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.
Log Income	1.275	0.865	1.611***	0.576	2.186*	1.151	0.194	0.389	0.353	0.363	1.89***	0.666
Log Income^2	-0.088*	0.048	-0.106***	0.033	-0.112**	0.055	-0.02	0.031	-0.036	0.030	-0.143***	0.052
Number of Earners	0.224**	0.088	1.058***	0.084	0.557***	0.067	0.465***	0.069	0.07	0.044	-0.075**	0.037
HH Size	-0.478***	0.157	-0.682***	0.133	-0.601***	0.146	-0.638***	0.135	-0.38**	0.155	0.178	0.158
Age (Standardised)	-0.098	0.146	0.402***	0.140	0.64***	0.129	0.357***	0.111	0.188*	0.112	1.078***	0.224
Age (Standardised) Squared	-0.27*	0.157	0.586***	0.145	0.668***	0.131	0.392***	0.111	0.251**	0.122	0.821***	0.210
Married	-2.991***	0.136	-2.272***	0.125	-1.866***	0.109	-0.987***	0.101	-0.775***	0.093	-1.352***	0.120
Employee	-1.231***	0.128	-2.269***	0.153	-1.628***	0.127	-1.561***	0.111	-0.719***	0.121	-0.292**	0.122
Self-Employed			-3.575***	0.188	-2.984***	0.169	-2.807***	0.144	-2.171***	0.166	-1.683***	0.159
Unemployment	-2.274***	0.201	-3.021***	0.201	-2.119***	0.225	-2.051***	0.209	-1.636***	0.148	-0.612***	0.168
Upper Secondary	0.793***	0.102	0.889***	0.103	0.579***	0.088	0.525***	0.081	0.243**	0.095	0.121	0.088
University Educated	0.371**	0.148	0.907***	0.131	0.197*	0.108	0.636***	0.088	0.273***	0.077	0.394***	0.077
Number of Children (0-4)	0.457**	0.180	0.677***	0.159	0.633***	0.160	0.516***	0.146	0.211	0.170	-0.331*	0.173
Number of Children (5-13)	0.371**	0.172	0.689***	0.147	0.628***	0.154	0.602***	0.141	0.427***	0.164	-0.222	0.164
Number of Children (16-24)	0.42***	0.154	0.389***	0.128	0.499***	0.148	0.594***	0.132	0.294*	0.157	-0.2	0.159
Number of Adults	0.346***	0.087	0.068	0.084	0.132	0.082	0.164**	0.075	0.243***	0.087	-0.146	0.126
Rural HH	1.1***	0.092	0.369***	0.080	0.095	0.070	0.138**	0.068	0.003	0.069	-0.051	0.065
Constant	-4.055	3.994	-4.94*	2.606	-9.454	5.988	0.684	1.233	-0.197	1.157	-5.36**	2.127
Pseudo R2	0.4337		0.388		0.3026		0.1722		0.137		0.1105	

Note: Own calculations using the HBS data from the Irish Social Science Data Archive. The dependent variable is a dummy for the household being headed by a female. Family type group dummies were also included in the model, but not reported here for brevity reasons..

Table 4 summarises our estimates of the association between household characteristics and the probability of the household being led by a female. The most dominant category across the period is the number of earners, as dual income families are more likely to have a female head than single earner (or no-earner) households. In line with this, higher income households are more likely to have a female head although the negative coefficient on the square of income shows that the effect is not linear. In fact, the net effect of the income polynomial is consistent with figure 3 which shows that female headship declines over the income distribution. It should be noted that, in 2009, the significance of the income association disappeared, reflecting the gender differentiated impact of the financial crisis as the employment rate of women under 35 surpassed that of men for a period CSO, 2012). By 2015, the number of earners in the household was negatively associated with a female head, perhaps reflecting the recovery of male employment and income.

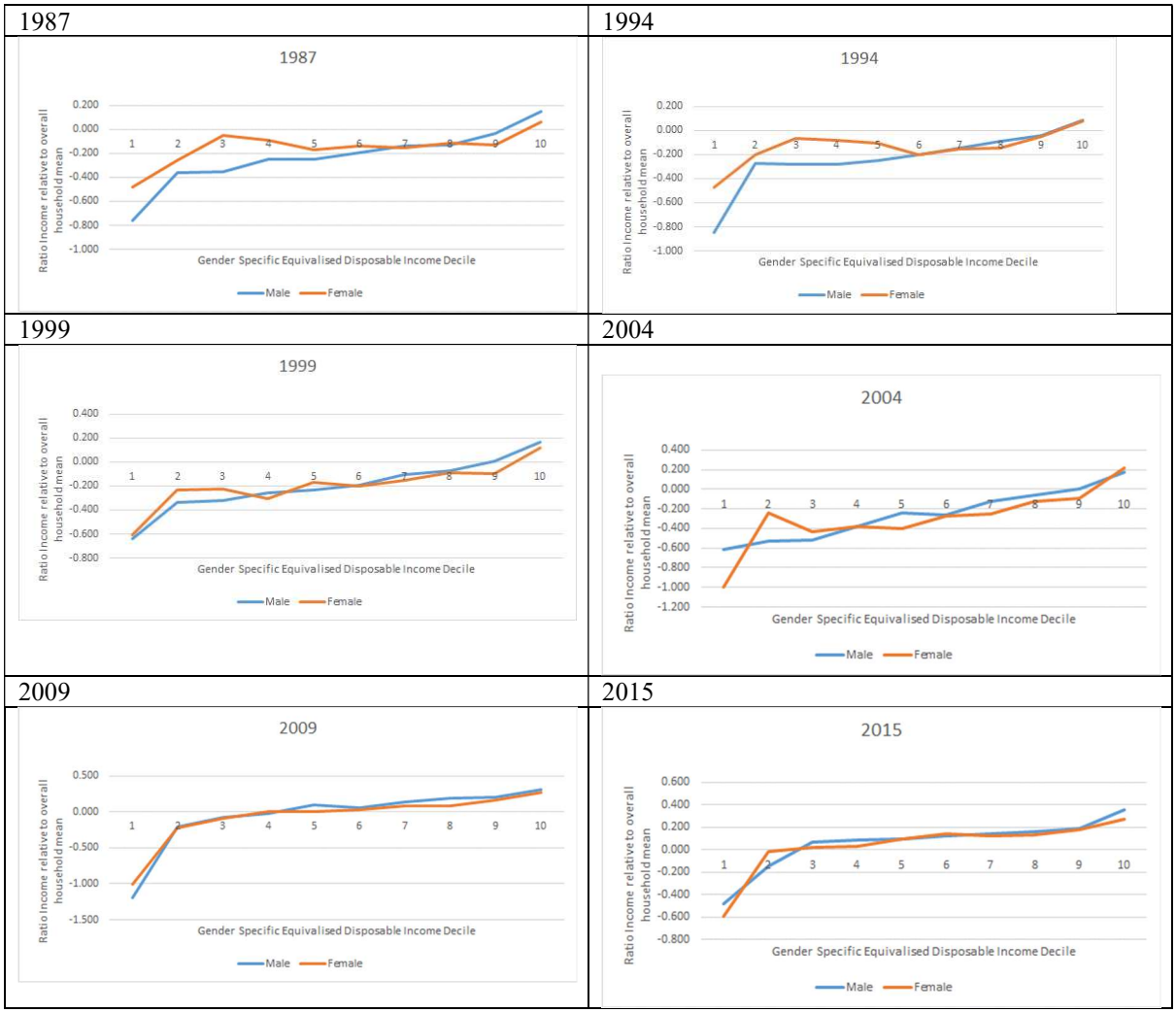
In general, married households have been less likely to have a female head, although this effect moderated during the financial crisis. In earlier years the presence of children, particularly for lone parents, was associated with a higher probability of female headship when considered together with the marital status variable. However, by 2015, this significance had disappeared, reflecting greater cohabitation rates.

Overall, another striking trend is the decline in the pseudo R2 of the models. In 1987, the pseudo R2 was 43.4%, with observable factors being strong drivers of headship. However, this declined rapidly, particularly during the economic take-off between 1994 and 1999, so that by 2015, the pseudo R2 has declined to 11.1% with unobservable factors and personal decisions (or preferences) being more important drivers of which households have female heads.

4.3 Consumption and savings of male- and female-headed households

We calculate savings as the difference between reported household income and expenditure and report the gender differential rate in Figure 4. The distributions exhibit a typical profile of dissaving at the bottom of the distribution and saving at the top. At the start of the period considered (1987 and 1994), low-income female-headed households had a lower level of dissaving than male-headed households. This suggests a more risk averse perspective for female-headed households or lower access to credit. However, this pattern has disappeared as incomes rose during the subsequent period. Between 1987 and 2004, the average overall savings rate declined as the country became richer, with average savings rates shrinking dramatically by 2004/5, consistent with the consumer led boom of the end of the Celtic Tiger (Kirby, 2016). During the biggest income jump between 1994 and 1999, savings rates of female-headed households fell faster than those of male-headed households, with the gender gap in dissavings at the bottom of the income distribution disappearing. After the financial crisis of 2008-2012, the savings rate recovered significantly as general risk aversion increased following the scarring effect of the financial crisis. However, the gender differential did not reappear, with little difference currently visible between male and female-headed households.

Figure 1. Average Savings Rate of Male and Female-headed Households across the income distribution



Note: Own calculations using the HBS data from the Irish Social Science Data Archive. Deciles are constructed using equivalised household disposable income. Income is equivalised using the square root of the number of persons.

Table 5 summarises our estimates of OLS regressions of consumption against income, capturing this savings relationship. In the early years (1987 and 1994), female headed households had lower consumption, conditional on their income, which is consistent with figure 4. However, this gap disappears as incomes rise. Married female-headed households have an even higher savings rate/lower dissavings rate during this period. During the Celtic Tiger, the female differential in consumption disappeared, except for married female-headed households. There was marginal significance for this relationship during the economic crash as savings rates recovered. However, by 2015, there was no gender differential in the relationship between consumption and income between male and female headed households.

Table 6 contains the gender-differentiated coefficients of the presence of a budget share (Logit) and the level of the budget share (OLS) equations.[2] The models highlight important gender differentials for different groups. For some categories like food, where expenditure is ubiquitous, we cannot identify the Logit models. For brevity, only a subset of the coefficients are discussed.

In general, female households have a higher budget share for food. However, this reversed during the financial crisis as the economic position of men deteriorated by relatively more than that of women. Conversely, for both the presence of and the level of the budget share for alcohol and tobacco, the opposite is found. Female-led households had lower budget shares of both tobacco and alcohol up to the financial crisis. The gender differential for tobacco disappeared in 2015, consistent with overall falls in tobacco consumption. Female-led households still had lower budget shares of alcohol, conditional on some consumption, in the most recent year of the analysis.

In the earlier period, female-headed households were more likely to purchase clothes, but this gender differential disappeared by 2004, with limited differences for the budget shares conditional on some consumption. Similarly, in the earlier period, when incomes were lower, female households were both more likely to consume home heating fuels and, when purchased, to have a higher budget share. However, the differential disappeared for higher income households and is no longer observable in more recent years. Although there is no gender difference in the presence of electricity consumption in the overall bundle, this pattern is visible in the period to 2004 for the budget share of electricity, conditional on some consumption.

As private renting increased in the 2000's, lower-income female-headed households were more likely to rent, but this gender differential disappeared by 2015. For most of the period, female headed households were more likely to purchase household goods and services and durables, but there is little significance in the gender difference in the budget share. For private health expenditures, the story weakly supports lower expenditure amongst female-headed households, with differences falling for richer households. Female-headed households are less likely to have private transportation and motor fuel expenditures and, in more recent years, less likely to use public transport, with the impact disappearing for higher income households.

Of the remaining categories, the coefficients are not consistent. In lower-income female headed households, there are lower associated child-care costs but these are higher for married households. This finding combines the lower employment participation rate of lone parents with growing participation of married women. This differential disappears by 2015.

[2] The other coefficients are available from the authors on request.

Table 5. Regression Model - Log Expenditure versus Log Income

	1987	1987	1994	1994	1999	1999	2004	2004	2009	2009	2015	2015
	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coefficient	S.E.	Coeff.	S.E.
Female HOH	-0.938***	0.229	-0.74***	0.229	-0.192	0.224	-0.011	0.144	-0.256	0.168	-0.079	0.129
Female HOH x Log Income	0.102***	0.025	0.083***	0.024	0.028	0.022	0.019	0.024	0.045*	0.026	0.01	0.022
Married x Log Income	-0.044*	0.026	-0.027	0.026	-0.047*	0.024	-0.062**	0.028	-0.032	0.041	-0.029	0.029
Married x Female HOH x Log Income	-0.015***	0.003	-0.021***	0.003	-0.014***	0.003	-0.03***	0.006	-0.012***	0.004	0.002	0.006
Log Income	-1.136***	0.138	-1.082***	0.247	-1.019***	0.182	-0.339***	0.105	-0.732***	0.171	-1.09***	0.135
Log Income^2	0.08***	0.007	0.077***	0.012	0.071***	0.009	0.063***	0.008	0.088***	0.014	0.118***	0.010
Number of Earners	0.037***	0.009	0.031***	0.009	-0.001	0.009	-0.02	0.013	0.003	0.008	0.002	0.006
HH Size	0.018	0.019	0.001	0.017	0.005	0.021	-0.09***	0.027	-0.082***	0.029	0.046	0.031
Age (Standardised)	0.035**		0.08***	0.017	0.082***	0.018	0.067***	0.025	0.106***	0.021	0.158***	0.041
Age (Standardised) Squared	0.016	0.017	0.043**	0.018	0.048***	0.018	0.032	0.023	0.079***	0.023	0.133***	0.039
Married	0.598**	0.017	0.456*	0.262	0.686***	0.259	0.608***	0.183	0.346	0.279	0.21	0.181
Employee	-0.014	0.253	0.007	0.014	0.022	0.014	0.019	0.018	-0.016	0.017	-0.005	0.017
Unemployment	-0.176***	0.014	-0.172***	0.020	-0.12***	0.029	-0.057	0.047	-0.06**	0.028	-0.208***	0.027
Upper Secondary	0.148***	0.019	0.152***	0.013	0.175***	0.013	0.13***	0.020	0.052***	0.019	0.107***	0.017
University Educated	0.277***	0.013	0.228***	0.017	0.217***	0.015	0.233***	0.020	0.141***	0.015	0.196***	0.015
Number of Children (0-4)	-0.011	0.019	0.001	0.019	-0.009	0.024	0.121***	0.030	0.095***	0.032	-0.04	0.033
Number of Children (5-13)	0.003	0.021	0.007	0.018	0.008	0.023	0.134***	0.028	0.109***	0.031	-0.032	0.032
Number of Children (16-24)	0.046**	0.019	0.081***	0.017	0.062***	0.022	0.191***	0.027	0.181***	0.030	0.047	0.031
Number of Adults	0.077***	0.019	0.095***	0.012	0.12***	0.014	0.136***	0.017	0.145***	0.018	0.032	0.023
Rural HH	0.028***	0.048	0.049***	0.011	0.062***	0.011	0.058***	0.016	0.022	0.014	0.005	0.012
Constant	12.421***	0.011	12.312***	1.240	12.6***	0.977	5.257***	0.345	6.738***	0.528	7.659***	0.452

Note: Own calculations using the HBS data from the Irish Social Science Data Archive. The dependent variable is the log of household consumption. Family type group dummies were also included in the model, but not reported here for brevity reasons.

Table 6. Gender Specific Components on Budget Share Equations

	1987	1994	1999	2004	2009	2015		1987	1994	1999	2004	2009	2015
	Logit Model - Presence of Consumption Group							**Budget Share Model - Presence of Consumption Group**					
1 Food and Non-alcoholic beverages													
							female	0.104*	0.12***	0.083**	0.031	-0.073**	0.078***
							femalelc	-0.01*	-0.01**	-0.007*	-0.004	0.011*	-0.008**
							marrlc	-0.021***	-0.012***	-0.008*	-0.009*	0.001	-0.003
							marrfemlc	0	0.0002	0.001	0	-0.001	-0.003**
2 Alcoholic beverages													
female	-8.992***	-7.227***	-6.695***	-2.183***	-1.467*	-0.685	female	-0.279***	-0.211***	-0.299***	-0.126***	-0.098***	-0.128***
femalelc	0.839***	0.662***	0.588***	0.266**	0.23*	-0.008	femalelc	0.023***	0.016***	0.023***	0.014***	0.012**	0.016***
marrlc	0.485***	0.152	-0.051	0.133	0.465**	-0.166	marrlc	0.023***	0.011**	0.001	0.002	0.011*	0.008
marrfemlc	0.068***	0.033*	0.017	0.048*	-0.002	0.114***	marfemlc	0.003***	0.003***	0.004***	0.004***	0.003***	0.002**
3 Tobacco													
female	-2.88***	-1.145	-2.248**	-0.137	-2.172**	0.14	female	-0.14***	-0.092**	-0.073*	-0.028	-0.058**	-0.067
femalelc	0.265**	0.098	0.2**	-0.027	0.393***	-0.04	femalelc	0.013***	0.008**	0.006	0.002	0.008*	0.01
marrlc	-0.169	-0.268**	-0.205**	-0.31***	0.624***	-0.253	marrlc	0.007*	0.01**	0.001	-0.004	-0.005	0.015
marfemlc	0.059***	0.044***	0.049***	0.086***	-0.08***	0.035	marfemlc	0.003***	0.002***	0.001**	0.002***	0.001	0.001
4 Clothing and footwear													
female	-0.323	-1.397	-1.626				female	-0.037	-0.12***	-0.058	0.023	0.042	-0.014
femalelc	0.132	0.246**	0.253**				femalelc	0.005	0.013***	0.007**	-0.002	-0.004	0.004
marrlc	0.519***	0.462***	0.224*				marrlc	0.017***	0.012**	0.007*	0.013***	0.002	0.011
marfemlc	-0.06***	-0.10***	-0.07***				marfemlc	0.001	-0.001*	-0.002***	-0.001	-0.001*	-0.001
5 Home fuels													
female	2.622**	2.975***	1.859			1.07	female	0.089**	0.059*	0.023	0.019	-0.038	0.011
femalelc	-0.256**	-0.32***	-0.149			-0.061	femalelc	-0.009**	-0.005*	-0.002	-0.003	0.003	0
marrlc	0.174	0.108	0.276*			-0.064	marrlc	0.002	0.006**	0.004	0.005**	0.012	0.016***
marfemlc	-0.027	0.032	-0.014			-0.087*	marfemlc	0	0	0	0	0.001	-0.002**
6 Electricity													
female	-0.537	0.882	0.000	0.000	0.167	1.212	female	0.035*	0.038***	0.046***	-0.001	0.043	-0.011
femalelc	0.1	-0.048	0.000	0.000	-0.014	-0.14	femalelc	-0.003*	-0.004***	-0.004***	0	-0.011	0.002
marrlc	0.281	0.116	0.000	0.000	0.219	0.069	marrlc	-0.001	-0.004***	-0.002	-0.002	0.023	-0.002
marfemlc	-0.05	-0.021	0.000	0.000	-0.028	-0.062	marfemlc	0	0	0	0	0.004***	0

7 Rents													
female	-1.502	0.295	0.874	1.759***	2.1**	-0.36	female	-0.059	-0.084*	0.069	-0.041	0.009	-0.168***
femalelc	0.198	-0.001	-0.052	-0.242**	-0.26*	0.028	femalelc	0.007	0.009*	-0.008	0.001	-0.001	0.026***
marrlc	0.067	-0.112	-0.318***	-0.006	1.011***	0.308**	marrlc	0.015***	-0.004	-0.024***	-0.014**	-0.001	-0.014
marfemlc	-0.04*	-0.042**	-0.019	-0.046*	-0.051	0.048	marfemlc	-0.002**	-0.001	0	0.003*	0	-0.003
8 Household services													
female	4.361***	3.053***	3.954***	1.575**			Female	0.03	0.004	0.018	0.024*	0.017	0.036**
femalelc	-0.449***	-0.307***	-0.373***	-0.233**			Femalelc	-0.004	-0.001	-0.001	-0.003	-0.001	-0.004
marrlc	0.536***	1.028***	1.049***	0.968***			Marrlc	0.002	0.002	0.001	-0.004	0.004	-0.009
marfemlc	-0.07***	-0.041**	-0.052***	-0.047*			Marfemlc	0	0	-0.001*	0	-0.002***	-0.001
9 Health													
female	0.94	2.749**	-0.578	0.799	-3.069***	1.956***	female	-0.037	-0.016	-0.134***	-0.048**	-0.045***	-0.017
femalelc	-0.04	-0.242**	0.083	-0.071	0.519***	-0.207*	femalelc	0.004	0	0.013***	0.008**	0.006***	0.003
marrlc	0.291**	0.372***	0.455***	0.656***	0.764***	0.12	marrlc	0.006	0.01	0.008*	0.011***	-0.002	-0.001
marfemlc	-0.071***	-0.066***	-0.055***	-0.085***	-0.019	-0.067*	marfemlc	-0.001	0.001	-0.002***	-0.001	0	0
10 Private transport													
female	-3.739**	-3.579***	-3**	-3.192***	-0.517	-1.543	female	0.011	-0.014	0.059**	-0.004	-0.056*	-0.011
femalelc	0.306*	0.298**	0.253*	0.45***	0.062	0.131	femalelc	0	0.001	-0.005**	0.001	0.007	0.001
marrlc	0.516***	0.624***	0.559***	0.792***	0.248	0.004	marrlc	-0.003	0	0.001	0.007**	0.006	-0.005
marfemlc	-0.051**	-0.032*	-0.034*	-0.019	-0.007	0.086*	marfemlc	0	0	0	0	0.001	0.001
11 Public transport													
female	1.446	0.787	-0.633	0.051	1.978**	-1.793**	female	0.026	-0.05	0.009	0.008	-0.001	-0.069***
femalelc	-0.084	-0.013	0.084	0.035	-0.296**	0.264*	femalelc	-0.003	0.005	-0.001	-0.002	0	0.009***
marrlc	-0.029	0.017	-0.006	0.316***	-0.117	0.078	marrlc	0.001	0.005	-0.005	-0.004	0	0.004
marfemlc	-0.005	-0.021	-0.005	-0.045**	-0.014	0.02	marfemlc	0.001*	0	0	0.001	0	0.001
12 Communication													
							female	0.097***	0.09***	0.1***	0.033**	0.007	0.039***
							femalelc	-0.009***	-0.008***	-0.009***	-0.004**	-0.001	-0.006***
							marrlc	0.001	-0.002	-0.003	-0.004	-0.003	0.004
							marfemlc	-0.001***	-0.001***	0	-0.001	0	0.001
13 Recreation and culture													
							female	0.014	0.035	-0.042**	-0.018	0.013	-0.008
							femalelc	-0.002	-0.004*	0.003	0.002	-0.002	0
							marrlc	-0.003	-0.002	0.006***	0.006***	0.002	-0.001
							marfemlc	0.001**	0.001**	0*	0	0	0

14 Education												
female	-0.462	4.644***	0.187	0.001	-0.229*	1.245	female	-0.165*	0.027	-0.088	0.033	-0.006	0.016
femalelc	0.116	-0.41***	0.003	0.022	0.083	-0.272*	femalelc	0.016*	-0.004	0.007	-0.005	0	-0.003
marrlc	0.014	-0.324**	-0.072	-0.076	-0.034	-0.579**	marrlc	0.035***	0.001	0.01	0.013**	-0.006	0.02**
marfemlc	-0.06***	-0.042**	-0.027	-0.055**	2.684**	0.111**	marfemlc	0	0.002**	0.001	0.001	0.001	0.001
15 Restaurants and hotels												
female	-0.662	-2.141	0.086	0.337	2.116**	1.652**	female	-0.154**	-0.006	-0.004	-0.093*	0.033	0.036
femalelc	0.127	0.259*	-0.003	0.027	-0.325**	-0.162	femalelc	0.014**	-0.006**	-0.007*	0.013	-0.005	-0.006
marrlc	0.734***	0.44**	0.024	-0.087	0.995***	0.218	marrlc	0.012	0.036***	-0.004	-0.007	0.002	0
marfemlc	-0.012	-0.038*	-0.04*	-0.075*	0.001	-0.083**	marfemlc	0	0.006	0.031***	0.001	0	0.001
16 Other goods and services												
							female	-0.031	-0.006	0.059**	0.06***	-0.012	-0.032
							femalelc	0.005	0.002	-0.003	-0.005	0.003	0.007
							marrlc	-0.002	0.007*	0.007**	0.01***	-0.002	0.024***
							marfemlc	-0.002***	-0.002***	-0.002***	-0.003***	0	-0.001
17 Child Care												
female		10.397***	2.327	2.07	0.515	1.699	female	-2.877***	-1.145	-2.248**	-0.137	-2.172**	0.14
femalelc		-0.878***	-0.094	-0.093	-0.039	-0.213	femalelc	0.265**	0.098	0.2**	-0.027	0.393***	-0.04
marrlc		0.779*	0.755*	1.446***	0.147	-0.201	marrlc	-0.169	-0.268**	-0.205**	-0.311***	0.624***	-0.253
marfemlc		-0.067	-0.094*	-0.176**	-0.059**	0.027	marfemlc	0.059***	0.044***	0.049***	0.086***	-0.08***	0.035
18 Motor Fuels												
female	-3.368**	-4.515***	-3.285***	2.07	0.244	-1.172	Female	-0.021	0.033	-0.025	-0.012	-0.2	-0.025
femalelc	0.262	0.395***	0.294**	-0.093	0.031	0.138	femalelc	0.002	-0.004	0.002	0.001	0.029	0.001
marrlc	0.359**	0.309**	0.555***	1.446***	0.498**	0.109	Marrlc	-0.006	-0.003	0	-0.004**	-0.023	-0.008*
marfemlc	-0.025	-0.015	-0.023	-0.176**	-0.051*	0.036	marfemlc	0	0.001*	0	0.001*	-0.001	0.002**
19 Durable goods												
female	3.313**	2.779**	2.131		0.757	0.000	Female	0.109	0.004	0.041	0.029	0.037	0.031
femalelc	-0.301**	-0.254**	-0.19		-0.101	0.000	femalelc	-0.014	-0.002	-0.006	-0.007	-0.006	-0.007
marrlc	0.195	0.442***	0.207		0.262	0.000	Marrlc	-0.007	0.023***	0.023***	0.009	-0.018*	-0.017*
marfemlc	-0.015	-0.036**	0.003		0.066	0.000	marfemlc	0.002	0.001	0.003***	0.002	0.001	0.002

Note: Own calculations using the HBS data from the Irish Social Science Data Archive. The dependent variable is the logit specification (left hand panels) is the presence of expenditure on the particular consumption group in total expenditure. The dependent variable in the OLS specification (right hand panels) is the share of the particular consumption group in total expenditure. A full set of explanatory variables (similar to Table 5) was also included in the model, but is not reported here for brevity reasons.

5. Discussion and Conclusions

This paper explored the differential trend in consumption between male and female headed households in Ireland between 1987 and 2015. This period reflects a huge transition in living standards and the differential position of men and women. While not reflecting intra-household sharing of resources, the definition of the reference person in the Household Budget Survey (HBS) collected by the Central Statistics Office, which depends upon the name of the home ownership or renter or the highest income, can provide some interesting insights in relation to the changing position of women in households and consequentially the consumption patterns of households.

Reflecting these trends, the share of female headed households increased markedly from 21.5% in 1987 to a peak of 46.4% during the financial crisis in 2009/10, when female employment rates for under 35's exceeded that of males. Typically however across all waves of the HBS, female headed households were disproportionally in the lower half of the income distribution. Of particular note is the increasing purchasing power in the income distribution, particularly between 1994 and 1999 and between 1999 and 2004, where Ireland experienced the so-called Celtic Tiger. In real terms, the top decile of the income distribution in 1987 had lower disposable income than the bottom decile of the income distribution in 2015, highlighting this enormous increase in purchasing power across the income distribution.

Consumption patterns were considered in relation to four dimensions, total expenditure, the difference between income and expenditure (or savings), the existence of the expenditure for a particular expenditure group (or non-zero budget share) and the budget for a particular expenditure group relative to total expenditure (budget share).

At the start of the period considered, dis-savings rates were lower for low-income female headed households compared to low-income male-headed households, suggesting more risk aversion or lower access to credit for female-headed households. This pattern, however, disappeared as the country became wealthier over the course of the 2000's. In fact, the savings rates for female headed households fell faster than for the overall population during the consumer boom at the end of the Celtic Tiger era. The post-crash increase in savings applied to both males and female headed households.

In the paper, we report gender differentials for 19 expenditure groups and for the presence of these expenditures over the whole period. The dominant theme of the results is that, in earlier periods, when living standards were lower, poorer female headed households were more likely to have a higher budget share for necessities such as food and heating while poorer male headed households had higher budget shares for tobacco, alcohol and motor fuels. At the time, this differential diminished for higher income households. However, as living standards have risen over time, smaller gender differentials in the budget shares of food and alcohol are observable while the gender differential disappears completely for tobacco and heating fuels.

Thus there appears to be some evidence over the sample of increased female economic power, leading to reduced gender differentials in consumption patterns. We present no evidence here about the direction of causality as to whether the economic developments drove differences in gender outcomes or vice versa. Equally, we cannot isolate the impact of compositional changes to the group of female-headed households from behavioural changes to consumption. However, on the substantiative issue of gender differentiated consumption patterns over the income distribution, the consistency between the historic pattern within the income distribution and the

reduction in gender differentials as the country became richer, provides evidence of converging economic power between men and women, particularly in poor households.

Although gender differentials in consumption have declined, the remaining differentials have implications for important questions such as the gender differentiated impact of the cost-of-living crisis, a question tackled by Sologon et al (2024) for six European countries. The continued existence of gender differences in consumption suggests that, while the effect may have moderated over time, changes to benefit payments that are primarily received by women (i.e. Child Benefit or the One Parent Family Payment) might have different aggregate implications for consumption and welfare than changes to tax or other types of social welfare. Our results also suggest that the emergence of international literature which suggests that women consume more sustainably than men should be investigated in an Irish context and that the sensitivity of this pattern to income levels should be studied. Gender differences in nutrition patterns, of vital importance for both the environment and public health, are also outside of the scope of this research given the aggregation of consumption bundles considered. These questions merit further study. The dramatic fall of male employment in the period 2009-2011 also provides an interesting natural experiment in differential gender power that could be explored in more detail.

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Appendix Expenditure Categories (COICOP Adjusted)

1. Food and Non-alcoholic beverages
2. Alcoholic beverages
3. Tobacco
4. Clothing and footwear
5. Home fuels
6. Electricity
7. Rents
8. Household services
9. Health
10. Private transport
11. Public transport
12. Communication
13. Recreation and culture
14. Education
15. Restaurants and hotels
16. Other goods and services
17. Child Care
18. Motor Fuels
19. Durable goods