Reference Dependent Financial Satisfaction over the Course of the Celtic Tiger: A Panel Analysis Utilising the Living in Ireland Survey 1994-2001

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REFERENCE DEPENDENT FINANCIAL SATISFACTION OVER THE COURSE OF THE CELTIC TIGER: A PANEL ANALYSIS UTILISING THE LIVING IN IRELAND SURVEY 1994-2001

The link between income and subjective satisfaction with one's financial situation is explored in this paper using a panel analysis of 4,000 individuals tracked through the course of the 'Celtic Tiger' boom period, 1994-2001. The impact of the level of individual and household income, the time-path of income and the impact of reference group income on financial satisfaction are all considered. To the extent that income influences financial satisfaction, there is strong evidence from this paper that household income has a greater effect on financial satisfaction than individual income. There is also evidence that changes in income have an independent effect on financial satisfaction with the time derivative of income entering positively in the financial satisfaction equation. Thus, our paper gives further evidence to support the hypothesis that individuals process changes as well as absolute levels of income. While reference group income has a negative effect at the start of the period it has no effect at the end.

The period of economic growth from the mid-nineties to the turn of the 21st century was unprecedented in Irish history. The causes of this economic boom, popularly termed the 'Celtic Tiger' era, have been debated at length but the consequences have received less attention. In particular, the effect of the boom on the subjective well-being of the population as a whole over the course of this period has not been systematically analysed. This paper, working within the Leyden framework (see for example Van Praag *et al*. (2003), Van Praag and Ferrer-i-Carbonell (2004)), offers a detailed analysis of one domain of life satisfaction, financial satisfaction. Particularly, we address one specific question that is of interest to economists and economic theory and for which the Celtic Tiger provides an ideal natural experiment: what is the relationship between financial satisfaction and income? This paper presents evidence from the Living in Ireland Panel dataset on 9,000 individuals tracked in Ireland for the period from 1994 to 2001 (Economic and Social Research Institute, 1994-2001).

While studies modelling subjective well-being are common in the literature (Ferrer-i-Carbonell, 2005; Senik, 2004; Van Praag *et al*., 2003; McBride, 2001), the main contribution of this paper is that three different aspects of the relationship between income and *financial satisfaction* are simultaneously explored.[1] Firstly, we consider the level of income, for both the individual and the household, hypothesising that higher levels of income at the individual and household level will lead to higher levels of financial satisfaction. The extent to which the effect of individual and household income might differ is also considered. Secondly, the transitory component of income is explored by considering how the time path of income, that is changes in an individuals' income level from one period to another, affect their reported level of financial satisfaction. It is expected that, even when persistence in the dependent variable is controlled for, this effect should be positive. Thirdly, the

[1] Few studies have explicitly model the relationship between income and individuals' subjective well-being as measured by their *financial satisfaction* with Van Praag *et al*. (2003) being the only example to the authors' knowledge. Ferrer-i-Carbonell (2005), Senik (2004) and McBride (2001) analyse the relationship between income and general life satisfaction measures.

effect of reference group income on reported levels of financial satisfaction is considered both in the context of intra-household reference group income, captured by changes in household income controlling for individual income effects, and individual reference group income, measured as the average income of individuals of the same age, education level, gender and marital status.

This paper is structured in the following way. Section 2 of the paper examines existing evidence on each of these questions. Section 3 describes the Living in Ireland panel survey, outlines the economic model and the econometric methods used. The results of a number of panel econometric estimations of the effect of the level of income, changes in income and relative income position on subjective financial satisfaction are presented in Section 4. Some findings on the independent effect of demographic and socio-economic factors are also discussed. Section 5 concludes the paper with implications for the theoretical literature and for policy.

1 Evidence on Income and Financial Satisfaction

As utility maximising economic agents, material goods only matter in so far as they impact on individuals' well-being or happiness (Oswald, 1997). Most measures of well-being rely on individuals' subjective self-rating of how satisfied they are with their life situation.[2] Satisfaction with life, however, crosses different domains such as satisfaction with work, housing, leisure time or financial satisfaction, each of which may be affected differently by changes in income or personal circumstances (Van Praag *et al.* 2003). In this paper, we are concerned with financial satisfaction, and specifically its relation with income. The model considered here follows Van Praag *et al.* (2003). Financial satisfaction is defined as a function of income and a set of observable characteristics. In the standard model, financial satisfaction is seen as a function of achieved income levels. A simple model of the relationship between financial satisfaction and income posits that income is largely an exogenous determinant of financial satisfaction and that higher levels of income will be associated with higher levels of financial satisfaction. Indeed, most of the papers to date find such a relationship, although with a low order of magnitude in many applications.

However, there are a number of reasons for placing further structure on the relationship between financial satisfaction and income. In assessing the relationship between income and financial satisfaction, a number of regularities are apparent. Firstly, the literature on subjective financial satisfaction points to a high degree of inter-temporal persistency in the path of financial satisfaction. The notion of a life satisfaction set point has been discussed heavily in the psychological literature (Fujita and Diener, 2005). According to this view, life satisfaction varies around a set point, which is a personal baseline that remains constant over time. While this literature does not specifically examine the concept of a set point in terms of financial satisfaction a number of studies have suggested that the life satisfaction set point can be adjusted by negative life events such as unemployment and changes in marital status for example (Lucas *et al*., 2004; Lucas *et al*., 2003).

Secondly, reference-dependency over time and preferences over sequences are also widely noted phenomena in the literature. One manifestation of this is habituation to higher levels of income. For example, Brickman *et al.* (1978) compared the

[2] The most commonly used measure of well-being is a composite measure of disutility or mental distress derived from scores recorded in the General Health Questionnaire.

happiness levels of lottery winners with those of a control group finding very little differences in rates of subjective happiness between the two groups. Furthermore, an extensive literature on time preferences has demonstrated that people have preferences for improving as opposed to declining sequences even to the extent of being willing to trade off the total level of benefit to generate an improving sequence (Chapman, 2000; Lowenstein and Prelec, 1991).[3] This is similar to early theories of the consumption function, whereby utility was seen to be a function of current consumption and the time-derivative of consumption (for example, Duesenberry (1949)). Burchardt (2004) examines the subjective assessments of financial well-being at a specific point in time for individuals tracked across 10 years of the British Household Panel Survey. In terms of evaluating time dependent preferences, she finds that those who have experienced a fall in income over the course of a year are less satisfied with their financial circumstances, but that those who had experienced a rise in income were also less satisfied. Over a long period, those who have experienced falling incomes are less satisfied than those who have had constant income levels, while those who have experienced rising incomes are no more satisfied than those whose income remained constant.[4]

Thirdly, group-reference dependency in subjective happiness is widely observed in the literature. As Rabin (1998) points out, there is overwhelming evidence to suggest that individuals evaluate their happiness with reference to a benchmark level of objective well-being rather than on the specific circumstances they find themselves in. It has long been noted in the literature that people have a tendency to evaluate their financial satisfaction relative to a given reference group (Blanchflower and Oswald, 2004). Frank (1985) suggests that such reference dependency is an endemic feature of human stimulus perception (citing for example Helson (1964)). In a labour economics context, Clark (2003) found that the well-being of a person who was unemployed was strongly related to reference group unemployment at the regional, partner or household level. Sweeney and McFarlin (2004) examine the effects of social comparison on pay satisfaction and demonstrate a number of national and international comparison effects after controlling for actual pay. Closest to the spirit of this paper, Ferrer-i-Carbonell (2005) finds that reference-group income is approximately as important as personal income in explaining individual well-being. Similarly, McBride (2001) finds that financial satisfaction is negatively predicted by peer-group income and by income of the parents. An exception is Senik (2003) who finds that reference group income increases well-being, an effect which is attributed to the reference group providing information for future income.

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[3] Lowenstein and Prelec (1991) illustrate the point with an aptly chosen quote from the Theory of Moral Sentiments: *"The man who lives within his income is naturally contented with his situation, which, by continual, though small accumulations is growing better every day. He is enabled gradually to relax, both in the rigour of his parsimony and in the severity of his application; and he feels with double satisfaction this gradual increase of ease and enjoyment, from having felt before the hardship, which attended the want of them"*.

[4] Burchardt (2004) argues strongly that her results point to the flaws in using subjective assessments as means to evaluate well-being or equality. *"Those who have become poor within a ten-year period are less satisfied than those who have been poor throughout that time, while those who are upwardly mobile are not in general any better satisfied than those who have experienced a higher income over a long period. These past experiences may have been shaped by circumstances of unjust privilege or disadvantage, and the fact that they influence individuals' current satisfaction, implies that satisfaction – the best proxy we have for the concept of utility – is unsuitable for assessing current well-being, justice or equality. Instead we need an objective normative standard of assessment, such as offered by the capabilities framework.*

Thus, the literature points to a number of *a priori* hypotheses about the relationship between financial satisfaction and time and reference group dependency. Firstly, we expect a high degree of persistency in the level of financial satisfaction. However, this persistency may be dislodged by severe shocks such as a separation, becoming disabled or becoming involuntarily unemployed. Secondly, to the extent that income does have an effect on financial satisfaction we would expect that this is due to both the level of income and its trajectory. Humans appear to prefer ascending sequences of benefits in a number of domains and we would expect to see this here also. Thirdly, we would expect financial satisfaction to be related to deviations from expected or reference group income.

2 Data and Method

The data used in this paper are derived from the Living in Ireland survey. The Living in Ireland Survey forms the Irish component of the European Community Household Panel (ECHP): an EU-wide project, co-ordinated by Eurostat, to conduct harmonised longitudinal surveys dealing with the social situation, financial circumstances and living standards of European individuals and households. The first wave of the ECHP was conducted in 1994, and the same individuals and households were followed each year. The survey ran for eight waves, until 2001. In 2000, the Irish sample of individuals and households followed from Wave 1 was supplemented by the addition of 1,500 new households to the total. The rationale behind this measure was to increase the overall sample size, which had declined due to attrition since 1994 (Watson, 2004).[5]

Individuals' subjective appraisal of personal satisfaction with each domain is measured on a scale of 1 to 6 ranging from very dissatisfied to very satisfied. Table 1 presents average levels of satisfaction across four domains, work, housing, leisure time and financial situation for 1994 to 2001.[6] On average, individuals are more satisfied with work, housing and leisure time than with their financial situation. However, over the course of the Irish economic boom average levels of financial satisfaction increased by 15 per cent compared with 3 per cent for satisfaction with work, 1 per cent for satisfaction with housing and only a half a percentage point for satisfaction with leisure time. These findings would suggest that the increased levels of affluence experienced in Ireland during the Celtic Tiger years had the greatest impact on personal financial satisfaction with small positive effects evident in the other domains. Table 2 presents Spearman Rank Correlations between net household income and domain specific life satisfaction. While net household income is positively correlated with satisfaction with work, housing and financial situation the magnitude of the correlation is greatest for the latter.[7]

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5 The questionnaires were administered in a face-to-face interview by the ESRI's team of interviewers. On average, the household questionnaire took 12 minutes to complete, while the individual questionnaire took 30-35 minutes to complete. The average number of individual interviews per household in 1994 was 2.4. Further information about sampling is available in Watson (2004).

6 As for other life satisfaction studies standard assumptions are required in order to analyse these data: firstly, that individuals are capable and willing to answer questions relating to domains of life satisfaction; secondly, that such responses are directly linked to individual welfare; and thirdly, that individuals who report the same level of financial satisfaction are directly comparable in terms of the actual level of financial satisfaction that they enjoy (Van Praag *et al*., 2003).

7 As might be expected a negative correlation is found between net household income and satisfaction with leisure time, suggestive of a labour-leisure trade-off. This issue is not explored in this paper.

Table 1

Domain Specific Life Satisfaction over the course of the Celtic Boom

Year		Work	Financial situation	Housing	Leisure time
1994	Mean	4.46	3.43	4.92	4.50
	N	8,895	8,869	8,870	8,871
	Std. Deviation	1.47	1.60	1.34	1.51
1995	Mean	4.51	3.52	4.94	4.59
	N	7,390	7,388	7,384	7,385
	Std. Deviation	1.37	1.52	1.28	1.39
1996	Mean	4.51	3.50	4.92	4.58
	N	6,400	6,400	6,404	6,408
	Std. Deviation	1.33	1.51	1.27	1.40
1997	Mean	4.55	3.66	4.98	4.56
	N	5,873	5,873	5,874	5,875
	Std. Deviation	1.28	1.48	1.21	1.39
1998	Mean	4.58	3.68	4.98	4.55
	N	5,358	5,359	5,361	5,362
	Std. Deviation	1.22	1.47	1.19	1.38
1999	Mean	4.55	3.74	4.99	4.57
	N	4,566	4,563	4,563	4,566
	Std. Deviation	1.22	1.46	1.16	1.33
2000	Mean	4.56	3.80	4.94	4.53
	N	6,784	6,790	6,785	6,785
	Std. Deviation	1.27	1.47	1.23	1.35
2001	Mean	4.60	3.94	4.97	4.52
	N	5,492	5,491	5,496	5,492
	Std. Deviation	1.24	1.44	1.17	1.34
Total	Mean	4.53	3.64	4.95	4.55
	N	50,758	50,733	50,737	50,744
	Std. Deviation	1.32	1.51	1.25	1.40

Table 2

Spearman Rank Correlations between Net Household Income and Domain Specific Life Satisfaction

		Net Household Income	Satisfied with work	Satisfied with financial situation	Satisfied with housing	Satisfied with leisure time
Net Household Income	Correlation Coefficient	1.00	0.06**	0.19**	0.06**	-0.12**
	Sig. (2-tailed)	.	0.00	0.00	0.00	0.00
Satisfied with work	Correlation Coefficient	0.06**	1.00	0.50**	0.41**	0.38**
	Sig. (2-tailed)	0.00	.	0.00	0.00	0.00
Satisfied with financial	Correlation Coefficient	0.19**	0.50**	1.00	0.38**	0.32**
situation	Sig. (2-tailed)	0.00	0.00	.	0.00	0.00
Satisfied with housing	Correlation Coefficient	0.06**	0.41**	0.38**	1.00	0.45**
	Sig. (2-tailed)	0.00	0.00	0.00	.	0.00
Satisfied with leisure	Correlation Coefficient	-0.12**	0.38**	0.32**	0.45**	1.00
time	Sig. (2-tailed)	0.00	0.00	0.00	0.00	.

Correlation is significant at the 0.01 level (2-tailed).

In addition to the basic income specification, required in a model of this kind is the inclusion of a number of controls. There are a number of factors other than income that could potentially influence financial satisfaction in that they could influence the need for resources or the extent to which a person can produce a level of financial satisfaction for a given level of income. For example, factors such as disability, poor health, marital status and ageing as well as being associated with lower income levels may also be associated with a greater need for resources such as health-care (Ingelhart, 2002; Stack and Eshelman, 1998; Mookherjee, 1997). Personality variables and cognitive and non-cognitive skills may also influence the extent to which people can utilise a given level of income while at the same time influencing individuals' utility functions with respect to material goods. While the data available do not allow us to specify such variables in detail we can control for at least part of this latent heterogeneity through the inclusion of education and religiosity variables. The remainder can be controlled for through the inclusion of random effects allowing for time invariant individual effects to be included. Additionally, a fixed time effect is incorporated into the model through the inclusion of a year dummy allowing us to control for exogenous factors that may influence the trend in financial satisfaction over time.[8] The control variables included in the model are discussed further in Section 4.3.

An additional consideration that is made is the fact that a change in an individual's reported level of financial satisfaction will be dependent on what their reported level of financial satisfaction was in the previous period. For example, an individual reporting the highest level of financial satisfaction in one period will be unable to report an increase in financial satisfaction between that period and the next even if this is in fact the case. Likewise, an individual reporting the lowest level of satisfaction in one period will be unable to report a decline in financial satisfaction in the next period. As such, the individual's starting point or initial conditions will impact on the dynamics of the model. To control for this, the lag of financial satisfaction is also included in the model.

A central question in modelling the determinants of a categorical measure of individual well-being such as financial satisfaction is whether or not to treat the reported levels of happiness as ordinal or cardinal. Ferrer-i-Carbonell and Frijters (2004) found that the choice of ordinality or cardinality in this context makes little difference to the empirical results. For this paper, both ordinality and cardinality assumptions are made yielding very similar results thus supporting these findings. Nevertheless, we follow the recent trend in the literature of using the ordinal nature of the financial satisfaction variable within a random effects ordered probit framework.

A further consideration when using panel survey data of the kind applied in this paper is the pattern of attrition (see Table 3). A difficult type of attrition to deal with in panel data models is where individuals leave the panel and then re-enter at a later stage. Controlling for this type of attrition is complicated and as such we assume that once a person leaves the sample they do not return by eliminating observations on such individuals in later time periods. Attrition is a problem if the decision to leave a sample is not random and as such may inflict a bias on the results of the model. To control for any influence attrition may have a dummy variable is included for all individuals who remain in the sample for the duration of the sample period.

[8] Ferrer-i-Carbonell (2005) use a similar justification for their approach.

Table 3
Panel Attrition Pattern

Freq.	Percent	Cum.	Pattern
2948	18.77	18.77	11111111
2419	15.40	34.18	11
1850	11.78	45.96	1.....
1286	8.19	54.15	.....1.
1233	7.85	62.00	11.....
929	5.92	67.92	111111..
812	5.17	73.09	111.....
741	4.72	77.81	11111...
640	4.08	81.88	1111....
2845	18.12	100.00	(other patterns)
15703	100.00		XXXXXXXX

The full statistical model of the underlying latent model is presented in equation (1).

$$f_{it}^{*} = \alpha + \gamma f_{it-1} + \beta_1 \ln y_{it} + \beta_2 (\ln y_{it} - \ln y_{it-1}) + \beta_3 \ln y_{rit} + \beta_4 \ln y_{ht} + \beta_5 (\ln y_{ht} - \ln y_{ht-1}) + \sum_{k}^{K} \delta_k x_{kit} + u_i + e_{it} \quad (1)$$

Here, f_{it} is the reported level of personal financial satisfaction of individual i in time period t; y_{it} is individual i's income level in time period t; y_{rit} is individual i's reference group income in time period t; y_{ht} is household income in time period t; x_{kit} are the various controls discussed above; u_i is the random effects term assumed to be uncorrelated with the observable explanatory variables; and e_{it} is included to capture statistical noise.

The β parameters are of key interest in this paper. It is expected that β_1 and β_4 will be positive indicating that higher levels of individual and household income will be associated with higher levels of financial satisfaction. Similarly, it is expected that β_2 will also be positive indicating that positive changes in year on year income have a positive effect on financial satisfaction. On the other hand it is expected that β_3 will be negative since higher reference group income will be associated with lower levels of financial satisfaction. The sign of β_5 is not *a priori* determinable. If positive, it will indicate that individuals' financial satisfaction is positively influenced by increases in household income as per their individual income. If negative it will suggest that controlling for individual income and individual income changes, increases in household income negatively effect individuals' financial satisfaction thus providing evidence of an intra-household reference group income that individuals use to appraise their own personal financial situation.

In addition to the application of this model to the panel, the financial satisfaction of individuals in 2001 is related to changes in income and reference group income that occurred over the course of the entire Celtic Tiger period (1994-2001), thus allowing us to draw conclusions as to the extent to which the time path of income (both household, individual and reference group income) persists in individuals' appraisal of their personal financial satisfaction. In addition the extent to which the relationship between income and financial satisfaction changed over the course of this period of rising wealth and prosperity is also explored.

3 Results

3.1 Specification Issues

The results of various specifications of the model given in equation (1) are presented in Table 4. The first factor considered is the extent to which an individual's starting point or initial conditions will impact on their subjective appraisal of their financial situation. The results show that the reported level of financial satisfaction in the previous year has a significant and positive effect on the reported level of financial satisfaction in the current period. This means that a high level of financial satisfaction in one period makes it more likely for the individual to report a higher level the following period. Since this result is independent of changes in income and other demographic factors one could conclude therefore that there is persistence in individuals' subjective appraisal of their level of satisfaction with their financial situation. The control variable for attrition is found to be significant and positive at the 10 per cent level and as such is retained in the model to control for potential impact of the unbalanced nature of the panel on the dependent variable. Many of the control variables are found to be significant some of which are discussed later.

Table 4
Random Effects Ordered Probit Models of the Determinants of Financial Satisfaction in Ireland 1994-2001

	(1)	(2)	(3)
Lag Log of Financial Satisfaction	0.2916*** (0.0063)	0.2929*** (0.0064)	0.2927*** (0.0064)
Level of Individual Income	0.0061 (0.0067)	-0.0061 (0.0071)	-0.0010 (0.0074)
Change in Individual Income		0.0319*** (0.0061)	0.0287*** (0.0062)
Individual Reference Income			-0.0311** (0.0132)
Level of Household Income	0.3541*** (0.0158)	0.3830*** (0.0181)	0.3828*** (0.0181)
Change in Household Income		-0.0605*** (0.0168)	-0.0591*** (0.0168)
Time Dummies	Yes	Yes	Yes
Controls	Yes	Yes	Yes
Intercept 1	1.3900*** (0.1015)	1.5063*** (0.1102)	1.3950*** (0.1200)
Intercept 2	2.1233*** (0.1015)	2.2393*** (0.1103)	2.1280*** (0.1201)
Intercept 3	2.9491*** (0.1019)	3.0647*** (0.1108)	2.9535*** (0.1205)
Intercept 4	3.9136*** (0.1026)	4.0290*** (0.1116)	3.9179*** (0.1212)
Intercept 5	4.8631*** (0.1036)	4.9786*** (0.1126)	4.8676*** (0.1221)
Log Likelihood	-51,155	-51,138	-51,135
n	34,354	34,354	34,354

Standard errors are given in parenthesis
**** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level*

3.2 Income and financial satisfaction

The first key question of interest is: how and to what extent do absolute income levels affect the level of financial satisfaction of Irish households in the 1994-2001 period? As the first column indicates, individual income is not a significant factor in determining personal financial satisfaction. Household income, on the other hand, has a statistically significant and positive effect of a high magnitude. As expected, richer people are more satisfied with their financial situation but the income effect is dominated by household level income. This may be due to the large number of individuals in the sample who report very low levels of individual income (for example, individuals engaged in home duties) whose financial satisfaction is dependent on the incomes of the rest of the household members and a pooling of household resources.[9] Few studies have considered the separate effects of individual and household income on subjective well-being measures. Most include household income only, also finding a strong positive effect (Ferrer-i-Carbonell, 2005; Senik, 2004; Van Praag *et al*., 2003). McBride (2001) only includes individual income finding a significant and positive effect but of a small magnitude.

The second question we ask in this paper is to what extent does the time path of individual income impact on financial satisfaction. The second column of Table 4 reveals that controlling for the level of individual and household income, year on year changes in individual income has a positive and significant effect on financial satisfaction. This result is as expected and supports much of the evidence in the literature suggesting that the level of individual income is not what is important to individuals in their own subjective appraisal of their financial situation rather it is whether the income sequence is improving (for example Burchardt (2004)).

The third question addresses the extent to which changes in reference group income impact on individuals' personal financial satisfaction. First we consider the possibility of an intra-household reference group effect. As hypothesised, the coefficient on the household income change variable is negative suggesting that increases in household income, that are not due to the individual in question, have a negative effect on personal financial satisfaction thus providing evidence of an intra-household reference income group that individuals compare their own income against. Also of interest is the fact that the magnitude of this effect is greater than that on individual income change suggesting that, controlling for the level of household income, the dissatisfaction associated with another member of the household experiencing an increase in income is greater than the satisfaction associated with an increase in one's own income level. This result supports that of Van Praag *et al*. (2003) who find that controlling for the level of household income, the existence of a second earner in the household has a significant and negative effect on individuals' levels of financial satisfaction. Our finding goes one step further in allowing us to conclude that this effect persists where changes in individual income are also controlled for.

The final question addresses the extent to which individuals exogenous reference group income, measured on the basis of age, education, sex and marital status, affect individuals reported levels of financial satisfaction. The results are

[9] This result is supported by the fact that larger the household, in terms of both the number of adults and children report a lower the level of individual financial satisfaction thus highlighting the importance of household factors in determining individuals' self-assessed levels of financial satisfaction. This result suggests that in larger households, where resources must be shared among more adults and children, personal financial satisfaction is lower.

illustrated in the third column of Table 4. As hypothesised the effect is negative and significant indicating that higher reference group incomes impact negatively on personal financial satisfaction. Ferrer-i-Carbonell (2005) and McBride (2001) find a negative effect of reference group income on general life satisfaction.[10]

3.3 Socio-economic factors and financial satisfaction

While this paper is primarily concerned with the impact of income in its various forms on individuals' level of satisfaction with their financial situation, a number of additional factors that influence financial satisfaction in different ways are also controlled for. As such, it is also of interest to consider to what extent do changes in socio-economic factors have an independent effect on financial satisfaction levels. Table 5 presents the results for these variables as they appear in the final specification of the income model presented in Table 4.

Table 5
Random Effects Ordered Probit Models of the Determinants of Financial Satisfaction in Ireland 1994-2001: Socio-economic and demographic effects

Log Number of Adults	-0.3352*** (0.0243)	Self-Employed	0.0327 (0.0364)
Log Number of Children (+1)	-0.1689*** (0.0160)	Farmer	-0.1844*** (0.0384)
Age	0.0143*** (0.0008)	Relative Assist	0.0155 (0.1204)
Female	-0.1145*** (0.0280)	Farm Relative Assist	-0.3909*** (0.0949)
Married	-0.1944*** (0.0681)	Training	0.0224 (0.1147)
Female*Married	0.1512*** (0.0424)	Seek First Job	-0.6308*** (0.0938)
Junior Certificate Education	0.1318*** (0.0245)	Unemployed	-0.9046*** (0.0424)
Leaving Certificate Education	0.1545*** (0.0257)	Unemployed Ill	-0.3940*** (0.1249)
Higher Level Education	0.2338*** (0.0324)	Ill/Disabled	-0.3280*** (0.0600)
Poor Health	-0.1687*** (0.0095)	Retired	0.0164 (0.0353)
Religiosity	0.0362*** (0.0050)	Home Duties	-0.1127*** (0.0288)
Apprentice	-0.1437 (0.0985)	In Education	-0.3921*** (0.0489)
Temporary Scheme	-0.2802*** (0.0559)		

Standard errors are given in parenthesis
**** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level*

[10] Reference group income was also measured as the predicted values from a model of individual income levels estimated annually yielding similar result. This technique was deployed by Clark and Oswald (1996) and Hamermesh (1977) in the job satisfaction literature and Senik (2004) in the life satisfaction literature. The approach taken here follows that of Ferrer-i-Carbonell (2005) and McBride (2001).

As expected, the larger the household, in terms of both the number of adults and children, the lower the level of individual financial satisfaction. Once again we see the importance of household factors in determining individuals' self-assessed levels of financial satisfaction, with this result suggesting that in larger households, where resources must be shared among more adults and children, personal financial satisfaction is lower. Van Praag *et al*. (2003) also found this result. This result adds further evidence to the notion that in evaluating well-being in the financial domain, individuals consider resources in a pooled context.

The results for the age variables suggest that as individuals age their reported level of financial satisfaction increases. Van Praag *et al*.'s (2003) found that male respondents are less content than female respondants and that the presence of a partner in the household has a positive effect on financial satisfaction. Contrary to these findings, in this study females and married individuals are found to have lower levels of financial satisfaction than males and the unmarried. However, an interaction variable between gender and marriage reveals that married females are significantly more satisfied with their financial situation. Education attainment also impacts positively on financial satisfaction with the effect increasing in magnitude with the level of education attained.

The results for labour force status are as expected with all significant categories experiencing a lower level of financial satisfaction compared with the base category, 'full-time employees'. As expected individuals seeking their first job, those engaged in household duties and those still in education have lower levels of financial satisfaction than the base category. Of particular note is the magnitude of the coefficient on the 'unemployed' categories suggesting that unemployed individuals have a markedly lower level of satisfaction with their financial situation even when individual and household income are controlled for. Similarly, the ill and disabled experience lower levels of financial satisfaction than employees. This finding is also evident in the fact that poor health has a significant negative effect on financial satisfaction. On the other hand, higher levels of religiosity positively impacts on happiness with one's financial situation once all other factors are controlled for.

3.4 Changes in the determinants of financial satisfaction

The first column of Table 6 details the results of the model capturing income changes between 1994 and 2001 as a whole. The only income factor significantly impacting on financial satisfaction levels in 2001 is the level of household income in 2001. Individual and reference income in 2001 are insignificant as are changes in these income levels over the 1994 to 2001 period. This result suggests that while the time path of income and reference group income is important on an annual basis, over the longer term, individuals evaluate their personal financial satisfaction on the basis of their current circumstances only, with a longer term perspective on relative income changes being insignificant.

This result could be suggestive of a change in attitudes towards income in Ireland over the course of the Celtic Tiger period, or more specifically a change in the way people evaluate their financial situation relative to others. If this is the case then the relationship between income and financial satisfaction may be different at the start of the period compared with the end. To check for this an ordered probit model of the original model (incorporating year-on-year changes in the income variables) was estimated for 1995 and 2001 separately. The results are presented in columns 2 and 3 of Table 5 respectively. The results for 1995 reveal a similar relationship between

income and financial satisfaction as found for the full panel with the exception that the change in individual income levels between 1994 and 1995 had no impact on the level of financial satisfaction in 1995. Reference group effects, both intra-household and relative to a peer group, are negative and significant. For 2001, however, a different relationship emerges. Household income and the change in individual income between 2000 and 2001 have a positive and significant effect but reference group effects are no longer a significant determinant of the level of financial satisfaction. This result, combined with the findings of the model examining financial satisfaction in 2001 relative to income changes between 1994 and 2001, provides evidence to suggest that rising income levels, as experienced in Ireland over this period, dampens the expected reference group effects found in previous well-being studies.

Table 6
Ordered Probit Models of the Determinants of Financial Satisfaction in Ireland

	2001 relative to 1994	1995 relative to 1994	2001 relative to 2000
Lag Log of Financial Satisfaction	0.1749***	0.3262***	0.4396***
	(0.0151)	(0.0095)	(0.0124)
Level of Individual Income	-0.0288	0.0007	-0.0070
	(0.0246)	(0.0137)	(0.0153)
Change in Individual Income	0.0153	0.0179	0.0462***
	(0.0180)	(0.0239)	(0.0142)
Individual Reference Income	0.0623	-0.0737***	0.0183
	(0.0524)	(0.0231)	(0.0273)
Change in Individual Reference Income	0.0007		
	(0.0362)		
Level of Household Income	0.3957***	0.3734***	0.2176***
	(0.0544)	(0.0319)	(0.0364)
Change in Household Income	0.0118	-0.1138***	0.0060
	(00453)	(0.0360)	(0.0392)
Controls	Yes	Yes	Yes
Intercept 1	1.3840***	1.5382***	1.2593***
	(0.4135)	(0.2024)	(0.2535)
Intercept 2	1.9512***	2.1852***	1.8962***
	(0.4137)	(0.2027)	(0.2535)
Intercept 3	2.6227***	2.9146***	2.6383***
	(0.4148)	(0.2035)	(0.2542)
Intercept 4	3.4893***	3.7346***	3.5381***
	(0.4165)	(0.2048)	(0.2557)
Intercept 5	4.2960***	4.5591***	4.4603***
	(0.4178)	(0.2065)	(0.2575)
Log Likelihood	-3,698	-10,022	-7,012
n	2,460	6,573	4,796

Standard errors are given in parenthesis
**** indicates significance at the 1% level, ** indicates significance at the 5% level, * indicates significance at the 10% level*

4 Conclusion

The Irish economy grew rapidly over the period 1994-2001. Perhaps unsurprisingly, this raised financial satisfaction among the population though not satisfaction in many other domains of life such as leisure and housing. In general, income is not the main factor driving financial satisfaction and state variables such as health, disability and unemployment have dramatic independent effects on financial satisfaction throughout

the period studied. To the extent that income influences financial satisfaction, there is strong evidence from this paper that household income has a greater effect on financial satisfaction than individual income. There is also evidence that changes in income have an independent effect on financial satisfaction in the direction one would expect, with the time derivative of income entering positively in the financial satisfaction equation. Thus, our paper gives further evidence to the effect that individuals process changes as well as absolute levels of income. Interestingly, we find that reference-group income, while having a negative effect at the start of the period has no effect at the end. This demands further study. It is consistent with the view that the initial movements in income may have generated disutility for individuals who perceived competition from their reference-groups but that such effects diminish as the economic prosperity continues with individuals focusing more on the extent to which they themselves have progressed.

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