

McCarthy, Yvonne

**Working Paper**

## Behavioural characteristics and financial distress

ECB Working Paper, No. 1303

**Provided in Cooperation with:**

European Central Bank (ECB)

*Suggested Citation:* McCarthy, Yvonne (2011) : Behavioural characteristics and financial distress, ECB Working Paper, No. 1303, European Central Bank (ECB), Frankfurt a. M.

This Version is available at:

<https://hdl.handle.net/10419/153737>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



EUROPEAN CENTRAL BANK

EUROSYSTEM

---

CONFERENCE ON HOUSEHOLD  
FINANCE AND CONSUMPTION

---

**WORKING PAPER SERIES**

**NO 1303 / FEBRUARY 2011**

**BEHAVIOURAL  
CHARACTERISTICS  
AND FINANCIAL  
DISTRESS**

by Yvonne McCarthy



EUROPEAN CENTRAL BANK

EUROSYSTEM



## WORKING PAPER SERIES

NO 1303 / FEBRUARY 2011

**CONFERENCE ON HOUSEHOLD  
FINANCE AND CONSUMPTION**

# BEHAVIOURAL CHARACTERISTICS AND FINANCIAL DISTRESS <sup>1</sup>

by Yvonne McCarthy <sup>2</sup>



In 2011 all ECB  
publications  
feature a motif  
taken from  
the €100 banknote.



NOTE: This Working Paper should not be reported as representing the views of the European Central Bank (ECB). The views expressed are those of the author and do not necessarily reflect those of the ECB.

This paper can be downloaded without charge from <http://www.ecb.europa.eu> or from the Social Science Research Network electronic library at [http://ssrn.com/abstract\\_id=1761570](http://ssrn.com/abstract_id=1761570).

<sup>1</sup> The views expressed in this paper are those of the author and do not necessarily reflect those of the Central Bank of Ireland. The author would like to thank Karl Whelan, Liam Delaney, Ron Davies and Denis Conniffe of University College Dublin, as well as participants at a Central Bank of Ireland seminar and an anonymous referee, for helpful comments.

The author is responsible for any remaining errors.

<sup>2</sup> Central Bank of Ireland; e-mail: [yvonne.mccarthy@centralbank.ie](mailto:yvonne.mccarthy@centralbank.ie)



## CONFERENCE ON “HOUSEHOLD FINANCE AND CONSUMPTION”

This paper was presented at the conference on “Household Finance and Consumption”, which was co-organised by the Banque centrale du Luxembourg and the ECB, and was held on 25-26 October 2010 in Luxembourg. The organising committee consisted of Michael Ehrmann (ECB), Michalis Haliassos (CFS and Goethe University), Thomas Mathä (Banque centrale du Luxembourg), Peter Tufano (Harvard Business School), and Caroline Willeke (ECB). The conference programme, including papers, can be found at [http://www.ecb.europa.eu/events/conferences/html/joint\\_ecb\\_lux.en.html](http://www.ecb.europa.eu/events/conferences/html/joint_ecb_lux.en.html). The views expressed in this paper are those of the authors and do not necessarily reflect those of the Banque centrale du Luxembourg, the ECB or the Eurosystem.

© European Central Bank, 2011

**Address**

Kaiserstrasse 29  
60311 Frankfurt am Main, Germany

**Postal address**

Postfach 16 03 19  
60066 Frankfurt am Main, Germany

**Telephone**

+49 69 1344 0

**Internet**

<http://www.ecb.europa.eu>

**Fax**

+49 69 1344 6000

*All rights reserved.*

*Any reproduction, publication and reprint in the form of a different publication, whether printed or produced electronically, in whole or in part, is permitted only with the explicit written authorisation of the ECB or the author.*

*Information on all of the papers published in the ECB Working Paper Series can be found on the ECB's website, <http://www.ecb.europa.eu/pub/scientific/wps/date/html/index.en.html>*

ISSN 1725-2806 (online)

## CONTENTS

Abstract	4
Non-technical summary	5
1 Introduction	6
2 Literature review	7
3 Data and descriptive statistics	9
3.1 The financial capability surveys	9
3.2 Descriptive statistics	17
4 Empirical approach and results	20
4.1 Struggling to keep up	20
4.2 Do the effects differ by degree of struggle?	26
4.3 More extreme financial distress	29
5 Reverse causality?	32
6 Conclusions	33
References	34

## Abstract

Using a new nationally representative survey of financial capability and experience in the UK and Ireland, I investigate the key factors that cause individuals to experience financial distress. In this context, a key area that I focus on is whether individuals' *behavioural* traits, such as their capacities for self-control, planning, and patience, affect their ability to stay out of financial trouble. I find that the variables that proxy for these behavioural characteristics are both statistically significant and economically important for predicting both mild and extreme forms of financial distress, in a regression controlling for demographic and socio-economic factors. Furthermore, behavioural traits emerge as having a stronger impact on the incidence of financial distress than education or financial literacy. The results raise questions about whether policy can be oriented towards improving financial habits and mitigating the impact of behavioural characteristics on personal finances.

JEL classification: C25, D14.

Keywords: Personal Finance, Financial Strain, Debt, Behaviour, Financial Literacy.

## Non Technical Summary

Financial distress at an individual and household level can have serious consequences which go far beyond those experienced by the individual or household involved. The current financial crisis, which stemmed in large part from poor financial decisions and heightened financial distress among households around the world, and its enormous fiscal cost, is a clear reminder of this fact. In this context, understanding why people get into financial difficulties is key to devising policies to prevent future episodes of heightened financial distress. Using data from a new survey of financial capability and experience in the UK and Ireland, this study addresses this issue.

In examining the issue of what the key drivers of financial distress are, this study goes beyond the results already available in the existing literature, by incorporating information on behavioural characteristics in addition to financial literacy, socio-economic and demographic factors. Specifically, a key area that this study focuses on is whether an individual's capacity for self-control, planning and patience affects their ability to manage their finances and stay out of financial trouble. The results show that behavioural factors are important determinants of financial difficulties; people who are impulsive are more likely to get into financial difficulties than people who are not impulsive, and this result applies even if a person is well educated and financially literate. Similarly impatient or disorganised people are also more likely to experience financial distress.

The results show that policy efforts to prevent financial difficulties must go beyond solely trying to improve financial literacy and education levels, which also matter. Instead, these efforts should be combined with tools to improve individuals' organisation skills and devices to, as much as is possible, minimise the impact of behavioural and psychological traits on financial outcomes.

# 1 Introduction

The financial crisis stemmed, in large part, from poor financial decisions and heightened financial distress among households around the world. The years prior to the crisis saw many people making bad financial choices from taking on levels of debt that they were not able to manage, to spending beyond their means. The US sub-prime mortgage market, in which people with poor credit history and income prospects took on debt which they could not afford, is the best known example of this phenomenon but, closer to home, there are numerous examples of European households facing financial woes because of poor financial behaviour. In many cases these financial difficulties lead to serious problems for the people involved. However, the enormous fiscal costs associated with a financial crisis are a reminder that heightened financial distress and poor financial behaviour on the part of a relatively small number of people can have serious negative externality effects on the rest of the economy. In this context, understanding why people get into financial difficulties is key to devising policies to minimise future episodes of financial distress. It is with this in mind that the current study is undertaken.

Specifically, my goal in this paper is to identify the main factors that cause people to experience financial distress. A key area that I focus on is whether people's *behavioural* traits, such as their capacities for self-control, planning, and patience, affect their ability to manage their finances and stay out of financial trouble. I find that the variables that proxy for behavioural traits are both statistically significant and economically important for predicting both mild and extreme forms of financial distress, in a regression controlling for demographic and socio-economic factors. Furthermore, behavioural traits emerge as having a stronger impact on the incidence of financial distress than education or financial literacy. For example, while having either a college education or being financially literate reduces the likelihood of getting into financial trouble, being impulsive can undo all of this benefit. These results suggest that policies to prevent people from getting into financial difficulties must take behaviour into account.

I use data from Financial Capability Surveys carried out in the UK and Ireland in recent years to undertake my analysis. These surveys were specially designed to shed light on financial decision making and outcomes and they have not yet been utilised in the existing international literature. They provide large nationally representative samples, collected detailed data on demographics, income and wealth and also asked questions about people's daily financial lives, from how they manage their money to how they choose financial prod-



ucts and how much financial planning they engage in. The surveys also asked respondents various questions that can be used to assess behavioural and psychological traits and the UK survey contained questions that assessed basic financial literacy. While some previous work on financial distress has employed samples that have some of these features, the Financial Capability Surveys are unique in having all of them.

Relative to the existing literature, therefore, this paper is the first to use a large representative sample to examine the effects of behavioural characteristics on financial distress rather than on asset accumulation, which is the focus of a number of other papers (Ameriks et al (2003) or Lusardi and Mitchell (2007), for example).<sup>1</sup> To the author's knowledge, the paper is also the first to focus on both mild and extreme forms of financial distress. A number of previous papers have studied extreme forms of financial distress such as mortgage arrears, default and repossessions. This sort of analysis is no doubt important, but it only presents part of the picture as to why people get into financial trouble. It neglects the fact that people may experience 'milder' forms of financial distress long before they default on large debt obligations such as mortgages, and of course, people who do not have large debt obligations might still get into financial difficulties.

The rest of this paper is structured as follows: In the next section I examine the existing literature on the causes of financial distress. In Section 3 I introduce the data used in the current study and present a socio-demographic and behavioural overview of the sample according to individuals' degree of financial distress. Section 4 covers the econometric techniques used and presents the model results. In Section 5 I examine the issue of endogeneity and reverse causality. Finally, Section 6 summarises and concludes.

## 2 Literature Review

In examining the literature on behaviour and financial distress, a number of points emerge. Firstly, while certain recent studies examine the effect of behavioural traits such as planning on financial outcomes, these studies have tended to be based on data for the United States and focussed on the impact of planning on net worth, rather than financial distress. Ameriks et al (2003), for example, examine the role of planning in explaining why different households end up with different levels of wealth. Using survey data for individuals

---

<sup>1</sup>While a relatively small literature does examine the effect of behaviour on financial distress, the sample sizes used in these studies tend to be small and are not nationally representative - see Livingstone and Lunt (1992) for example.

in the U.S., they examine the proposition that attitudes and skills influence a household's propensity to plan, while differences in propensities to plan influence wealth accumulation. They find evidence that individuals with a high propensity to plan spend more time developing financial plans and save and accumulate more wealth than those with a lower such propensity. The authors argue that their findings are consistent with broad psychological evidence concerning the beneficial impacts of planning on goal pursuit.

On a similar theme, Lusardi and Mitchell (2007) examine the effect of planning and financial literacy on wealth holdings of individuals in the U.S. who are nearing retirement. They compare the wealth holdings of two cohorts of the same age (51-56 years) at different points in time (1992 and 2004) and find that in both cohorts, planners tend to have higher levels of financial literacy and end up with higher wealth levels at retirement than non-planners. The authors find that the relationship between planning and wealth remains strong in a regression controlling for several socio-demographic factors. They also explore the possibility that reverse causality may be a problem in their regression of wealth on planning, but conclude that this is not the case.

Secondly, while a number of papers specifically examine the role of behavioural factors in financial distress, these papers tend to be based on very small sample sizes that pre-date the economic boom and rapid debt expansion period of the late 1990s and early 2000s. Among these, Walker (1996) uses a sample of only one hundred respondents to study the key factors affecting individuals' perceptions of their financial situation following a significant life event with financial implications - the birth of a new baby. She interviews new mothers in the UK and constructs a measure of 'financial coping' using responses to a question about whether or not respondents believed they had enough money to cope with life (before and after the birth of the new baby). She finds that time-preferences, financial management and attitudes towards debt tend to be important predictors of a household's financial distress level, after controlling for demographics and income.

Another paper in this field comes from Livingstone and Lunt (1992), who examine the social, economic and psychological factors related to debt in the UK, using a sample of just 279 respondents. These authors explore the factors distinguishing debtors from non-debtors, the amount of debt individuals take on and the amount of debt that gets repaid. The authors use data collected from a custom designed survey of the debt experiences of individuals based in and around Oxford, England during September 1989, to undertake their analysis. They find that socio-demographic factors play only a minor role in personal debt

and debt repayment, while attitudinal factors (such as whether an individual is pro-credit or anti-debt, or whether they see credit as useful but problematic or not) are important and significant predictors.

Finally, while there is a growing literature which examines the causes of extreme forms of financial distress such as mortgage default and repossessions, this literature does not take account of behavioural or psychological factors. For example, Böheim and Taylor (2000) use the British Household Panel Survey to examine evictions, repossessions and household finance problems in the UK over the period 1991-1997. They find that previous experience of financial distress is significantly and positively associated with the current financial position of the household and the probability of eviction and that employment and higher income and asset values decrease the probability of experiencing financial difficulties.

Burrows (1997) also examines the determinants of mortgage arrears in the UK, using a sample of 8,000 households from the 1994/95 Survey of English Housing. He finds that households are more likely to be in arrears if they are out of employment (or employed part-time), if they work in the private sector (relative to the public sector) or if they bought their property between 1987 and 1989. He also finds evidence to suggest that households in which members have previously faced mortgage repayment difficulties are more likely to be in arrears than other households.

In summary, while several papers examine different aspects of financial distress and the impact of behaviour and financial literacy on financial outcomes, no one paper takes the effect of economic and demographic factors, financial literacy *and* behaviour into account in looking specifically at financial distress - be it mild or extreme. Relative to the existing literature, therefore, this paper, which uses a large nationally representative dataset and takes all of these factors into account, offers new insights on the key causes of financial distress.

### 3 Data and Descriptive Statistics

#### 3.1 The Financial Capability Surveys

The nature of financial decision-making has changed a lot in recent years, as individuals are faced with a wider range of products, many of which are more complex than products available in the past. In addition, people are increasingly being asked to take more responsibility for their financial well-being, in particular with regards to providing for their future

pension needs. Against this background, the UK's Financial Services Authority (FSA) has, since 2003, lead a National Strategy for Financial Capability with the "aim to improve the nation's knowledge and understanding of personal finance."

To facilitate its goals, the FSA commissioned a Financial Capability Survey. The primary purpose of this survey was to measure the level of financial capability prevailing in the UK at the time that the survey was conducted. For the same reason, the Irish Financial Regulator later undertook a Financial Capability Survey, using the UK survey as its blueprint. The Irish survey therefore included the majority of the same questions as the UK survey, with some minor exceptions. Both Financial Capability Surveys covered a broad array of topics on financial knowledge and experience, but crucially, for the purposes of this study, asked respondents about their ability to make ends meet and keep track of their finances. When combined with demographic, socio-economic and behavioural information that is also available from the surveys, this allows an examination of the incidence of financial distress among respondents and the key factors relating to this distress.

The UK Financial Capability Survey was undertaken in the summer of 2005 while the Irish survey was undertaken in late 2007 / early 2008. Full details of the sampling methodologies used are available in FSA (2006) for the UK survey and Keeney and O'Donnell (2009) for the Irish survey, but here I set out some of the main features. Both surveys were conducted to be nationally representative, with the UK survey achieving a sample size of approximately 5,300 respondents and the Irish survey achieving 1,529 respondents.<sup>2</sup> The surveys were conducted using a random location sampling approach and quota sampling, where quotas were selected on the basis of age and working status within gender profiles taken from the 2001 British Census (in the case of the UK) and from the 2006 Irish Census (in the case of Ireland). On the basis of the census population totals, simple frequency weights were subsequently designed.

Both the UK and Irish versions of the survey group their questions into four sections. The first section, "Managing Money", asks people about their ability to make ends meet and keep track of their finances. The second group of questions falls under the "Planning Ahead" heading, where people are asked about the extent to which they have prepared for substantial future commitments. They are also asked about their provisions for unexpected financial events. In the "Choosing Products" section, respondents are asked about their

---

<sup>2</sup>The primary sampling unit was a geographical unit, which was, for example, an electoral division (ED), or combination of EDs, with at least 200 households in the Irish case.

knowledge of financial products, and the key factors influencing their choice and purchase of particular products. Finally, the “Staying Informed” section considers whether and how often respondents monitor financial topics. This section also asks people about how they have dealt with complaints to shops, suppliers and financial firms.

### 3.1.1 Questions on Financial Distress

The Financial Capability Survey asked respondents several questions about their financial situation, and I use this information to derive measures of financial distress in the sample. I begin by defining financial distress as a situation where individuals report that they are having some degree of difficulty keeping up with their bills and credit commitments. Later, I assess more extreme forms of financial distress such as how often people run out of money and whether or not they have fallen into arrears on loans and credit commitments for a period of three months or more. At this stage, the question from the Financial Capability Survey that I use to identify people in financial distress is as follows:

*Which of these statements best describes how well you and your partner are keeping up with your bills and credit commitments at the moment?*

1. Keeping up with all bills and credit commitments without any difficulties.
2. Keeping up with all bills and credit commitments, but it is a struggle from time-to-time.
3. Keeping up with all bills and credit commitments, but it is a constant struggle.
4. Falling behind with some bills and credit commitments.
5. Having real financial problems and have fallen behind with many bills and credit commitments.
6. Don't have any bills or credit commitments.
7. Don't know / Refused.

Table 1 shows the distribution of the responses to this question among the sample. In both Ireland and the UK, just over 60 per cent of the sample report that they are having no difficulties keeping up with all their bills and credit commitments. Just over a quarter of the sample in both countries report that they are keeping up with all their bills and credit commitments but that they struggle to do so from time-to-time. About 7 per cent of both samples report that they find keeping up with their bills and credit commitments



Table 1: Distribution of samples by Degree of Struggle (%)

	UK	Ireland	Total
No difficulties	63.2	60.1	62.5
Struggle Time to Time	26.4	27.4	26.6
Constant Struggle	7.1	7.6	7.2
Falling Behind Some	2.2	1.6	2.1
Falling Behind Many	1.1	0.5	0.9
Don't have any	-	2.2	0.5
Don't Know/Refused	-	0.6	0.2
N	5,328	1,529	6,857

a constant struggle, while 1.6 per cent in the Irish sample and 2.2 per cent of the British sample report that they are falling behind with some of their bills and credit commitments. Only 1 per cent of the British sample report that they have fallen behind with many of their bills and credit commitments, while the corresponding figure for Ireland is less than 1 per cent.

### 3.1.2 Questions on Behavioural Characteristics

The Financial Capability Survey differs from a number of other household surveys that collect financial information in asking questions about behavioural characteristics, such as respondents' level of self control, time preference and whether or not they are well organised with their money.

#### Self-Control and Time Preference

Time preference in financial decision-making is generally thought to capture an individual's choice of whether to spend their money now, or delay gratification for later, for example by saving, (Walker, 1996). Similarly, self-control is thought to be an important influence on a person's financial decisions. Several studies have found that a preference for the future and self-control have a positive impact on saving and financial 'coping' (Groenland and Nyhus, 1994; Lea et al., 1995). In the Financial Capability Survey, respondents were asked their degree of agreement or disagreement with the following statements:



“I tend to live for today and let tomorrow take care of itself.”

“I am impulsive and tend to buy things even when I can’t really afford them.”

Potential responses are “Agree Strongly”, “Tend to Agree”, “Tend to Disagree” and “Disagree Strongly”. I use the responses to the first statement to proxy an individual’s time preference, and responses to the second statement to proxy an individual’s degree of self-control. In particular, I create dummy variables “Live Today” and “Impulsive” which are equal to one if an individual responds that they either agree strongly or tend to agree with the statements, and zero otherwise. As shown in Table 2, over 40 per cent of the sample has a time preference of today relative to tomorrow, while close to a quarter of the sample agrees that they are impulsive, i.e. that they lack self-control.

### **Financial Management and Organisation**

Several papers show that different styles and degrees of financial management and planning have an important effect on the debt status or degree of financial coping of a household (Lea et al. (1995), Gunnarsson and Wahlund (1993), Livingstone and Lunt (1992) for example). Specifically those households that plan or manage their money better tend to have less debt and cope financially better than those households that do not plan or manage their money as well. In this study, I proxy for respondents’ financial management or organisation behaviours using responses to several questions/statements available in the Financial Capability Survey. Firstly, respondents are asked about their degree of agreement or disagreement with the following statement:

“I am very organised when it comes to managing my money day-to-day.”

Furthermore, respondents are asked how accurately they know how much money they have/owe in their various savings, current, and loan accounts. Answers range from “I know within a pound/euro or two” to “I have no idea at all”. Respondents are also asked if they ever check statements for their various accounts and investments. Based on this information, I create a dummy variable “Organised” which is equal to one for organised individuals and zero for disorganised individuals. Specifically, I classify those individuals who disagree with the statement on money organisation or who agree with it but claim to have no idea at all as to how much money they have available to them or that they never monitor their investments or check statements for any of their accounts, as disorganised with their money. Organised individuals agree with the statement and do not display evidence

to the contrary. As shown in Table 2, roughly 60 per cent of the sample are classified as being organised with their money.

Table 2: Distribution of samples by Behavioural and Time Preference Traits (%)

	UK	Ireland	Total
Live for Today	40.7	44.0	41.5
Impulsive	22.1	25.6	22.8
Organised	61.8	60.7	61.6

### 3.1.3 Questions on Financial Literacy

Financial literacy has been shown to affect many different financial outcomes such as savings, wealth, debt and retirement funds (see Stango and Zinman (2010), Lusardi and Tufano (2008), Lusardi and Mitchell (2007), for example). Unfortunately, information on financial literacy is not available in the Irish Financial Capability Survey. However, in the UK version (which accounts for almost 80 per cent of the total sample), respondents were presented with several questions that I use to assess basic financial literacy. In particular, respondents were shown a copy of a bank statement (see Table 3) and asked:

- (1) Looking at this example of a bank statement, please can you tell me how much money was in the account at the end of February?
- (2) And still looking at this statement, if a direct debit of £179 comes in on 28th February and there is an agreed overdraft limit of £100 on the account, would there be enough money in the account including the overdraft limit, to cover the direct debit?

Table 3: Quiz Material 1

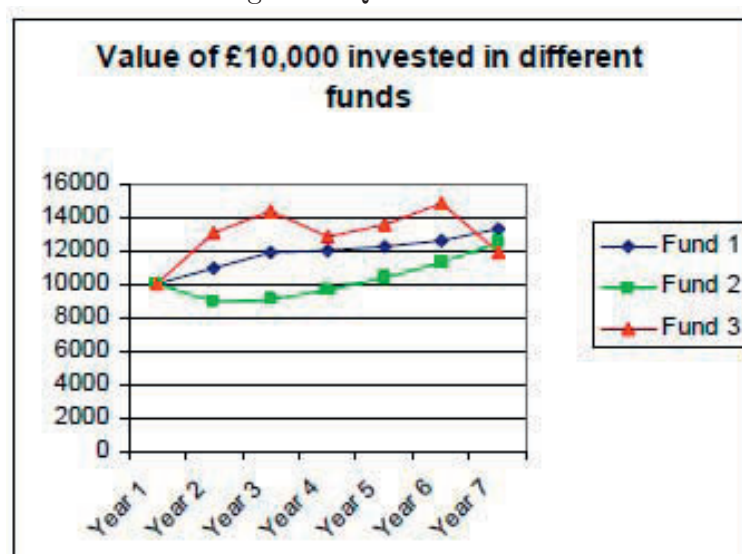
Ms. J Bloggs		Bristol Bank Green Street Forest Glade RR9 5AT			
Sheet 008	Account Number	02-82-03 47493555			
DATE		DETAILS	PAID OUT	PAID IN	BALANCE
01-Feb-05		Balance Brought Forward			25.00
01-Feb-05		Bacs Transfer Salary		1000	
01-Feb-05	DD	Electricity Board	30.00		995.00
02-Feb-05	DD	Car Insurance	50.00		
		XXX Bank Forest Glade High			
02-Feb-05	ATM	Street	150.00		795.00
04-Feb-05	CHQ	100009	35.00		760.00
06-Feb-05	DD	XXX Mobile Phone Company	30.00		730.00
10-Feb-05	DD	XXX Mortgage Bank	200.00		530.00
		XXX Bank Forest Glade High			
12-Feb-05	ATM	Street	120.00		410.00
15-Feb-05	SO	New Building Society	50.00		360.00
20-Feb-05	CHQ	100010	300.00		60.00
28-Feb-05	CR	Net Interest		1.00	61.00
28-Feb-05		Balance Carried Forward			61.00
Key to Abbreviations					
DD	Direct Debit				
ATM	ATM Cash Withdrawal				
CHQ	Cheque				
SO	Standing Order				
CR	Automated Credit				

Respondents were also presented with a line graph (Figure 1), which shows how four different investment funds performed over time. The following questions were posed in relation to this graph:

(3) This chart shows how a £10,000 investment would have performed in different types of investment funds over the last seven years. Assuming that fees and charges are the same for all funds, which fund gave the best return after seven years?

(4) And which would have been the best fund to have chosen if you had to withdraw your money after four years?

Figure 1: Quiz Material 2



Two additional questions were also asked, which assessed respondents knowledge of the real value of money and their ability to calculate percentages:

- (5) If the inflation rate is 5% and the interest rate you get on your savings is 3%, will your savings have at least as much buying power in a years time?
- (6) Suppose you saw the same television on sale at a discount in two different shops. The original purchase price of the television was £250. One shop is offering a discount of £30 off the original price, the other is offering a discount of 10% off the original price. Which is the better deal - £30 off or 10% off?

Table 4 summarizes how the UK respondents performed on these questions. At first glance, the sample appear to score well on the financial literacy questions, with over 90 per cent getting the first question about the closing balance on the bank account correct. However, just over 70 per cent of the sample was able to answer either question on the graph correctly. More worrying still is the fact that only 46 per cent of the UK sample is able to answer all the questions correctly. I create four dummy variables reflecting how well respondents performed on the financial literacy questions: “Literate: 3 and less” which is equal to one if a respondent answered three or less questions correctly, and zero for all other

respondents. Similarly “Literate: 4”, “Literate: 5” and “Literate: 6” respectively are equal to one if a respondent answered four, five or six questions correctly and zero otherwise.

Table 4: Financial Literacy Among UK Sample

Question	Correct (%)	Incorrect (%)	Don't Know/Refused (%)	N
(1) Closing Balance	91.0	4.8	4.2	5,328
(2) Direct Debit	84.7	10.7	4.5	5,328
(3) Chart 7Yr	73.4	20.8	5.8	5,328
(4) Chart 4Yr	72.0	21.7	6.3	5,328
(5) Real Value	77.2	9.0	13.8	5,328
(6) Percentage Calculation	89.8	7.2	3.0	5,328

### 3.2 Descriptive Statistics

From this point onwards, I combine the UK and Irish samples and undertake all analyses on the total sample of over 6,000 respondents, including, where necessary, a dummy variable indicating which survey respondents come from. I do this for two reasons. Firstly, combining the datasets from both countries results in a larger sample that allows for a more detailed examination of financial distress. Secondly, the descriptive statistics in both the British and Irish samples reveal little difference between the two countries in terms of who experiences financial distress.

As a robustness check I repeat all the empirical exercises contained in this paper separately for the UK and Ireland and find no quantitative differences in the results for both countries.<sup>3</sup> Furthermore, I believe I am justified in combining both datasets since the UK and Ireland share many features such as a common language, similar cultural and institutional backgrounds and the Anglo-Saxon banking culture, while there has also always been a high degree of labour mobility between Ireland and the UK. In addition, while both surveys were undertaken at different points in time, the macroeconomic conditions prevailing in both countries in the lead-up to the surveys were broadly similar. Specifically,

<sup>3</sup>One example of such an exercise is available in Table 7 where separate results are available based on the Irish dataset alone and on the British data alone. The remaining results are available on request from the author.

both countries enjoyed strong economic growth and low unemployment rates during the period.<sup>4</sup> Finally, O'Donnell (2009) compares the overall results for financial capability between Ireland and the UK and finds a high degree of correlation between the results in both countries for the managing money and keeping track of one's personal finances sections of the surveys.

Table 5 examines the demographic and economic characteristics of respondents according to their distress level in the total sample. The age distribution of persons reporting financial distress is shown in the first panel, and shows that younger people tend to report some degree of financial distress more often than older people. For example, 30.4 per cent of 18-24 year olds in the sample report that they struggle from time-to-time to keep up with bills and credit commitments, relative to 12.8 per cent of the 65+ year olds. I also find that a slightly higher proportion of females report financial distress relative to males (Panel 2). In Panel 3 I show that married people report financial distress less often than non-married people, while Panel 4 shows that less educated respondents tend to report financial distress more often than more educated individuals.

Financial distress responses also vary by income, as shown in Panel 5, where I divide respondents into quintiles based on their income level. The lowest income quintile captures the poorest 20 per cent of respondents in the sample, where for example, 10.2 per cent of this group report that it is a constant struggle to keep up with their bills and credit commitments. The highest income quintile captures the richest 20 per cent of the sample, where for example 3.1 per cent of this group report a constant struggle with bills and credit commitments. The table also shows that respondents with outstanding debt more often report being in financial difficulties relative to those with no outstanding debt. Finally, in Panel 7 I show the work status of the sample, and find that unemployed respondents more often report that they are financially distressed relative to individuals with another work status.

---

<sup>4</sup>The unemployment rate in both countries was in the range of 4-5 per cent at the time that the surveys were conducted, while real GDP grew, on average, by close to 1 per cent per quarter in the year leading up to the surveys in both countries.



Table 5: Distribution of Financial Distress by Demographic Characteristics (% , unless otherwise stated)

Panel	Variable	No Problem	Struggle TTT	Constant Struggle	Falling Behind	N
1	<b>Age (years)</b>					
	18-24	56.2	30.4	8.8	4.6	871
	25-44	53.7	33.5	8.6	4.2	2,646
	45-64	65.4	24.9	7.1	2.6	2,079
	65+	83.7	12.8	3.2	0.3	1,217
2	<b>Gender</b>					
	Male	66.4	24.6	6.3	2.8	3,404
	Female	59.5	29.0	8.2	3.4	3,409
3	<b>Marital Status</b>					
	Single	55.5	29.4	10.1	5.0	2,117
	Married	67.8	25.9	4.8	1.5	3,450
	Widowed/Divorced/Separated	62.1	24.6	9.2	4.1	1,246
4	<b>Education</b>					
	Lower 2nd Level	58.6	27.8	9.7	4.0	1,779
	Upper 2nd Level	62.3	28.6	6.7	2.4	2,340
	3rd Level +	70.5	24.3	3.4	1.8	1,303
	Other <sup>1</sup>	62.3	24.7	8.6	4.4	1,369
5	<b>Income Quintile</b>					
	1 (Poorest)	59.9	26.0	10.2	4.0	1,309
	2	59.0	27.3	9.0	4.7	1,294
	3	59.8	28.5	7.9	3.8	1,312
	4	62.6	29.0	6.1	2.4	1,311
	5 (Richest)	71.7	24.8	3.1	0.5	1,312
6	<b>Debt Outstanding</b>					
	No Debt	69.8	22.2	6.1	2.0	3,962
	Debt	53.4	33.1	8.8	5.0	2,851
7	<b>Work Status</b>					
	Employed	63.8	28.1	5.9	2.2	3,552
	Unemployed	39.8	34.6	16.1	9.5	497
	Inactive	49.4	33.6	11.3	5.7	1,370
	Retired	82.8	13.7	3.1	0.4	1,394
	Total <sup>2</sup>	62.9	26.8	7.2	3.1	6,813

<sup>1</sup> The 'Other' education category only applies to the UK sample, and includes individuals with overseas education or some other education that they could not match to the British system. <sup>2</sup> Total percentages differ from Table 2 since we have excluded respondents with no bills/credit commitments or those who refused to answer or reported that they did not know the answer. N=6,791 for panel 4 and 6,538 for panel 5.

## 4 Empirical Approach and Results

### 4.1 Struggling to Keep Up

As discussed in Section 3, the financial distress measure is constructed using responses to the question on how well respondents are keeping up with their bills and credit commitments. In particular, I create a dummy variable “Struggle to Keep Up” which is equal to one for all respondents reporting some degree of struggle in keeping up with their bills and credit commitments, and equal to zero for those who report no difficulties at all in keeping up with bills and credit commitments. I exclude respondents who have no bills / credit commitments or who either refused to answer the question or reported that they did not know the answer, though as shown in Table 1, these categories represent less than 1 per cent of the total sample.

Since the dependent variable “Struggle to Keep Up” is a binary variable, I use discrete dependent variable techniques to examine the impact of the various demographic, socio-economic and behavioural variables on the probability of experiencing financial distress. Specifically, I specify the following probit model:

$$\text{Prob}(y_i = 1) = F(\beta x_i) + \epsilon_i \quad i = 1, 2, \dots, n$$

where  $y$  is the dependent variable “Financial Distress”,  $x$  comprises a set of characteristics posited to influence the presence of financial distress (including demographic, socio-economic and behavioural variables),  $\beta$  is a set of parameters to be estimated,  $\epsilon$  is the error term and  $i$  is the observation number.

In Table 6, I describe the various independent variables that are used in the analysis. The probit results are presented in Table 7, where the estimated marginal effects and standard errors of the parameters for the probit regressions are reported. These marginal effects are calculated at the means of the independent variables. The likelihood ratio (LR) test results and the McFadden  $R^2$  are also shown.

**Demographics and Income:** I begin by examining the role of demographics and income in the ability of respondents to keep up with their bills and credit commitments. These results are shown in the first column of Table 7. I find, as expected, that marital status, the number of dependent children, age, unemployment, education and income all matter for financial distress.

The results show that the probability of being in financial distress increases with age, though only up to a certain point (late 30s) after which the age effect falls rapidly. The results also show that married people are 6 per cent less likely than single people to experience financial distress, while people who have suffered relationship breakdown or the loss of a partner are 6 per cent more likely. Respondents with dependent children are also more likely to experience financial troubles than respondents with no dependent children, and this effect increases the more children a person is responsible for. For example, respondents with one dependent child are 8 per cent more likely to experience financial distress than respondents with no dependent children while those with 3 or more dependent children are 15 per cent more likely. British respondents are about 3 per cent less likely than Irish respondents to report financial distress.

Work status also matters for financial distress; employed people are 18 per cent less likely than unemployed people to experience financial distress; retired people are 14 per cent less likely and inactive people are 6 per cent less likely. Having a college education reduces the probability of financial troubles by 9 per cent while people with higher income are also less likely to report that they are in financial distress.<sup>5</sup> Finally, having outstanding debt increases the probability of financial distress by 12 per cent relative to individuals with no outstanding debt.

**Behavioural Characteristics:** Next I examine the effects of behavioural traits on financial distress, as measured by the survey questions on impulsiveness, organisation and time preference. I begin by including the measure of impulsiveness in the regression, the results of which are reported in column 2 of Table 7. The coefficient on the impulsiveness variable shows that impulsive people are 17 per cent more likely than non-impulsive people to experience financial distress, and this result is statistically significant. The interpretation and significance of the remaining variables is in line with those shown in the first column.

---

<sup>5</sup>I repeat the regression replacing log income with dummy variables representing income quintiles to assess if the effect of income on financial distress varies across quintiles. The effect is only statistically significant for the top two income quintiles (relative to the bottom income quintile), and in particular suggests that the 4th income quintile is 6 per cent less likely than the poorest 20 per cent of the sample to experience financial distress while the richest 20 per cent of the sample are 15 per cent less likely than the poorest 20 per cent of the sample to experience financial distress.

Table 6: Description of Independent Variables

<i>Variable Name</i>	<i>Description</i>
Male	Dummy variable taking a value of 1 if the individual is male, and 0 otherwise.
Age	Age of individual.
Age Squared	Square of individual's age.
Married	Dummy variable taking a value of 1 if the individual is married, and 0 otherwise.
W/D/S	Dummy variable taking a value of 1 if the individual is widowed, divorced or separated, and 0 otherwise.
1 Child	Dummy variable taking a value of 1 if the individual has one dependent child living in household, and 0 otherwise.
2 Children	Dummy variable taking a value of 1 if the individual has two dependent children living in household, and 0 otherwise.
3+ Children	Dummy variable taking a value of 1 if the individual has three or more dependent children living in household, and 0 otherwise.
UK	Dummy variable taking a value of 1 if the individual is from UK survey, and 0 otherwise.
Employed	Dummy variable taking a value of 1 if the individual is employed, and 0 otherwise.
Retired	Dummy variable taking a value of 1 if the individual is retired, and 0 otherwise.
Inactive	Dummy variable taking a value of 1 if the individual is inactive, and 0 otherwise.
College	Dummy variable taking a value of 1 if the individual has a college education, and 0 otherwise.
Log Income	Log of household income.
Debt	Dummy variable taking a value of 1 if the individual has debt outstanding.
Impulsive	Dummy variable taking a value of 1 if the individual is impulsive, and 0 otherwise.
Organised	Dummy variable taking a value of 1 if the individual is organised with their money, and 0 otherwise.
Live Today	Dummy variable taking a value of 1 if the individual tends to live for today and let tomorrow take care of itself, and 0 otherwise.
Literate:4	Dummy variable taking a value of 1 if the individual gets 4 questions on financial literacy correct, and 0 otherwise, (UK survey only).
Literate:5	Dummy variable taking a value of 1 if the individual gets 5 questions on financial literacy correct, and 0 otherwise, (UK survey only).
Literate:6	Dummy variable taking a value of 1 if the individual gets all 6 questions on financial literacy correct, and 0 otherwise, (UK survey only).

Table 7: Probit Results of Financial Distress (Dependent Variable: 'Struggle to Keep Up')

	Pooled Sample						Irish Sample		UK Sample	
	(1)	(2)	(3)	(4)	(5)	(6)	Marginal Impact	Std. Error	Marginal Impact	Std. Error
Male	0.00	0.01	0.00	0.01	-0.02	0.00	0.00	0.01	0.00	0.01
Age	0.02***	0.02***	0.02***	0.00	0.01***	0.02***	0.02***	0.01	0.02***	0.00
Age sq. <sup>2</sup>	-0.02***	-0.02***	-0.02***	0.00	-0.02***	-0.02***	-0.02***	0.00	-0.02***	0.00
Married <sup>2</sup>	-0.06***	-0.05***	-0.05***	0.02	-0.02	-0.05***	-0.05***	0.04	-0.05***	0.02
W/D/S <sup>2</sup>	0.06***	0.07***	0.07***	0.02	0.18***	0.04*	0.09***	0.05	0.04*	0.03
1 Child <sup>2</sup>	0.08***	0.08***	0.08***	0.02	0.07	0.09***	0.11***	0.05	0.11***	0.02
2 Children <sup>2</sup>	0.11***	0.11***	0.11***	0.02	0.11***	0.11***	0.11***	0.05	0.11***	0.02
3+ Children <sup>2</sup>	0.15***	0.15***	0.15***	0.03	0.15***	0.15***	0.15***	0.06	0.15***	0.04
UK	-0.03**	-0.03*	-0.03**	0.02	-0.03*	-0.03*	-0.03*	0.02	-0.03*	0.02
Employed <sup>2</sup>	-0.18***	-0.17***	-0.18***	0.03	-0.17***	-0.17***	-0.17***	0.06	-0.17***	0.03
Retired <sup>2</sup>	-0.14***	-0.13***	-0.13***	0.03	-0.13***	-0.12***	-0.12***	0.07	-0.12***	0.04
Inactive <sup>2</sup>	-0.06**	-0.05*	-0.05*	0.03	-0.05*	-0.04	-0.04	0.06	-0.04	0.03
College	-0.09***	-0.09***	-0.08***	0.02	-0.09***	-0.07***	-0.07***	0.03	-0.07***	0.02
Log Income	-0.05***	-0.05***	-0.05***	0.01	-0.05***	-0.04***	-0.04***	0.02	-0.04***	0.01
Debt	0.12***	0.11***	0.11***	0.01	0.11***	0.11***	0.11***	0.03	0.12***	0.02
Impulsive		0.17***	0.16***	0.02	0.13***	0.13***	0.13***	0.03	0.14***	0.02
Organised			-0.07***	0.01	-0.06***	-0.06***	-0.06***	0.03	-0.06***	0.01
Live Today					0.06**	0.10***	0.10***	0.03	0.10***	0.02
Literate: <sup>4</sup>						0.00	0.00	0.03	0.00	0.03
Literate: <sup>5</sup>						-0.08***	-0.08***	0.02	-0.08***	0.02
Literate: <sup>6</sup>						-0.09***	-0.09***	0.02	-0.09***	0.02
N	6,518	6,510	6,501	6,484	1,413	5,043	5,043		5,043	
LR chi2	892.46	1014.56	1046.30	1100.70	228.13	904.68	904.68		904.68	
Prob chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	
Pseudo R2	0.1035	0.1179	0.1217	0.1284	0.1211	0.1359	0.1359		0.1359	

Notes: <sup>1</sup> Marginal Impact for Age sq. is scaled up by 100; <sup>2</sup> Omitted categories for dummy variables are: 'Single', 'No Children', 'Unemployed' and '3 or less financial literacy questions answered correctly'.

\*\*\* Significant at 1% level; \*\* Significant at 5% level; \* Significant at 10% level.

Note that the log-likelihood and pseudo- $R^2$  in columns 5 and 6 are not comparable with the previous columns in this table.

The third column shows the results after inclusion of the second behavioural variable capturing people who are organised with their money. These people are 7 per cent less likely than disorganised individuals to experience financial distress. Again, the significance and interpretation of the remaining variables in the regression does not change from the results reported in the first and second columns.<sup>6</sup>

Column 4 shows the results when a measure of time preference is included in the regression. People who claim that they tend to live for today and let tomorrow take care of itself are 10 per cent more likely to experience financial distress than those who have a preference for the future. Impulsive people are still more likely than non-impulsive people to get into financial trouble, while organised individuals are less likely than disorganised individuals to experience financial distress. The inclusion of all three behavioural dummy variables raises the pseudo- $R^2$  from 0.104 to 0.128, suggesting that behavioural characteristics play an important role in predicting financial problems.

One interesting pattern that emerges from Columns 2 to 4 (and which emerges from other regressions not reported here) is the relative stability of the coefficients on the individual behavioural variables. One might have expected that these variables could be highly correlated, perhaps all proxying for some common behavioural trait such as “common sense.” In that case, one might have expected the coefficients on the individual behavioural characteristics to move around a lot and for there to have been limited additional explanatory power when new behavioural variables were added. In fact, each of these variables adds to the fit of the model and the relative sizes of the individual coefficients are relatively stable.

**Irish Results:** The results in Columns 1 to 4 are based on the pooled Irish and UK samples. However, since the UK sample accounts for almost 80 per cent of the entire sample, I also report the results based on the Irish sample only. The results, which are reported in column 5 of Table 7, are broadly similar to those for the entire sample. In

---

<sup>6</sup>The variable capturing people who are organised with their money is a triple interaction variable incorporating information on whether or not respondents agree with the statement on money organisation, if they know how much money is available to them or how much money they owe and if they ever check account statements or monitor their investments. The regression is re-run several times replacing the organisation variable with each of its individual elements. The results suggest that the two most important elements are whether or not the respondent agrees with the statement on money organisation and whether or not they check statements and monitor their investments.



particular, the results support the proposition that behavioural factors are important and significant determinants of whether or not an individual experiences financial distress.

**Financial Literacy:** Finally, in the sixth column, I focus only on UK respondents and assess the impact of being financially literate on the incidence of financial distress. Controlling for all the demographic, income and behavioural factors already discussed, I find that financially literate individuals in the sample are less likely than financially illiterate individuals to experience financial distress. The results suggest that the greater the number of questions answered correctly by respondents, the lower the probability that respondents will have experienced financial distress. For example, the probability of getting into financial difficulties is about 8 per cent lower for people who get five of the six questions on financial literacy correct, relative to people answering three or less questions correct, and this result is statistically significant.<sup>7</sup> It is worth noting that the behavioural factors remain significant in this regression while the size of the coefficients on two of the variables, impulsiveness and time preference, are larger than those on the financial literacy variables.<sup>8</sup>

**Summary:** The analysis so far points to a number of key results:

1. Firstly, demographic and economic factors matter for financial distress. The effects are as expected, and in line with the studies surveyed in Section 2. In particular, relationship breakdown, having dependent children, being unemployed and having outstanding debt all increase a person's probability of getting into financial difficulties, while a college education and higher income reduce the probability. The probability of financial distress also increases with age, but only up until the late-30s, after which point the probability falls.

---

<sup>7</sup>I also run a regression where financial literacy is instead captured by dummy variables for each of the six questions (where the dummy variable equals one if the respondent gets the question correct and zero otherwise). The results, which are available from the author, show that an ability to distil information from investment related graphs is most important (in terms of statistical significance) for whether or not a respondent gets into financial difficulties.

<sup>8</sup>Furthermore, I run a probit regression of financial distress on the financial literacy variables and the remaining demographic and socio-economic variables (excluding the behavioural variables). The absolute size of the marginal effects on the financial literacy variables are higher by about 2 percentage points. This shows that a failure to account for behavioural factors over-estimates the importance of financial literacy on the probability of getting into financial trouble.

2. Secondly, the results show that behavioural characteristics matter. The behavioural effects are economically large and add quite a bit to the fit of the model.
3. Finally, behaviour seems to be more important than financial literacy; being financially literate can reduce the probability of financial distress by up to 9 per cent, while being patient can reduce it by 10 per cent. The effect of not being impulsive is even larger. This is an important finding because it suggests that the recent drive to improve financial literacy levels in the population may not be sufficient to prevent financial difficulties. These efforts should be combined with tools to improve individuals' organisational skills and devices to, as much as is possible, minimise the impact of behavioural and psychological traits on financial outcomes.

## 4.2 Do the Effects Differ by Degree of Struggle?

As discussed earlier, the dependent variable “Struggle to Keep Up” is constructed from several responses to the question on how well people are keeping up with their bills and credit commitments. These responses are mutually exclusive, suggesting that in addition to examining the factors that cause people to get into financial difficulties, it is also possible to examine if the effect of these factors differs by the degree of financial difficulty reported. I therefore create a dependent variable “Degree of Struggle to Keep Up” ( $Y$ ) which has four outcomes, as follows:

$Y_i = 1$ , if “Falling behind with some/many.”

$Y_i = 2$ , if “Constant struggle.”

$Y_i = 3$ , if “Struggle from time-to-time.”

$Y_i = 4$ , if “No difficulties keeping up.”

I use a generalized ordered logit model to examine if the various effects of the demographic, economic and behavioural factors differ across these outcomes. This model, which nests a number of more restrictive models such as the ordered logit model, is described in detail in Williams (2006).<sup>9,10</sup> In the current context, the generalized ordered logit model

<sup>9</sup>The ordered logit model is more restrictive because it imposes the parallel lines assumption, whereby slope coefficients are deemed constant across the various outcomes of the ordered categorical dependent variable. The generalized ordered logit model is able to nest this assumption for all or a subset of variables.

<sup>10</sup>The model is implemented in Stata using the `gologit2` command. The results reported here are based on the final specification chosen by the ‘autofit’ option.

can be written as follows:

$$\begin{aligned}
 P(Y_i > 1) &= g(X_i\beta_1) = \left( \frac{\exp(\alpha_1 + X_i\beta_1)}{1 + [\exp(\alpha_1 + X_i\beta_1)]} \right) \\
 P(Y_i > 2) &= g(X_i\beta_2) = \left( \frac{\exp(\alpha_2 + X_i\beta_2)}{1 + [\exp(\alpha_2 + X_i\beta_2)]} \right) \\
 P(Y_i > 3) &= g(X_i\beta_3) = \left( \frac{\exp(\alpha_3 + X_i\beta_3)}{1 + [\exp(\alpha_3 + X_i\beta_3)]} \right)
 \end{aligned}$$

Where:  $Y_i$  is the categorical dependent variable, “Degree of Struggle to Keep Up”,  $X_i$  is a vector of independent variables,  $\beta$  is a coefficient to be estimated and  $\alpha$  is a constant.

The results are presented in Table 8, where estimates (rather than marginal effects) and standard errors are reported. Column 1 contrasts category 1 with categories 2, 3 and 4 (where category 1 is set to zero and categories 2, 3 and 4 are set to 1); the second column contrasts categories 1 and 2 with categories 3 and 4; and the third column contrasts categories 1, 2 and 3 with category 4. As discussed in Williams(2006), positive coefficients indicate that higher values on the explanatory variable make it more likely that the respondent will be in a higher category of Y than the current one. Negative coefficients indicate that higher values on the explanatory variable increase the likelihood of being in the current or a lower category.

The results show that while the effect and statistical significance of independent variables differ across the various outcomes of “Degree of Struggle to Keep Up”, the behavioural and time preference variables are important and statistically significant across all outcomes. In particular, the negative coefficients on the variables capturing impulsiveness and impatience imply that respondents with these traits are more likely to get into financial difficulties than respondents who are not impulsive or impatient. On the other hand, respondents who are organised are less likely to get into financial difficulties.

Finally, I examine the effect of financial literacy in the UK sample on the various distress outcomes. The results (which are not reported in the table) show that, relative to respondents with no difficulties in keeping up with their bills and credit commitments, financial literacy reduces the chances of experiencing financial troubles.

Table 8: Generalized Order Logit Results (Dependent Variable: ‘Degree of Struggle to Keep Up’)

Degree of Struggle	(1) Falling Behind		(2) Constant Struggle		(3) Struggle Time-to-Time	
	Estimate	Std. Error	Estimate	Std. Error	Estimate	Std. Error
Constant	4.18***	-0.42	1.95***	-0.36	0.16	-0.35
Male	0.01	-0.06	0.01	-0.06	0.01	-0.06
Age	-0.09***	-0.01	-0.09***	-0.01	-0.09***	-0.01
Age sq.	0.00***	0.00	0.00***	0.00	0.00***	0.00
Married	0.70***	-0.18	0.61***	-0.11	0.24***	-0.08
W/D/S	-0.30***	-0.09	-0.30***	-0.09	-0.30***	-0.09
1 Child	-0.34***	-0.08	-0.34***	-0.08	-0.34***	-0.08
2 Children	-0.13	-0.22	-0.10	-0.13	-0.49***	-0.09
3+ Children	-0.63***	-0.12	-0.63***	-0.12	-0.63***	-0.12
UK	-0.49**	-0.21	0.05	-0.11	0.13*	-0.07
Employed	0.80***	-0.11	0.80***	-0.11	0.80***	-0.11
Retired	0.62***	-0.15	0.62***	-0.15	0.62***	-0.15
Inactive	0.24**	-0.11	0.24**	-0.11	0.24**	-0.11
College	0.35	-0.24	0.64***	-0.14	0.34***	-0.08
Log Income	0.19***	-0.04	0.19***	-0.04	0.19***	-0.04
Debt	-0.50***	-0.06	-0.50***	-0.06	-0.50***	-0.06
Impulsive	-0.87***	-0.15	-0.50***	-0.09	-0.57***	-0.07
Organised	0.34***	-0.06	0.34***	-0.06	0.34***	-0.06
Live Today	-0.90***	-0.17	-0.60***	-0.09	-0.41***	-0.06
N	6,484		6,484		6,484	
LR chi2	1337		1337		1337	
D.F.	30		30		30	

Note: Omitted categories for dummy variables are: ‘Single’, ‘No Children’ and ‘Unemployed’.

\*\*\* Significant at 1% level; \*\* Significant at 5% level; \* Significant at 10% level.

### 4.3 More Extreme Financial Distress

The results so far suggest that while demographic and economic factors are important determinants of financial distress, behaviour and financial literacy also matter. However, I now want to assess whether these results hold for people experiencing more extreme forms of financial distress such as running out of money and going into arrears for 3 months or more. To do this, I use two additional questions in the Financial Capability Survey as follows:

- (1) In the past 12 months, how often have you and your partner run out of money before the end of the week or month? Would you say it was ...?
- (2) Within the last five years, have you found yourself in financial difficulties?  
By that I mean being three months or more behind with payments on your regular commitments.

Based on the first of these questions, I create a dummy variable “Run out of money” which is equal to one for those respondents who report that they run out of money always, most of the time or sometimes, and equal to zero if respondents report that they hardly ever or never run out of money. 30 per cent of the sample report that they run out of money at least some of the time. I use the second question to create a dummy variable “Arrears” that captures people who have gone into arrears on regular commitments for a period of 3 months or more. 15 per cent of the sample falls into this category. I repeat the empirical analysis using these two more extreme forms of financial distress as dependent variables. The results are shown in Table 9.

In the first column of Table 9, I examine the impact of the various demographic, economic and behavioural variables on the incidence of running out of money. While the results are similar to the earlier findings, there are some differences. Firstly, having dependent children increases the probability of running out of money, as before, but this time the effect is marked and significant only for respondents with three or more children. Secondly, the British respondents are now 5 per cent more likely than the Irish respondents to run out of money, whereas they were less likely than the Irish respondents to struggle on a day-to-day basis. Finally, an examination of the coefficients on the behavioural and time preference variables suggests that these are again important and significant determinants of financial distress. However, the results now point to a greater role for being organised in preventing people from running out of money. Organised individuals are 9 per cent less

likely than disorganised individuals to run out of money.

In the second column of Table 9, the results for the UK sample only are shown, where the effect of financial literacy on financial distress is assessed. There are no major differences in these results relative to the earlier findings; again being financially literate reduces the probability of financial distress.

Next I re-run the regressions using “Arrears” as the dependent variable. In terms of the significance of the various coefficients, the results are broadly similar to those shown in the first column, though the coefficient sizes vary slightly. In particular, having three or more dependent children increases the probability of falling into arrears while there is also again a significant difference between the British and Irish respondents. The behavioural and time preference traits again show up as having an important impact on the incidence of financial distress, though the size of the coefficients on these variables is smaller than with ‘milder’ forms of financial difficulties.

Finally, in column 4 the results for the UK sample are reported. Being financially literate again reduces the probability of experiencing financial distress, in this case falling into arrears, by up to 6 per cent.



Table 9: Probit Results of Financial Distress (Dependent Variable: ‘Run Out of Money’ or ‘Arrears’)

Dependent Variable	(1) Run Out of Money		(2) Run Out of Money		(3) Arrears		(4) Arrears	
	Marginal Impact	Std. Error	Marginal Impact	Std. Error	Marginal Impact	Std. Error	Marginal Impact	Std. Error
Male	0.00	0.01	0.00	0.01	0.01	0.01	0.03***	0.01
Age	0.01**	0.00	0.01***	0.00	0.01***	0.00	0.01***	0.00
Age sq. <sup>1</sup>	-0.01***	0.00	-0.02***	0.00	-0.01***	0.00	-0.01***	0.00
Married <sup>2</sup>	-0.04***	0.02	-0.02	0.02	-0.02**	0.01	-0.03**	0.01
W/D/S <sup>2</sup>	0.04*	0.02	0.04*	0.02	0.08***	0.02	0.07***	0.02
1 Child <sup>2</sup>	0.03	0.02	0.03	0.02	0.02	0.01	0.03*	0.02
2 Children <sup>2</sup>	0.02	0.02	0.01	0.02	0.01	0.01	0.00	0.01
3+ Children <sup>2</sup>	0.08***	0.03	0.06*	0.03	0.06***	0.02	0.05***	0.02
UK	0.05***	0.01			0.03***	0.01		
Employed <sup>2</sup>	-0.13***	0.02	-0.11***	0.03	-0.07***	0.02	-0.07***	0.02
Retired <sup>2</sup>	-0.15***	0.03	-0.13***	0.03	-0.05***	0.02	-0.06**	0.02
Inactive <sup>2</sup>	-0.07***	0.02	-0.04	0.03	-0.03*	0.01	-0.02	0.02
College	-0.07***	0.01	-0.04***	0.02	-0.04***	0.01	-0.03**	0.01
Log Income	-0.06***	0.01	-0.05***	0.01	-0.01**	0.01	-0.01	0.01
Debt	0.06***	0.01	0.07***	0.01	0.02**	0.01	-0.02***	0.01
Impulsive	0.12***	0.02	0.13***	0.02	0.05***	0.01	0.06***	0.01
Organised	-0.09***	0.01	-0.09***	0.01	-0.03***	0.01	-0.03***	0.01
Live Today	0.12***	0.01	0.13***	0.01	0.06***	0.01	0.06***	0.01
Literate: 4 <sup>2</sup>			-0.01	0.02			-0.01	0.02
Literate: 5 <sup>2</sup>			-0.09***	0.02			-0.04***	0.01
Literate: 6 <sup>2</sup>			-0.10***	0.02			-0.06***	0.01
N	6,509		5,043		6,514		5,043	
LR chi2	1383.30		1147.32		687.55		567.98	
Prob chi2	0.0000		0.0000		0.0000		0.0000	
Pseudo R2	0.1744		0.1838		0.1253		0.1304	

Notes: <sup>1</sup> Marginal Impact for Age sq. is scaled up by 100; <sup>2</sup> Omitted categories for dummy variables are: ‘Single’, ‘No Children’, ‘Unemployed’ and ‘3 or less financial literacy questions answered correctly’.  
\*\*\* Significant at 1% level; \*\* Significant at 5% level; \* Significant at 10% level.

## 5 Reverse Causality?

The results above show that behavioural traits are an important determinant of who experiences financial distress. However, if the behavioural traits are correlated with unobservables that cannot be controlled for in the model, the measured effects might not be capturing the true causal relationship between behavioural traits and financial distress. I consider this issue for impulsiveness, which is the variable that has the largest effect in the probit regressions. In this case, it might be argued that while impulsiveness increases the likelihood of getting into financial difficulties, being in financial distress might cause respondents to report that they're impulsive. In order to assess this issue further, I employ instrumental variable analysis.

The instrumental variable approach used here is motivated by Lusardi and Mitchell (2007) who assess the effect of planning on net worth. In order to examine this issue, the authors run a regression where net worth is the dependent variable and planning is one of the independent variables in their model. In testing if reverse causality is a problem, they run a 'reverse' regression where planning is the dependent variable and net worth is one of the independent variables, and they instrument for net worth. Their results show an insignificant coefficient on the instrumented net worth measure in their IV regression, suggesting that reverse causality is not a problem and that their original results hold.

Following Lusardi and Mitchell's methodology, I run a 'reverse' probit regression, where impulsiveness is the dependent variable and independent variables include the same demographic and economic variables included in the previous models, plus the instrument for financial distress - "Struggle to Keep Up". I instrument for financial distress using information on whether or not respondents have a long-standing illness. Twenty per cent of the sample claim to have a long-standing illness.

The results are shown in Table 10. The IV regression shows no significant coefficient on the financial distress variable, which would suggest that reverse causality in relation to impulsiveness is not a problem in my regressions.<sup>11</sup>

---

<sup>11</sup>The first stage fit in the regression is good with the illness variable being statistically significant at the 1 per cent level.

Table 10: IV Probit Results - Marginal Impact

Dependent Variable	Impulsive
<i>Instrumenting for:</i>	
Struggle to Keep Up	0.18
(Std. Error)	(0.1989)

## 6 Conclusions

The number of people in financial difficulties is increasing and looks set to rise further in the future. This is worrying, not only because of the implications for the individuals involved, but also because these difficulties can result in enormous costs for the entire financial system. In this context it is vital that we understand exactly why people get into financial trouble, so that appropriate means of preventing people from getting into difficulties in the future can be devised.

Using new nationally representative data from the Financial Capability Survey for the UK and Ireland, I have shown that while demographic and economic variables are important determinants of who gets into financial difficulties, behavioural factors such as an individual's capacity for self-control, planning, and patience, also matter. This is an important result that has in general been neglected in most of the recent literature on the causes of financial distress. It is important because it shows that policies to prevent people getting into financial difficulties should not focus solely on improving financial literacy and education levels, which also matter. Instead, these efforts should be combined with tools to improve individuals' organisational skills and devices to, as much as is possible, minimise the impact of behavioural and psychological traits on financial outcomes.

There is a broad literature on measures that can be used to attempt to change or overcome behaviour. Much of this literature suggests that de-biasing techniques which encourage critical thinking, and commitment devices can be used for this purpose, (Shefrin and Thaler (1988), Thaler and Benartzi (2004), Choi et al (2005), for example). However, the evidence on the effect of such efforts in changing the impact of behaviour on financial outcomes is thin. Examining this latter topic will be the next task for research in this area.

## References

- [1] Ameriks, J., A. Caplin and J. Leahy (2003), “Wealth accumulation and the propensity to plan”, *The Quarterly Journal of Economics*, Vol.118 (3), pp.1007-1047.
- [2] Böheim, R. and M. Taylor (2000), “My home was my castle: evictions and reposessions in Britain”, *Journal of Housing Economics*, Vol. 9, pp. 287-320.
- [3] Burrows, R. (1997), “Who needs a safety-net? The social distribution of mortgage arrears in England”, *Housing Finance*, Vol. 34, pp.17-24.
- [4] Choi, J., D. Laibson and B. Madrian (2005), “Are empowerment and education enough? Under-diversification in 401(k) Plans” *Brookings Papers on Economic Activity* 2, pp.151-213.
- [5] FSA (2006), “Financial capability baseline survey: methodological report”, *Consumer Research Report No. 47a*, Financial Services Authority: UK.
- [6] Groenland, E. and E.Nyhus, (1994), “Determinants of time preference, saving, and economic behaviour. A comparison between Norway and The Netherlands”, *Paper prepared for IAREP/SABE conference. Erasmus University Rotterdam, July 10-13*, pp. 357-378.
- [7] Groenland, E. and R. Wahlund (1996), “Household saving behaviour and financial management”, *Journal of Economic Psychology*, Vol. 17, pp.669-675.
- [8] Gunnarsson, J. and R. Wahlund (1993), “Household financial strategies: do they exist? A report from an ongoing study in Sweden”, Paper prepared for the 18th Colloquium of the IAREP, Moscow, 4-7 July.
- [9] Keeney, M. and N. O'Donnell (2009), “Financial capability: new evidence for Ireland”, *Research Technical Paper, 1/RT/09*, Central Bank and Financial Services Authority of Ireland.
- [10] Lea, S., P. Webley and C. Walker (1995), “Psychological factors in consumer debt: money management, economic socialisation and credit use”, *Journal of Economic Psychology*, Vol. 16, pp. 681-701.

- [11] Livingstone, S. and P. Lunt (1992), “Predicting personal debt and debt repayment: psychological, social and economic determinants”, *Journal of Economic Psychology*, Vol. 13, pp.111-134.
- [12] Lusardi, A. and O. Mitchell (2007), “Baby boomer retirement security: the roles of planning, financial literacy and housing wealth”, *Journal of Monetary Economics*, Vol. 54, pp.205-224.
- [13] Lusardi, A. and P. Tufano (2009), “Debt literacy, financial experiences and overindebtedness”, *NBER working paper*, no.14808.
- [14] O'Donnell, N. (2009), “Consumer financial capability: a comparison of the UK and Ireland”, *Research Technical Paper*, 4/RT/09, Central Bank and Financial Services Authority of Ireland.
- [15] Pechmann, C., L. Levine, S. Loughlin and F. Leslie (2005), “Impulsive and Self-Conscious: Adolescents' Vulnerability to Advertising and Promotion”, *Journal of Public Policy and Marketing*, Vol.24(2), pp.202-221.
- [16] Shefrin, H. and R. Thaler (1988), “The behavioural life-cycle hypothesis”, *Economic Inquiry*, Vol.26, pp.609-643.
- [17] Stango, V. and J. Zinman (2010), “Exponential Growth Bias and Household Finance”, *forthcoming*, *Journal of Finance*.
- [18] Thaler, R. and S. Benartzi (2004), “Save more tomorrow: Using behavioural economics to increase employee savings”, *Journal of Political Economy*, Vol.112(1), pp.164-187.
- [19] Walker, C. (1996), “Financial management, coping and debt in households under financial strain”, *Journal of Economic Psychology*, Vol. 17, pp.789-807.
- [20] Williams, R. (2006), “Generalized Ordered Logit/ Partial Proportional Odds Models for Ordinal Dependent Variables”, *The Stata Journal*, 6(1):58-82.

