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Financial Expectations, Consumption and Saving: A Microeconomic Analysis.

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Abstract

We explore the determinants of individuals' financial expectations using data from the British Household Panel Survey (*BHPS*) 1991-2001. Our findings suggest that individuals' financial predictions are influenced by both the life cycle and the business cycle. We also investigate the extent to which the accuracy of past financial expectations affects current financial expectations. Interestingly, only past financial optimism matters, regardless of the accuracy of the prediction. We also explore the relationship between financial realisations and expectations and we find that expectations tend to fall short of financial realisations. Finally, we investigate the relationship between financial expectations, savings and consumption. Our findings suggest that financial optimism is inversely associated with savings and that current financial expectations serve to predict future consumption.

Key Words: Consumption; Financial Expectations; Financial Realisations, Forecasting Accuracy; Savings.

JEL Classification: D10, D84, E32

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I Introduction

In economic models of individual and household decision-making, financial expectations play a central role. Human capital investment, for example, is largely determined by expected increases in future income whilst life-cycle models exploring inter-temporal consumption and savings behaviour are also driven by expectations of future income. Consequently, the lack of empirical research exploring the determinants of individuals' expectations is somewhat surprising. One reason behind the shortage of research in this area may relate to the scarcity of data on individuals' expectations and, furthermore, such data tends to be from surveys with, as argued by Dominitz and Manski (1997), scepticism about the use of survey data still prevailing in economics. Thus, there is an obvious imbalance in the existing literature – economists acknowledge the importance of expectations in many different areas but as a discipline, very little is known about how expectations are actually formed. As commented by Dominitz and Manski (1997), p.855, 'economists engaged in empirical research on household behaviour lack empirical knowledge of income expectations'.

Given the central role played by expectations in numerous areas of economics, empirical analysis of expectations at the individual and household level should provide information that is vital to many fields of economics. Furthermore, given that financial expectations influence the decisions made by individuals and households – such as consumption, saving or debt accumulation – one would expect policy-makers to be interested in discovering the determinants of individuals' expectations, whether particular groups in the economy are more prone to financial optimism or pessimism and, in addition, whether such predictions are realised. Such information would enable policy-makers to predict how certain groups in the economy would react to changes in economic policy as well as to changes in the prevailing economic climate.

The aim of this paper is to partially redress the imbalance in the existing literature by exploring the determinants of the financial expectations of a relatively large sample of

individuals drawn from the *British Household Panel Surveys* (*BHPS*), 1991-2001. The *BHPS* is especially well suited to our study since it enables us to analyse expectations at the individual level over a relatively long time horizon. In contrast, the existing empirical studies in this area have, in general, used cross-section data or panel data over a relatively short time horizon. The analysis of panel data not only allows us to explore whether expectations vary over the life cycle or the business cycle, but in addition, we are able to explore whether individuals make consistent financial predictions over time and whether these predictions are realised. Finally, we also ascertain the importance of individuals' expectations for determining their savings and consumption behaviour.

II Background

At the macroeconomic level, a number of studies have investigated the impact of aggregate consumer expectations on household consumption patterns (see Acemoglu and Scott, 1994, for the U.K. and Carroll *et al.*, 1994, for the U.S.). In general, the findings suggest that expectations, on aggregate, do influence household consumption. But as argued by Guiso *et al.* (1996), p.158, 'idiosyncratic risks – which are likely to be the main determinants of household choices – tend to wash out in the process of aggregation'. Hence, it is surprising to note that corresponding empirical analysis at the microeconomic level into how individuals' expectations influence their consumption decisions is, however, somewhat scarce.

There is, however, a growing body of empirical literature exploring data on expectations. Dominitz and Manski (1997), for example, use cross-sectional income expectations data to fit respondent-specific subjective distributions for income in the following year. Das and van Soest (1999), on the other hand, test the rationality of income expectations using Dutch household level data and discover that expectations were low relative to realisations. In a similar vein, Souleles (2004) analyses expectations from a U.S. household level panel data set over a relatively long time horizon to explore a number of issues including

the rationality of expectations. The findings suggest that household expectations are biased and inefficient – evidence that Souleles (2004) argues is inconsistent with rational expectations.

In addition, there are a number of recent studies that exploit subjective information at the individual and household level on income expectations in order to explain a variety of individual and household decisions. For instance, Guiso *et al.* (1992, 1996) analyse the allocation of households' financial assets using data taken from a survey of Italian households. The set of explanatory variables includes income expectations based on a proxy for the subjective variance of real income derived from the variance of expected inflation and expected income growth. Their findings suggest that investors facing uninsurable income risk reduce their overall exposure to risk by holding a lower proportion of risky financial assets.

Focusing on the determinants of individual and household debt, Brown *et al.* (2005) present a theoretical framework where optimistic financial expectations impact positively on the quantity of unsecured debt undertaken at the individual and household level. Their empirical analysis based on British panel data confirms that financial expectations are important determinants of unsecured debt. Furthermore, the empirical results indicate that it is optimistic financial expectations *per se* that are important in influencing unsecured debt rather than the accuracy of individuals' predictions regarding their future financial situation.

The role of expectations in explaining related activities such as saving and consumption has attracted some attention in the literature.[1] From the theoretical perspective, life cycle models have been used to explain how saving and dis-saving are associated with consumption smoothing over the life cycle. The notion of precautionary saving introduces an additional role for saving as a type of insurance against future unforeseen events such as job loss or illness. Lusardi (1998) explores the importance of precautionary saving exploiting U.S. data on individuals' subjective probabilities of job loss from the Health and Retirement Survey. Lusardi (1998) reports evidence consistent with precautionary savings motives in that

[1] Browning and Lusardi (1996) provide a comprehensive review of the existing literature on household saving.

individuals facing higher income risk save more, although the findings suggest that the contribution of precautionary saving to wealth accumulation is not particularly large. In a similar vein, Guariglia (2001) uses the BHPS in order to ascertain whether households save in order to self-insure against uncertainty. Her findings suggest that a significant relationship exists between earnings uncertainty and savings. Moreover, the results imply that households save more if they expect their financial situation to deteriorate.

In general, the studies mentioned above emphasise the key role played by individuals' expectations in a variety of contexts. However, in most of the existing empirical literature, economists have argued that expectations are important yet they have largely treated individual's expectations as being exogenous. In contrast, our aim is to explore the determinants of expectations in order to more fully investigate the process of expectations formation using individual level panel data and, in addition, to explore the role played by expectations in determining savings and consumption.

III Data and Methodology

In the remainder of this paper, we analyse individuals' financial expectations from an empirical perspective. For the purposes of this study, we exploit information contained in eleven waves of the *British Household Panel Survey* (*BHPS*), 1991-2001. The *BHPS* is a random sample survey, carried out by the *Institute for Social and Economic Research*, of each adult member from a nationally representative sample of more than 5,000 private households (yielding approximately 10,000 individual interviews). We analyse a balanced panel of data comprising those individuals in the panel for the entire eleven-year period.[2] Our sample period is particularly interesting since it covers different stages of the business cycle; between 1988 and 1992, the U.K. economy was in recession with 1993 to 1994 being the recovery years marking the start of an economic boom.

[2] We have also analysed an unbalanced panel of data and our findings, which are available on request, are largely unchanged.

Our data comprises all individuals aged between 18 and 65 yielding a sample of 4,249 individuals per year and, hence, 46,739 observations. In each *BHPS* wave, respondents are asked '*Looking ahead, how do you think you will be financially a year from now?*' Table 1A presents the responses for each year, which implicitly incorporate a synthesis of individuals' own financial outlook (e.g. pay and job security) with their expectations about the general economic environment (e.g. future interest rates and unemployment). Across the time period, it is clear that individuals are more financially optimistic than pessimistic, with the exception of 1991 where nearly 55% of the sample were pessimistic compared to around 34% being optimistic. Interestingly, the U.K. economy was in recession in 1991 suggesting that business cycle effects influence individuals' financial expectations. In general, the level of financial optimism has been relatively stable over time at around 30% – although there was a noticeable fall in 2001. In addition, it is apparent from Table 1A that financial optimism is monotonically decreasing in age in each year, i.e. those in the youngest age category (18-30) appear to be the most financially optimistic.

<<TABLE 1A HERE>>

The Determinants of Financial Expectations

Following Brown *et al.* (2005), we create a Financial Expectations Index (*FEI*) whereby individuals who answer 'Worse off' are coded '0', those who answer neither 'Worse off or Better off' are coded '1', whilst individuals who answer 'Better off' are coded '2'. Thus, the index ranks individuals according to their financial expectations from having a bleak outlook to being optimistic. We specify a random effects ordered probit model to explore the determinants of FEI_{it}:

$$FEI_{it}^{*} = \beta' X_{it} + \nu_{it} \quad (1)$$

$$\nu_{it} = \alpha_i + \eta_{it} \quad (2)$$

where FEI_{it}^{*} is the unobserved (continuous) propensity of individual *i* at time *t* to form an expectation; FEI_{it} is the observed expectation; X_{it} is a vector of individual and household characteristics expected to influence FEI_{it}^{*}; β represents the coefficients vector; α_i is the individual specific unobservable effect capturing differences in expectations across individuals; and η_{it} is a random error term. The correlation between the error terms of individuals is a constant given by:

$$\rho = corr(v_{il}, v_{ik}) = \frac{\sigma_{\alpha}^{2}}{\sigma_{\alpha}^{2} + \sigma_{\eta}^{2}} \qquad l \neq k \tag{3}$$

The magnitude of ρ yields information pertaining to the importance of the individual effect – a low ρ implies little unobservable intra-individual correlation suggesting that individuals' expectations vary over time – perhaps with movements in the business cycle or with events arising over the life cycle (e.g. job changes, changes in marital status or having children).

In the X_{it} vector, we control for ethnicity, employment status, gender, marital status, education, number of children, log income, log savings and log wealth. To explore life cycle considerations, we include dummy variables representing age categories (i.e. 18-30, 31-40, 41-50 and 50-65) whilst year dummies are included to control for business cycle effects. Table 1B presents summary statistics for all of the variables used in our econometric analysis for the whole sample as well as split by current financial optimism and pessimism. It is apparent that income is higher for financially optimistic individuals.

<<TABLE 1B HERE>>

Past Forecasting Accuracy

We also explore whether the accuracy or otherwise of past expectations influences current forecasting. To ascertain whether past forecasting accuracy affects current expectations, we compare expectations at time period *t-1* with the answer to the following question at *t*: '*Would you say that you are better-off or worse-off financially than you were a year ago?*' We

formulate four binary variables – denoting a correct optimistic financial predication in *t-1*, an incorrect optimistic financial prediction in *t-1*, a correct pessimistic financial prediction in *t-1* and an incorrect pessimistic financial prediction in *t-1*. The inclusion of this set of dummy variables enables us to explore the impact of the accuracy of past forecasts on current financial forecasting. Moreover, in the following econometric analysis, we also interact these dummy variables with actual income changes to ascertain whether the magnitude of the change in the financial situation matters as well as the direction of the change in financial situation.

We also calculate forecasting accuracy using actual income changes in both real and nominal terms using the change in individual income ($\Delta \ln y_t$) and the change in total financial situation ($\Delta \ln fs_t$) which relates to total household income plus savings, investments and the value of real estate. It is important to analyse different measures of the financial situation given that the phrasing of the expectations question only asks individuals to comment on how they will be '*financially*' in a year's time and, hence, is relatively vague. Some individuals may relate this to their own income only, others might incorporate other household members' income or others may relate this to a more general definition of financial situation, which may include financial assets and housing wealth. Thus, we also investigate how past forecasting accuracy influences current financial expectations by comparing the prediction given in the financial expectations index with actual income and total financial situation outcomes in both real and nominal terms.

In total, we have five sets of the dummy variables capturing past forecasting accuracy with each set relating to a specific approach to assessing forecasting accuracy (i.e. the survey response, real and nominal changes in individual income and real and nominal changes in the total financial situation). The final column in Table 1C presents descriptive statistics relating to each set of dummy variables, whilst the fifth column of Table 1C shows the accuracy of forecasts based on each of the five measures of forecasting accuracy. It is noticeable that, based upon the survey response to how individuals' think their financial situation has changed,

correct optimism is under-predicted. It is also interesting to note that in terms of a correct optimistic prediction, the nominal measures appear to be the most accurate whilst in terms of a correct pessimistic prediction the real measures appear to be the most accurate. Columns one to four of Table 1C present the correlation matrix for each of the four dummy variables across the five measures of forecasting accuracy. It is reassuring to note that all measures are highly correlated in a positive direction.

<<TABLE 1C HERE>>

Analysing Financial Realisations

One of the main advantages of analysing panel data concerns the fact that we are able to analyse the relationship between an individual's expectation and the actual realisation. In order to explore this relationship, we formulate a Financial Realisations Index (*FRI*), which ranks individuals according to their financial outcomes between *t* and *t+1* from being worse off to being better off. Again, *FRI* can be calculated in five different ways. Firstly, in response to the survey question asking individuals how their financial situation has changed over the past year. Individuals who answer 'Worse off' are coded '0', those who answer neither 'Worse off or Better off' are coded '1', whilst individuals who answer 'Better off' are coded '2'. Secondly, instead of solely relying on the survey response, we also define *FRI* according to changes in the four definitions of income defined above. For example, by comparing individual income in *t* and *t+1*, we code the *FRI* as being equal to '0' (i.e 'worse off') if $\Delta y < 0$, as '1' (i.e. 'no change') if $\Delta y = 0$ and as '2' (i.e. 'better off') if $\Delta y > 0$.

We follow Das and van Soest (1999) by exploring the relationship between the financial realisation at time *t+1* and financial expectations at time *t*, which entails modelling *FRI* at time *t+1*, as defined above, as a function of *FEI* at time *t*:

$$FRI^{*}_{it+1} = \pi FEI_{it} + \lambda' Time + \omega_{it+1} \qquad (4)$$

We estimate two versions of equation 4, firstly with exogenous financial expectations and secondly with predicted financial expectations which entails estimation of equations 1 and 4. If

financial expectations are fully realised then the hypothesis that $\pi = 1$ should not be rejected. Time dummy variables are also included to allow for macroeconomic shocks, which, if significant, imply $\lambda \neq 0$.

Application to Consumption and Saving

A natural question to ask is whether expectations are correlated with specific types of individual and household behaviour. Thus, we explore whether expectations are useful in predicting savings and consumption behaviour.[3] Much of the existing empirical literature on saving and consumption at the individual or household level is based on cross-section data or panel data over relatively short time periods. Our data set has two distinct advantages; firstly we are able to analyse savings and consumption behaviour over a relatively long time horizon (i.e. over an eleven year period); and secondly, we are able to control for future income expectations defined both exogenously and endogenously. Firstly, we estimate a consumption equation based upon a standard linear Euler specification as follows:

$$\Delta CON_{ht} = \psi' H_{ht} + \delta(\sigma Y)_{ht} + \theta FEI_{ht} + \varepsilon_{ht} \quad (5)$$

where the dependent variable is the change in consumption between time *t* and *t+1*. Secondly, we estimate a savings equation:

$$(SAV / Y)_{it} = \psi' H_{it} + \delta(\sigma Y)_{it} + \theta FEI_{it} + \upsilon_{it} \quad (6)$$

where the dependent variable is savings as a proportion of income.[4] The consumption equation is estimated in differences at the household level, where *h* denotes the household, because the survey question explicitly asks about expenditure at the household level. In contrast, we

[3] The *BHPS* asks respondents about their savings and consumption over time. In each wave individuals are asked the following question regarding their saving behaviour: *"Do you save any amount of your income, for example by putting something away now and then in a bank, building society, or Post Office account other than to meet regular bills? Please include share purchase schemes and Personal Equity Plan schemes."* If the answer to this question is positive the individual is then asked *"About how much on average do you personally manage to save a month."* Regarding consumption, the following question is asked *"Tell me approximately how much your household spends each week on food and groceries?"*

[4] The estimation of consumption as a change and savings as a levels equation is standard in the existing empirical literature and we follow this convention for ease of comparison. One reason for considering savings in levels rather than differences is due to the fact that savings data tends to be noisy and so first differencing could exacerbate measurement problems (see Browning and Lusardi, 1996). The mean (standard deviation) for the change in consumption and savings as a proportion of income are -4.338 *(15.30)* and 0.280 *(10.46)* respectively.

estimate the savings equation at both the individual and the household level.[5] In addition, we estimate equations 5 and 6 using both exogenous and predicted measures of expectations, FEI_{it} and $\hat{FEI}_t$ respectively. The latter is obtained from estimation of equations (1) and (5) for consumption and equations (1) and (6) for savings.[6] Following the existing literature and for ease of comparison, we restrict the *H* matrix to include controls for age, education, employment status, marital status, family size, health and home ownership (Browning and Lusardi, 1996). The inclusion of a measure for income risk is clearly important in order to explore precautionary motives for saving – if savings represent precautionary behaviour one would predict a positive relationship between income risk and saving. Thus, we also include a measure of income risk, σY , based on the variance of household or individual level income relative to the yearly variance of total household or individual income in both the consumption and savings equations, as is common in the literature (see Browning and Lusardi, 1996). For the levels estimates of equation (6), we employ a random effects Tobit estimator due to the censored nature of the dependent variable at zero.[7]

In sum, in the following section we explore firstly the determinants of individuals' financial expectations; secondly we analyse the relationship between past forecasting accuracy and current financial expectations; thirdly, we investigate the relationship between financial expectations at time period *t* and realisations at time period *t+1*; and, finally, we consider the relationship between financial expectations, saving and consumption.

[5] We explore savings at both the individual and household level since as argued by Browning and Lusardi (1996) different household members may be characterised by different propensities to save.

[6] The literature to date, which has utilised expectations data from surveys, has largely treated expectations as exogenous. However, it is difficult to argue that consumption or savings decisions are made independently of expectations of future income.

[7] We conduct both household and individual level analysis of savings, which is important as the expectations question, as well as the savings question in the *BHPS*, is directed at individuals rather than households. Moreover, savings decisions vary considerably within households and so it might be the case that savings are an individual decision. For all household level analysis, the explanatory variables relate to the head of household. To be specific, financial expectations relate to those of the head of household.

IV Results

The Determinants of Financial Expectations

The determinants of current expectations, FEI_{it}, are presented in Table 2. The final three columns of Table 2 report the marginal effects across pessimistic (*FEI=0*) through to optimistic financial expectations (*FEI=2*). It is apparent that the life-cycle effects are particularly pronounced. To be specific, individuals in the youngest age category are much more financially optimistic than those in the oldest age category (with 51-65 being the omitted category). Moreover, an individual aged between 18 and 30 (relative to an individual over 50) has a 17 per cent higher probability of being financially optimistic rather than predicting no change in their financial situation. Our results also suggest that men are more financially optimistic than women. Financial optimism is positively associated with education such that the magnitude of the estimated coefficients on the educational attainment variables generally increase monotonically with educational attainment.

In terms of employment status, being in the labour market appears to be positively correlated with optimism regardless of employment status (those not in the labour force form the reference group). Indeed, the largest effect emanates from unemployment, where unemployed individuals have a 15 per cent higher probability of being financially optimistic. If unemployed individuals believe that their job search will be successful within a year, this may explain the source of their financial optimism.[8] Married individuals are less optimistic whilst the number of children is positively associated with financial optimism. Wealth and savings are inversely associated with optimistic financial predictions, which may be suggestive of precautionary savings motives, see Souleles (2004). Financial optimism is positively associated with income – a one per cent increase in income increases the probability of being financially

[8] We included a dummy variable for whether the individual was unemployed across two periods. Its negative estimated coefficient is consistent with the reasoning that long term unemployment decreases financial optimism.

optimistic by 1.12 per cent.[9] Clearly, the positive impacts of age, educational and employment status stem from the impact upon optimistic financial expectations. Similarly, the negative impacts of savings and wealth are also driven by the impact upon optimism.

<<TABLE 2 HERE>>

Turning to business cycle effects, the 1992 to 1994 controls have negative and significant estimated coefficients. For example, an individual answering the expectations question in 1992, relative to an individual responding in 2001 (the omitted year category), was nearly 6.5 per cent more likely to be financially pessimistic. Hence, individuals were less financially optimistic during this period, which is not surprising since this coincides with the depth of the recession and slow recovery period for the U.K. economy. Conversely by the late 1990s, the year effects are positive, i.e. individuals were becoming more financially optimistic as the economy moved out of recession. Finally, ρ is relatively small yet statistically significant suggesting that individuals' expectations do vary over time.[10]

Past Forecasting Accuracy

Table 3 reports selected results related to how the accuracy of past forecasts affects current financial expectations. The first five columns relate to the measurement of past forecasting accuracy according to the response to the following question, '*Would you say that you are better-off or worse-off financially than you were a year ago?*' It is apparent from the results presented in column one that if an individual was correctly financially optimistic in the previous period, this has a positive impact upon current expectations. Interestingly, it is not whether past financial expectations are correct *per se* that appears to matter, but rather whether

[9] To explore whether expectations are sensitive to recent changes in income, we have also explored the effects of changes in income. Our results are robust to its inclusion and are omitted for brevity.

[10] We have also explored how past financial expectations influence current financial expectations. There are, however, a number of problems with including a lagged dependent variable, i.e. allowing for dynamics in a model such as equation 1, concerning the initial conditions as well as the implicit assumption of inherent discreteness. We have experimented with including two dummy variables indicating whether individuals were financially optimistic or pessimistic in the previous period. Both dummy variables are statistically significant at the 1 percent level suggesting that there is likely to be a degree of state dependence. Lagged optimism increases the probability of being financially optimistic in the current period and statistically outweighs the negative impact of lagged pessimism.

an individual was optimistic during the previous period. This can be seen from the fact that even an incorrect optimistic financial expectation in the previous time period has a positive impact upon current expectations. In contrast, a correct financial pessimistic prediction during the previous period has a negative effect. In terms of the magnitude of the effects, the estimated coefficients on the controls for financial optimism in the previous time period – regardless of whether correct or incorrect – outweigh that for financial pessimism.

<<TABLE 3 HERE>>

We also investigate whether the extent of a past correct or incorrect forecast influences current financial expectations. Columns two to five of Table 3 present the results from interacting the binary dummy variables controlling for past forecasting accuracy derived from the survey response to whether individuals report that they believe that they are better off or worse off than a year ago, with, firstly, changes in real and nominal total financial situation and, secondly, with changes in real and nominal individual income. Regardless of the measure of financial situation adopted, only past financial optimism appears to matter. The results show that correct optimistic financial expectations in the previous time period interacted with the change in the financial situation introduces an additional positive impact. The magnitude of the change does appear to matter in formulating current financial expectations, with no significant difference between nominal and real interactions. In contrast, the results based on interactions with individual level income changes suggest that real effects are greater than nominal effects.

In columns six to nine, we repeat the analysis but ascertain past forecasting accuracy from actual financial situation and individual income changes. Interestingly, the effects are now much stronger with past optimism outweighing past pessimistic financial expectations regardless of the degree of accuracy. In addition, both correct and incorrect past pessimistic financial expectations have a negative effect on current expectations.[11]

[11] The results with the interaction terms between the past forecasting accuracy dummy variables, derived from actual income and financial situation changes, and the extent of actual income or financial situation changes are

Analysing Financial Realisations

The results from investigating the relationship between financial expectations and financial realisations, based on estimating equation 4, are shown in Table 4 below. One might hypothesise that a direct relationship between financial realisations in period *t+1* and financial expectations formulated at time *t* exists. The results shown in Table 4, based upon exogenous and predicted financial expectations modelled via equation (1), with financial realisations derived from survey responses and actual income and financial situation changes, show a positive and significant relationship between realisations and expectations. The year effects are also significant suggesting that macroeconomic shocks are important in determining financial realisations. In addition, the hypothesis that $\pi = 1$, i.e. that a direct relationship between expectations and realisations exists, is always rejected. These findings accord with the Dutch evidence reported by Das and van Soest (1999), in that a maximum coefficient of π=0.2397 across all specifications implies that financial expectations fall short of financial realisations, i.e. people are too pessimistic.[12]

It should be noted that Manski (1990) argues that divergences between individuals' intentions and actual behaviour may not indicate that individuals are poor predictors of their future, but rather that actual behaviour may depend on events not realised at the time of the survey. Hence, predictions at the time of the survey may be the best possible given the information available to individuals at the time of the prediction, but this does not imply a perfect relationship between realisations and expectations.

<<TABLE 4 HERE>>

not reported. In these specifications, the interaction terms are always insignificant. These results are available from the authors on request.

[12] We have also explored the relationship between realisations and expectations from a different perspective – by regressing the divergence between FRI_{it+1} and FEI_{it} on a set of explanatory variables including individual characteristics defined at time *t*. We find that the divergence between expectations and realisations is correlated with individual characteristics suggesting inefficiency in terms of expectations formation.

Application to Consumption and Saving Decisions

One might predict that the financial expectations of individuals and households may influence savings and consumption behaviour. Our results of estimating consumption and savings equations, equations (5) and (6) respectively, are presented in Table 5 below. We consider four different specifications in terms of the explanatory variables each estimated for three dependent variables – individual savings as a proportion of income, household savings as a proportion of household income and, finally, the change in household consumption.

In Models 1 and 2 in Table 5, we find, at both the individual and the household level and for both exogenous (Model 1) and predicted expectations (Model 2), that higher income risk is positively associated with savings and that the more financially optimistic individuals are, the lower are their savings, i.e. $\delta > 0$ and $\theta < 0$. These findings suggest that individuals and households save more if they expect their financial situation to deteriorate, i.e. *"saving for a rainy day"*.[13] This is an interesting finding given the mixed support for the precautionary savings motive reported by Browning and Lusardi (1996). We also decompose the financial expectations index, *FEI*, into whether individuals are optimistic or pessimistic. For savings, it can be seen from Model 3 that it is optimism that matters.

We also estimate models for changes in household consumption. The results from Models 1 and 2, show a positive and significant impact of both income risk and financial expectations (exogenous and predicted) on consumption. Thus, our findings suggest that current financial expectations do appear to help predict future consumption (i.e. $\theta \neq 0$) and, in addition, there may be a precautionary element to consumption since $\delta > 0$.

<<TABLE 5 HERE>>

Finally, we explore whether the role of financial expectations is dependent on their accuracy. The results of estimating Model 4 show that, for savings, it is only financial

[13] For the other controls in the consumption and savings models, we find significant age, family size, education, outright home ownership and employment status effects in accordance with previous findings in the literature (Browning and Lusardi, 1996).

optimism that matters – not whether expectations are realised.[14] Interestingly, for consumption, correct optimistic financial expectations have a positive impact upon consumption, whilst incorrect optimism and pessimism have negative effects.

V Conclusion

Given that individuals' expectations play a central role in economic analysis, it is vital that economists discover what drives individuals to be optimistic or pessimistic and, hence, what motivates behaviour such as spending, saving and investment. Although support for using subjective information on expectations has been scarce (see Manski, 2004), our work adds to the developing literature on expectations formation and, hence, contributes to an expanding area of research. The aim of this paper has been to shed further light on the determinants of individuals' financial expectations using U.K. panel data. Our empirical findings not only help to inform economists about the determinants of individuals' expectations, accurate or otherwise, but also about how they vary over the life cycle and the business cycle. Understanding how individuals formulate their expectations and identifying those groups prone to financial optimism or pessimism is insightful for policy makers, given the potential role of consumer confidence in influencing economic activity such as consumption and savings. Our findings suggest that financial expectations are influenced by individual characteristics (e.g. age and education) as well as by business cycle effects. Our results also suggest that actual financial realisations tend to fall short of expectations, which may be taken as an indicator that individuals may have a tendency to under-commit themselves financially.

Furthermore, we have explored the role of expectations in determining saving and consumption behaviour. As argued by Attanasio and Banks (2001), analysis of household consumption and saving is of utmost interest to policy makers since, for households, saving facilitates the movement of consumption over time and, for the economy as a whole, saving is

[14] The results relating to Model 4 in Table 5 are based upon realisations defined from real individual and household income changes. We also performed the analysis using nominal income and real and nominal changes in financial situation, as well as realisations based upon survey responses. These results, which in general accord with those presented in Table 5, are omitted for brevity but are available from the authors upon request.

a means to finance investment. Our findings suggest that higher income risk is positively associated with savings and that the more financially optimistic individuals are, the lower are their savings. In addition, our results suggest that current financial expectations do appear to help predict future consumption.

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Table 1A: Financial Expectations by Age and Year

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	ALL YEARS
All Ages												
Better off	34.2%	26.3%	28.7%	28.7%	30.3%	30.4%	29.8%	30.0%	29.4%	27.5%	24.6%	29.1%
Worse off	54.8%	17.7%	15.0%	12.1%	11.3%	9.7%	8.6%	8.6%	8.5%	7.2%	7.9%	10.7%
Age 18-30												
Better off	43.4%	36.6%	40.9%	42.9%	45.4%	47.1%	47.1%	51.0%	51.4%	44.8%	43.7%	44.0%
Worse off	9.8%	13.4%	11.8%	9.5%	8.6%	7.8%	6.7%	7.3%	7.5%	5.7%	7.4%	9.3%
Age 31-40												
Better off	35.0%	28.3%	30.2%	30.0%	32.4%	33.1%	33.3%	34.4%	34.4%	34.9%	33.8%	32.1%
Worse off	55.3%	16.1%	13.4%	11.1%	10.2%	9.3%	7.0%	6.9%	7.3%	5.6%	5.8%	9.4%
Age 41-50												
Better off	24.5%	18.1%	22.8%	23.5%	24.6%	23.7%	26.1%	28.8%	27.5%	27.2%	24.0%	24.2%
Worse off	63.2%	20.5%	16.9%	14.3%	12.2%	9.5%	9.3%	9.2%	8.3%	7.3%	7.5%	11.8%
Age 51-65												
Better off	20.3%	13.7%	14.5%	13.6%	17.4%	19.5%	18.9%	16.3%	17.4%	16.1%	14.1%	16.0%
Worse off	64.4%	25.3%	65.6%	72.0%	68.5%	68.2%	70.1%	73.6%	72.1%	75.2%	76.6%	12.3%

Table 1B: Summary Statistics

VARIABLE	SAMPLE ALL		OPTIMISTIC		PESSIMISTIC	
	MEAN	*STD. DEV.*	*MEAN*	*STD. DEV.*	*MEAN*	*STD. DEV.*
Financial Expectations FEI_t	1.184	0.603				
FRI_{t+1} (Survey based realisation)	0.953	0.764	1.180	0.818	0.618	0.748
FRI_{t+1} (Real $\Delta \ln y_t$ realisation)	1.188	0.979	1.143	0.988	1.038	0.995
FRI_{t+1} (Nominal $\Delta \ln y_t$ realisation)	1.375	0.918	1.322	0.941	1.315	0.939
FRI_{t+1} (Real $\Delta \ln fs_t$ realisation)	1.192	0.979	1.133	0.990	1.052	0.995
FRI_{t+1} (Nominal $\Delta \ln fs_t$ realisation)	1.366	0.924	1.301	0.950	1.300	0.946
Aged 18-30	0.202	0.402	0.312	0.463	0.176	0.381
Aged 31-40	0.318	0.466	0.361	0.480	0.278	0.448
Aged 41-50	0.303	0.459	0.261	0.439	0.327	0.469
Aged 51-65	0.243	0.429	0.138	0.344	0.279	0.448
Black	0.008	0.092	0.013	0.114	0.005	0.073
Asian	0.025	0.156	0.025	0.155	0.026	0.159
White	0.949	0.219	0.949	0.221	0.956	0.205
Male	0.456	0.498	0.511	0.500	0.476	0.499
Female	0.544	0.498	0.491	0.499	0.526	0.499
Single	0.149	0.356	0.191	0.393	0.141	0.348
Married/Cohabiting	0.795	0.424	0.735	0.441	0.767	0.423
Employed	0.666	0.472	0.688	0.463	0.642	0.480
Self Employed	0.091	0.288	0.111	0.314	0.078	0.268
Unemployed	0.036	0.187	0.055	0.229	0.037	0.189
Not in Labour Force	0.206	0.405	0.148	0.355	0.242	0.429
Degree	0.156	0.362	0.180	0.384	0.189	0.391
Further Education	0.234	0.423	0.266	0.442	0.218	0.413
A Level	0.120	0.324	0.141	0.348	0.132	0.339
O Level	0.204	0.403	0.212	0.409	0.177	0.382
CSE	0.043	0.203	0.044	0.204	0.029	0.169
Other Education	0.048	0.215	0.039	0.193	0.049	0.216
Number of Kids	0.787	1.054	0.830	1.048	0.677	0.996
Log Savings	1.645	2.081	1.636	2.090	1.677	2.119
Log Income	7.095	0.911	7.157	0.774	7.126	0.774
Log Wealth	1.614	3.882	1.025	3.192	1.797	4.059
Observations	*46,739*		*13,596*		*4,995*	

Table 1C: Descriptive Statistics for Variables relating to Past Forecasting Accuracy

	CORRELATION MATRIX				SUMMARY STATISTICS	
	SURVEY RESPSONSE	REAL $\Delta \ln y_t$	NOMINAL $\Delta \ln y_t$	REAL $\Delta \ln fs_t$	% ACCURATE PREDICTIONS	MEAN *(STANDARD DEVIATION)*
Correct Optimistic$_{t-1}$					***% FEI = 2***	
Survey Response	1				36.5%	0.108 *(0.311)*
REAL $\Delta \ln y_t$	0.1757	1			61.6%	0.183 *(0.386)*
NOMINAL $\Delta \ln y_t$	0.1828	0.9280	1		69.2%	0.206 *(0.405)*
REAL $\Delta \ln fs_t$	0.1581	0.7284	0.7361	1	61.2%	0.179 *(0.384)*
NOMINAL $\Delta \ln fs_t$	0.1668	0.7561	0.7810	0.9076	68.5%	0.192 *(0.394)*
Correct Pessimistic$_{t-1}$					***% FEI = 0***	
Survey Response	1				33.4%	0.037 *(0.188)*
REAL $\Delta \ln y_t$	0.1001	1			43.2%	0.047 *(0.212)*
NOMINAL $\Delta \ln y_t$	0.0847	0.8206	1		30.2%	0.032 *(0.177)*
REAL $\Delta \ln fs_t$	0.1052	0.6396	0.5362	1	42.6%	0.047 *(0.211)*
NOMINAL $\Delta \ln fs_t$	0.0933	0.6645	0.6161	0.8087	31.0%	0.040 *(0.196)*
Incorrect Optimistic$_{t-1}$					***% FEI = 2***	
Survey Response	1				63.5%	0.156 *(0.363)*
REAL $\Delta \ln y_t$	0.3783	1			38.4%	0.113 *(0.316)*
NOMINAL $\Delta \ln y_t$	0.3361	0.8787	1		30.8%	0.089 *(0.285)*
REAL $\Delta \ln fs_t$	0.3828	0.6024	0.5560	1	38.8%	0.116 *(0.320)*
NOMINAL $\Delta \ln fs_t$	0.3621	0.6139	0.5986	0.8574	31.5%	0.103 *(0.304)*
Incorrect Pessimistic$_{t-1}$					***% FEI = 0***	
Survey Response	1				66.6%	0.054 *(0.225)*
REAL $\Delta \ln y_t$	0.5087	1			56.8%	0.062 *(0.242)*
NOMINAL $\Delta \ln y_t$	0.5718	0.8908	1		69.8%	0.077 *(0.267)*
REAL $\Delta \ln fs_t$	0.5088	0.7256	0.7293	1	57.4%	0.063 *(0.243)*
NOMINAL $\Delta \ln fs_t$	0.5362	0.7717	0.8021	0.8714	69.0%	0.070 *(0.254)*

Table 2: The Determinants of Current Expectations; Dependent Variable = FEI_{it}

VARIABLE	COEFFICENT	T-STAT	MARGINAL EFFECTS		
			$FEI_t=0$	$FEI_t=1$	$FEI_t=2$
Aged 18-30	0.360	*(15.21)*	-0.0691 *	-0.1001 *	0.1692 *
Aged 31-40	0.128	*(6.28)*	-0.0324 *	-0.0345 *	0.0669 *
Aged 41-50	-0.026	*(0.15)*	-0.0064 *	-0.0062	0.0126
Black	0.448	*(3.17)*	-0.0537 *	-0.0943 *	0.1479 *
Asian	-0.008	*(0.08)*	-0.0028	-0.0027	0.0055
White	0.120	*(1.47)*	-0.0211 *	-0.0161 *	0.0372 *
Male	0.074	*(3.42)*	-0.0090 *	-0.0085 *	0.0174 *
Married/Cohabiting	-0.063	*(3.16)*	0.0082 *	0.0081 *	-0.0163 *
Employed	0.136	*(6.98)*	-0.0272 *	-0.0232 *	0.0504 *
Self Employed	0.330	*(10.48)*	-0.0492 *	-0.0731 *	0.1224 *
Unemployed	0.407	*(11.16)*	-0.0556 *	-0.0956 *	0.1512 *
Degree	0.293	*(8.51)*	-0.0217 *	-0.0241 *	0.0458 *
Further Education	0.221	*(7.56)*	-0.0258 *	-0.0282 *	0.0540 *
A Level	0.129	*(3.78)*	-0.0184 *	-0.0202 *	0.0387 *
O Level	0.204	*(6.73)*	-0.0249 *	-0.0275 *	0.0524 *
CSE	0.110	*(2.16)*	-0.0095 *	-0.0099 *	0.0194 *
Other Education	0.088	*(1.79)*	-0.0126 *	-0.0135 *	0.0261 *
Number of Kids	0.049	*(5.54)*	-0.0030 *	-0.0028 *	0.0059 *
Log Savings	-0.020	*(5.81)*	0.0029 *	0.0027 *	-0.0056 *
Log Income	0.015	*(2.83)*	-0.0057 *	-0.0054 *	0.0112 *
Log Wealth	-0.012	*(5.83)*	0.0026 *	0.0025 *	-0.0051 *
1991	0.036	*(1.34)*	0.0031	0.0028	-0.0059
1992	-0.302	*(11.15)*	0.0646 *	0.0337 *	-0.0983 *
1993	-0.166	*(6.23)*	0.0362 *	0.0246 *	-0.0608 *
1994	-0.093	*(3.49)*	0.0223 *	0.0172 *	-0.0395 *
1995	-0.028	*(1.06)*	0.0107 *	0.0091 *	-0.0199 *
1996	0.023	*(0.85)*	0.0017	0.0016	-0.0034
1997	0.050	*(1.91)*	-0.0034	-0.0033	0.0066
1998	0.070	*(2.68)*	-0.0075 *	-0.0075	0.0150
1999	0.068	*(2.59)*	-0.0079 *	-0.0080 *	0.0160 *
2000	0.067	*(2.57)*	-0.0087 *	-0.0089 *	0.0176 *
ρ	0.252	*(40.07)*			
$\chi^2(31)$	1054.69 *p=[0.000]*				
Observations	*46,739*				

* Marginal effects statistically significant at the 1 per cent level.

Table 3: Past Forecasting Accuracy; Dependent Variable = FEI_{it} (Selected Results – Estimated Coefficients with T-Statistics in Parenthesis)

	SURVEY RESPONSE					$\Delta \ln fs_t$		$\Delta \ln y_t$	
		REAL		NOMINAL		REAL	NOMINAL	REAL	NOMINAL
Correct Optimistic$_{t-1}$	0.279	0.231	0.208	0.214	0.205	0.374	0.378	0.394	0.379
	(12.51)	*(7.48)*	*(6.56)*	*(6.39)*	*(5.99)*	*(20.09)*	*(20.76)*	*(21.23)*	*(21.25)*
Incorrect Optimistic$_{t-1}$	0.101	0.122	0.121	0.138	0.134	0.401	0.396	0.369	0.394
	(5.49)	*(5.09)*	*(4.99)*	*(5.36)*	*(5.09)*	*(18.58)*	*(17.58)*	*(16.97)*	*(16.52)*
Correct Pessimistic$_{t-1}$	-0.187	-0.258	-0.222	-0.245	-0.242	-0.222	-0.204	-0.200	-0.157
	(6.59)	*(5.82)*	*(4.92)*	*(5.12)*	*(4.98)*	*(7.43)*	*(6.43)*	*(6.76)*	*(4.50)*
Incorrect Pessimistic$_{t-1}$	0.008	-0.013	0.016	-0.020	0.004	-0.173	-0.187	-0.188	-0.208
	(0.27)	*(0.34)*	*(0.40)*	*(0.48)*	*(0.11)*	*(6.70)*	*(7.52)*	*(7.22)*	*(8.70)*
Correct Optimistic$_{t-1} \times \Delta \ln fs_t$		0.015		0.016					
		(2.28)		*(2.61)*					
Incorrect Optimistic$_{t-1} \times \Delta \ln fs_t$		-0.007		-0.010					
		(1.26)		*(1.99)*					
Correct Pessimistic$_{t-1} \times \Delta \ln fs_t$		0.004		-0.001					
		(0.40)		*(0.02)*					
Incorrect Pessimistic$_{t-1} \times \Delta \ln fs_t$		0.006		0.007					
		(0.78)		*(0.90)*					
Correct Optimistic$_{t-1} \times \Delta \ln y_t$			0.025		0.019				
			(3.14)		*(2.89)*				
Incorrect Optimistic$_{t-1} \times \Delta \ln y_t$			-0.007		-0.009				
			(1.06)		*(1.67)*				
Correct Pessimistic$_{t-1} \times \Delta \ln y_t$			-0.011		-0.001				
			(0.78)		*(0.12)*				
Incorrect Pessimistic$_{t-1} \times \Delta \ln y_t$			-0.002		0.001				
			(0.20)		*(0.13)*				
$\chi^2(34)$	1278.84	1708.17	1289.54	1701.90	1287.84	1701.78	1699.43	1699.87	1700.63
	p=[0.000]	*p=[0.000]*	*p=[0.000]*	*p=[0.000]*	*p=[0.000]*	*p=[0.000]*	*p=[0.000]*	*p=[0.000]*	*p=[0.000]*
Observations	*42,490*								

Notes: (i) The set of explanatory variables is the same as that reported in Table 2; (ii) For brevity, the results with the interaction between the dummy variables denoting past forecasting accuracy based on actual income and financial situation changes and the actual income and financial situation changes are not reported. The findings are available from the authors on request; (iii) We lose 4,249 observations due to the use of lagged terms.

Table 4: The Determinants of Financial Realisations; Dependent Variable = FRI_{it+1} (Selected Results)

	EXOGENOUS EXPECTATIONS	**PREDICTED EXPECTATIONS**
SURVEY		
FEI_t	0.2397 *(20.77)*	0.1950 *(4.49)*
$H_0: \pi = 1 \quad \chi^2(1)$	4,338.04 *p=[0.000]*	417.73 *p=[0.000]*
Year Effects $\chi^2(8)$	144.05 *p=[0.000]*	169.09 *p=[0.000]*
REAL $\Delta \ln y_t$		
FEI_t	0.1174 *(11.07)*	0.1815 *(5.08)*
$H_0: \pi = 1 \quad \chi^2(1)$	6,923.50 *p=[0.000]*	526.02 *p=[0.000]*
Year Effects $\chi^2(8)$	98.35 *p=[0.000]*	97.53 *p=[0.000]*
NOMINAL $\Delta \ln y_t$		
FEI_t	0.1135 *(10.64)*	0.1549 *(4.29)*
$H_0: \pi = 1 \quad \chi^2(1)$	6,910.27 *p=[0.000]*	547.87 *p=[0.000]*
Year Effects $\chi^2(8)$	13.24 *p=[0.000]*	15.23 *p=[0.055]*
REAL $\Delta \ln fs_t$		
FEI_t	0.0969 *(9.12)*	0.2129 *(5.96)*
$H_0: \pi = 1 \quad \chi^2(1)$	7,232.38 *p=[0.000]*	484.93 *p=[0.000]*
Year Effects $\chi^2(8)$	244.34 *p=[0.000]*	240.27 *p=[0.000]*
NOMINAL $\Delta \ln fs_t$		
FEI_t	0.0895 *(8.36)*	0.1410 *(3.90)*
$H_0: \pi = 1 \quad \chi^2(1)$	7,229.85 *p=[0.000]*	564.52 *p=[0.000]*
Year Effects $\chi^2(8)$	83.92 *p=[0.000]*	83.67 *p=[0.000]*
Observations	*38,241*	

Notes: (i) For FEI_{it}, the estimated coefficients with T statistics in parenthesis are reported; (ii) We report a chi squared statistic for testing π=1; (iii) We report a chi squared statistic for the joint significance of year dummies; (iv) Observations are 38,241 due to losing 8,498 observations, through creating a difference (requiring a lag) and the dependent variable being a lead at *t+1*.

Table 5: The Impact of Expectations on Consumption and Savings (Selected Results)

MODEL		$(SAV/Y)_{it}$		$(SAV/Y)_{ht}$		ΔCON_{ht}	
1.	FEI_t	-0.214	*(2.97)*	-0.428	*(3.05)*	1.067	*(15.98)*
	σY	2.051	*(7.74)*	3.917	*(7.70)*	15.980	*(23.30)*
	$\chi^2(d)$	1296.62	*p=[0.000]*	1193.80	*p=[0.000]*		
	F*[d, 24200-(d+1)]*					49.27	*p=[0.000]*
2.	$\hat{FEI}_t$	-3.063	*(7.49)*	-3.241	*(6.23)*	3.532	*(12.85)*
	σY	2.042	*(7.73)*	3.948	*(7.77)*	16.011	*(23.27)*
	$\chi^2(d)$	1348.40	*p=[0.000]*	1224.25	*p=[0.000]*		
	F*[d, 24200-(d+1)]*					52.17	*p=[0.000]*
3.	*Optimistic*$_t$	-0.467	*(3.12)*	-0.716	*(3.68)*	0.320	*(1.69)*
	Pessimistic$_t$	-0.236	*(1.11)*	-0.071	*(0.26)*	-2.387	*(7.16)*
	σY	2.062	*(7.78)*	3.913	*(7.69)*	15.952	*(23.31)*
	$\chi^2(e)$	1302.34	*p=[0.000]*	1198.35	*p=[0.000]*		
	F*[e, 24200-(e+1)]*					47.44	*p=[0.000]*
4.	*Correct Optimistic*$_t$	-0.499	*(2.76)*	-0.527	*(2.20)*	1.232	*(5.52)*
	Incorrect Optimistic$_t$	-0.422	*(2.05)*	-0.946	*(3.64)*	-0.814	*(3.07)*
	Correct Pessimistic$_t$	-0.205	*(0.69)*	-0.335	*(0.85)*	-3.483	*(6.99)*
	Incorrect Pessimistic$_t$	-0.263	*(0.95)*	0.138	*(0.39)*	-1.430	*(3.37)*
	σY	2.061	*(7.78)*	3.874	*(7.61)*	16.028	*(23.30)*
	$\chi^2(g)$	1302.78	*p=[0.000]*	1201.02	*p=[0.000]*		
	F*[g, 24200-(g+1)]*					44.45	*p=[0.000]*
	Observations	*42,490*		*24,200*			

Notes: (i) The set of explanatory variables includes a quadratic in age, controls for whether married, cohabiting, widowed, or divorced, employment status, unemployment, highest educational qualification, a health index, family size, variance in individual (household income) relative to total population and whether the home is owned outright (the full results are available from the authors on request); (ii) The consumption question is asked to the household and so is estimated at the household level, using head of household characteristics; (iii) *d*=20; *e*=21; *f*=g=23; *h*=27.