

## **Financial Decisions: The role of information through social networks**

When forming expectations and making financial decisions, do economic agents use their social interactions to augment their information sets and learn from them? The answer to this is important for assessing whether social networks mainly reduce information costs or spread aspects of financial culture through imitation and comparison. In this project, we hypothesize and test whether and to what extent social networks are used for disseminating information relevant for expectations formation and financial decision-making. This is done by exploiting a unique survey-based longitudinal dataset in France (Taylor Nelson-Sofres '*Mode de vie des Français*' survey).

At the moment there are no outputs yet. Due to a variety of administrative and funding hurdles, we were unable to field the survey questionnaire in December 2014 as originally expected. In early April we have finally got confirmation that we will be able to run the survey in mid May 2015. The questionnaire is now complete and we expect to start getting some results from the survey in July 2015.

## 2.5 Description of proposed research of no more than 1500 words. This section should include background information and detail the methods/procedures to be employed. Please include project milestones/timetable and expected outcomes.

In light of the recent financial crisis and the worldwide recession, the automatic mechanism of (costless) information acquisition and correct processing embedded in the rational expectations paradigm has proven fragile. Economists thus need to undertake the difficult task of critically assessing the mechanism of individual expectation formation and understanding how are they formed, updated, and linked to financial behaviour. A theory of individual expectations is crucial for economic theory in general and financial markets in particular. Theoretically, two key assumptions underlying most existing theories have been rightly questioned: (i) the rationality of agents in financial decision making, and more generally (ii) the rationality of agents' expectations. However, most theories in finance, as well as in macroeconomics, have tended to adopt rational expectations axiomatically. Building upon recent advances on the role of social interactions in financial decision making, here we depart from the classic rational expectations/efficient market hypothesis in financial markets, and seek to identify whether and how individual information sets rely on social interactions and network characteristics in information acquisition/processing.

In line with the funding goals of CERF, this project focuses on valuing the effects of expectations and information constraints on households' financial choices. This will inform debates and practice about the spread and impact of the financial crisis and provide insights to financial sector practitioners, regarding potential future developments in the demand for financial products and for relevant information. Our most general contribution will be to assess quantitatively the responsiveness of individual financial behaviour and individual information sets to social interactions, within a network structure. As a result, the research has the potential to inform the design of government policy through greater understanding of the main factors that can trigger financial panics, frenzies or crashes.

Empirically, we shall design and collect novel survey data to enrich an existing unique novel longitudinal dataset: the Mode de vie des Français household survey, conducted by Taylor-Nelson Sofres (TNS hereafter) in 2007, 2009 and 2011. The next wave of the survey takes place in September 2014. We have been offered the possibility to incorporate a substantial number of questions in the next TNS wave, with a view to testing our theoretical hypotheses. We plan to employ a novel quantitative measure of households' information and examine how individual information depends on social interactions and the structure of the underlying social network. By embedding our module on social interactions and network structure within the 2014 survey wave, we will be able to empirically identify the interplay between realizations, information and financial return expectations, providing a better understanding of their feedback on financial decisions.

From a methodological viewpoint, we will develop a theoretical model of a financial market that allows for social interactions with a network structure in the linear-quadratic class (e.g. Bramoullé, Kranton and D'Amours, 2014). This will inform our survey design in identifying social and possibly strategic interaction components in financial information acquisition/processing, as well as relevant sufficient statistics to pin down empirically network characteristics. In turn, this will enable us to empirically identify an interaction component in individual information sets and disentangle social norm effects from peer group effects in financial choices, when social interactions matter.

Recent studies (e.g. Hommes, 2011; Arthur, 2006; Pesaran and Weale, 2006; Vissing-Jorgensen, 2003; Dominitz and Manski, 2011; Arrondel et al., 2012) identify the importance of subjective expectations in financial markets, but also provide a number of areas for future exploration. For example, in existing research, (i) only a subset of expectations' updating rules is evaluated (chosen by the scientist), (ii) heterogeneity in individual information sets is not allowed, implicitly assuming that agents discount public announcements regarding the stock market evolution similarly, (iii) surveys often lack a longitudinal dimension on both individuals' expectations and information sets, crucial for studying learning and stock market expectations formation in realistic settings, and (iv) strategic motives in forming subjective expectations are not examined.

To overcome such shortcomings, the TNS 2007, 2009, 2011, (and the forthcoming 2014) waves contain detailed individual-level information on risk and time preferences, earnings, income, wealth and socio-economic and demographic characteristics for a representative sample of 4,000 households, of which 1,000 have a complete longitudinal dimension that encompasses the 2008 stock market crash. Its most salient feature is that probabilistic elicitation techniques have been employed to obtain a quantitative measure of individual information and of strategic motives in its acquisition with which we can test and build upon the theoretical and experimental advances of the recent literature. In addition, questions capturing private/public information sources, financial literacy, personality traits, early-in-life conditions or socio-economic and educational family background are available longitudinally. Finally, survey data are combined with information from choice-based experiments, in which respondents can/will participate on-line (2007 and 2014 waves).

Using probabilistic elicitation question formats, that enable the recovery of individually relevant subjective unconditional and conditional moments, we will be able to capture differences in information across households and the relationship between answers to forward-looking probability questions and households' degree of awareness regarding the most recent stock market return realization. Exploiting the longitudinal dimension, we will estimate an expectations updating rule of stock market realizations conditional on households' actual information, either for the whole population (extending Hudomiet et al., 2011), or for different population types (extending Dominitz and Manski, 2011).

Once we have empirically uncovered an expectations updating rule, we will be able to disentangle peer group effects from average treatment effects in models of information transmission/acquisition through social interactions. With a long enough panel, we will attempt to disentangle the effect on households' risky asset demands of unobserved heterogeneity from state dependency, since we will have direct measures of most of the unobserved components. Key to this identification strategy is Arrondel and Masson (2011) who, exploiting data from the 2007 and 2009 TNS waves, establish that households' risk and time preferences were not affected by the stock market crash of 2008. Individual preferences were measured by a comprehensive score, the construction of which is described in Arrondel and Masson (2008).

To capture strategic motives in information acquisition, we will exploit a set of questions in the 2011 wave that inquire about how informed respondents believe others to be. Adapting these same question formats to more restrictive definitions of the population of reference (e.g. 'circle of acquaintances', as in the Dutch National Bank Household Survey exploited by Georgarakos et al., 2013) we can separately identify an 'equity culture' from peer-group aggregate effects on stock market return expectations, and therefore on financial choices. To further understand whether social interactions are a substitute for imperfect/incomplete/private information, we plan to add new questions that capture (i) sources of recent/older private/public information (e.g. acquaintances/specialized or general media/financial advisors), (ii) access/salience/frequency of consultation of those sources, (iii) factors that can explain the social/economic/psychological cost incurred by respondents in processing it, to deal with rational inattention theory and finally (iv) characteristics of the underlying network structure, such as out-degree, centralization, homophily or assortative mixing.

#### **TIMETABLE**

Design and piloting of empirical study	May – Jun 2014*
Identification of fieldwork company	May – Sep 2014*
Collection of fieldwork	Sep – Dec 2014
Interim report writing	Jan – Mar 2015
Main analysis of primary data	Mar – Dec 2015
Final report writing (primary data)	Jan – Apr 2016
Main analysis of secondary data	Apr – Dec 2016
Delivery of final report	Jan – Mar 2017

\*activities that will take place before funding starts

#### **REFERENCES**

- Arrondel, L., Calvo-Pardo, H., and D.Tas (2012), 'Subjective Stock Market Expectations, Information and Limited Stock Market Participation', *mimeo*
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- Arrondel, L., and A. Masson (2011), French Savers in the Economic Crisis: What has Changed?, PSE-Jourdan WP
- Arthur, W. B. (2006), 'Out-of-Equilibrium Economics and Agent-Based Modeling', in *Handbook of Computational Economics*, Vol. 2
- Bramoullé, Y., R. Kranton and M. D'Amours (2014), 'Strategic Interaction and Networks,' forthcoming, *American Economic Review*
- Dominitz, J. and C. Manski (2011), 'Measuring and Interpreting Expectations of Equity Returns', *Journal of Applied Econometrics*
- Georgarakos, D., M. Haliassos and G. Pasini (2014), 'Household Debt and Social Interactions', *Review of Financial Studies*, forthcoming
- Hommes, C. (2011), 'The Heterogeneous Expectations Hypothesis: Some Evidence from the Lab', *Journal of Economic Dynamics and Control*
- Hudomiet, P., Kézdi, G. and R. J. Willis (2011), 'Stock Market Crash and Expectations of American Households', *Journal of Applied Econometrics*
- Pesaran, M. H., and M. Weale (2006), 'Survey Expectations', in *Handbook of Economic Forecasting*
- Vissing-Jorgensen, A. (2002), 'Towards an Explanation of Household Portfolio Choice Heterogeneity: Nonfinancial Income and Participation Cost Structures', *mimeo*

## 2.6 Duration of the proposed research

<b>Project start date</b>	September 2014
<b>Project end date</b>	December 2016

2.7 Will any other person be involved in the research? If yes, please give details.

**Research Team:** Dr Hector Calvo-Pardo (University of Southampton), Dr Chryssi Giannitsarou (University of Cambridge) and Professor Michael Haliassos (Goethe Universitat, Frankfurt Am Main)

The background to our project is provided by the intersection between three research lines that have so far been developed independently, but all explore the role of interactions across economic agents. The first strand explores conditions under which interactions can lead (or not) to belief consensus and therefore provide (or not) resilience to the system. The second research line, of an essentially empirical nature, has developed novel methods to measure individual beliefs and understand their role in individual decision making. The third line has studied empirically the relevance of social interactions for household asset and debt behaviour. Each strand is represented by one of the three project participants.

## 3. Funding

3.1 Indicate the approximate total cost of the research and, as far as possible, the manner in which it is proposed to spend any grant that may be awarded.

Estimated fraction of costs for fieldwork from <i>Taylor-Nelson Sofres</i> for the Cambridge survey. Any grant awarded by CERF will be used towards covering this expense. For details on the breakdown of this budget, see notes at the end of the application (section 4.2).	£43,000
Research Assistant (Graduate Student at Cambridge, salary plus overhead expenses)	£4,000
Dissemination activities	£1,500
Research travel (Paris-Cambridge)	£1,500
<b>TOTAL COST</b>	<b>£50,000</b>

### 3.2 What other sources of financial assistance are available to you?

This project is currently not funded by any other funding body. Because we are eager to secure funding for the 2014 wave of the TNS survey that is scheduled to take place in September 2014, we have also applied for a grant from the Keynes Fund (KF) in Cambridge.

### 3.3 When did you apply to these alternative sources and with what results? If no such applications have been made, give reasons.

We applied on the 24<sup>th</sup> April 2014, giving the budget of the total cost of the project (£50,000), explaining that we have also applied for funding from CERF. The outcome is unknown at the moment.

### 3.4 Total amount requested from CERF:

£ 10,000

## 4. Additional information

### 4.1 List of attachments

Curriculum vitae (including list of publications)	
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### 4.2 Other information deemed important for the proposal

#### **Funding details:**

We note that *this wave of the French survey cannot take place unless sufficient funding is secured*. The total cost is approximately **€200,000** of which the research group in France (Paris School of Economics) has already secured **€150,000**.

A crucial part of our research plan involves the collection of primary data, longitudinally linked to an existing data set (TNS 2007, 2009 and 2011 waves), and the design of the embedded experimental module. The study will run over the last quarter of 2014, and we will monitor a range of determinants of past and future stock market performance indicators for a representative sample of the French population. In order to ensure we have enough respondents, we base our sample size calculation on previous TNS waves with information on stock market expectations data. We need to recruit about 4,000 respondents, of which around 1,000 will be longitudinally linked to all previous survey waves (2,000 pairwise), generating around 4,000 observations (four waves on each respondent; 6,000 overall pairwise linked). The most cost-effective way of collecting the data we require is via postal return questionnaire. We plan that each questionnaire would take about 30 minutes to complete. We will offer an exchange coupon of around €10 per

questionnaire returned, as well a prize in a draw as an incentive to participate (this has proved a highly cost-effective incentive in our previous research).

A draft of the survey questionnaire has already been prepared and is available upon request. However, the exact design and wording of the questions (and experimental module within the 2014 wave) will be determined through extensive consultation within the project team, the advisory group and by discussion with our extended network of experts. We will begin this process once funding is announced so that we can hit the ground running when the project officially begins.

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<b><i>Date received</i></b>	
<b><i>Date approved/rejected</i></b>	
<b><i>Institution</i></b>	
<b><i>Report submitted</i></b>	
<b><i>References received</i></b>	<i>Date:</i> _____ <i>Date</i>