Knowledge, experience, and financial decision-making

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Abstract. The paper begins with codified and tacit knowledge, situates the issue in relation to financial decision-making, and focuses upon the relationship between knowledge, experience, and behaviour. Being about individual behaviour in financial markets, how people cope with risk and uncertainty is an important theme of the paper. Drawing upon cognitive science, I focus upon the relationship between codified knowledge as embodied in financial literacy, decision-making competence, and learning-by-doing. Throughout, issues of spatial scale are brought to the fore noting, for example, the presumption in much of the literature that tests of financial literacy transcend geography whereas learning-by-doing is always local.

Keywords. Behaviour, experience, financial literacy, knowledge.

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Introduction
One way of describing 21st-century capitalism is to focus on the knowledge economy (Stiglitz and Greenwald 2014). Since knowledge has value when it is ‘sticky’, economists and geographers have sought to understand the evolution of the economic landscape by reference to the spatial differentiation and concentration of knowledge (Thrift 2005, 37–39). So, for example, it is argued that Silicon Valley was made and is reproduced time and again by individuals and organisations seeking to take advantage of their proximity to local knowledge. At one level, knowledge can be prosaic or sophisticated – it is oftentimes difficult if not impossible to separate one from the other. At another level, knowledge is both a stock and a flow. Modern economies trade on the stock of knowledge and gain comparative advantage via their access to the centers of knowledge creation.

The knowledge economy research programme has focused on issues such as the difference between tacit and codified knowledge, noting that tacit knowledge is often embodied in individuals and teams of workers and is embedded in systems of management and innovation which may be specific to the firm, industry, the region and the nation. Indeed, Stiglitz and Greenwald (2014, 65) emphasise that “geographical localisation” translates into ‘sticky’ knowledge. Much of the research in economic geography on the knowledge economy is about the challenges faced by organisations in mobilising knowledge at the local level, transferring it to other plants, and crossing over cultural, social, and
political boundaries (see Gertler 2003). More broadly, the significance of tacit knowledge in modern economies has given rise to the related research programme on the nature and geographical concentration of talent (see Florida and Mellander 2007).

In these ways, much of the literature assumes that there is something intrinsically valuable about knowledge. In this paper, I challenge this assumption in two ways. Instead of focusing upon how people and organizations manage knowledge, I focus on individual decision-making. Granted, there is an obvious difference between individuals and organizations in that focusing upon the former over the latter raises issues about competence and agent rationality which are rarely considered in the literature. One exception, perhaps, is the work by Teece which emphasises organisations' capabilities and resources – that is, whether organisations have the wherewithal to implement what they know. This issue is important. Here, however, suggest that there is no necessary equivalence between holding a stock of knowledge and being an effective decision-maker.

In the first instance, I explain the status of knowledge referring to seminal contributions in economic theory as regards the conceptualisation of information and knowledge. This serves as an introduction to the status and significance accord to financial literacy by governments and public and private institutions around the world. Those that contend that financial literacy can make a difference to

\footnote{1/ Recent research on global production systems are, not surprisingly, also concerned about how to mobilise tacit knowledge as codified knowledge and share it with units of production inside and outside of the firm at a distance (see Coe and Yueng 2015).}

\footnote{2/ Analysts tend to wrap an interest in finance and decision-making together with other expressions of what is termed 'neoliberalism' (see Springer et al. 2016). I do not defend my interest in this topic, nor do I believe that this issue is necessarily an expression of neoliberalism. See Storper (2016) and Weller and O’Neill (2015) on the challenges involved in demonstrating the significance of the concept.}
financial decision-making assume that many people do not have sufficient financial knowledge and/or the right kind of financial knowledge relevant to the world of financial institutions and markets. In this paper, I capitalise on arguments made elsewhere to the effect that formal tests of financial knowledge are so abstract as to be largely irrelevant to the circumstances of many people (see Clark 2013, 2014). Here, I go a step further and argue that how knowledge is applied is as important as the knowledge itself given observed behavioural biases and anomalies.

In these ways, I draw upon the findings of the behavioural revolution initiated by Simon (1956) and given depth and scope by Kahneman and Tversky (1979) and their followers. This research programme has had an enormous impact on how behaviour is conceptualised in economics, shifting the reference point from commonplace assumptions about agent rationality to a more realistic conception of the nature and scope of human behaviour in general and in specific settings or contexts (see Henman et al 2005). At issue, however, is not whether people are rational or irrational but whether they are competent to make decisions (financial or otherwise) in situations or environments which demand cognitive skills and expertise that many people either don’t have or are so underdeveloped that their long-term welfare is at risk.³

My argument in this regard is informed by our research programme on financial decision-making in time and space (Clark et al. 2012). There are many other related research programs in the social sciences. Nonetheless, our interest has been in topics such as space-time myopia, home bias, and

³/ A generation ago, there was considerable debate over strong versions of agent rationality wherein it is supposed that instances of irrationality are often, in fact, expressions of a certain kind of rationality (see Becker and Murphy 1988). Following Simon (1956), it is assumed that agents are intendedly rational albeit subject to behavioural traits that may discount their interests. See also Strauss (2008).
issues of (local) salience or relevance (see, also, Bordalo et al 2012). This work is referred to in passing, emphasising the conceptual issues rather than the findings of original research. This is consistent with the goals and objectives of the IMPULSES series sponsored by the Journal of Economic Geography.

**Conceptualizing Behavior and Decision-Making**

In his seminal paper on the measurement of utility, Samuelson (1937) provided a model of individual behaviour which has come to dominate modern economics. He was most concerned with conceptualising the process whereby “economic man” goes about realising “the sum of all future utilities”. Fundamental to his exposition was an assumption that utility is subjective in that it is specific to the individual and their current and expected well-being. Being subjective, he suggested that observing and measuring utility is very difficult; it is better to establish how utility may vary over time in relation to earned income. Consciously of the obvious shortcomings of such an approach, Samuelson believed it was preferable to trying to estimate a person’s utility function.

Embedded in his model is a theory of decision-making. It is assumed that an individual’s preferences are constant over time, thereby allowing for the maximisation of the sum of all future utilities. It is also assumed that the time horizon over which people plan for the future is known as is a person’s discount function. Samuelson was aware of criticisms that could be made about his approach. For example, he acknowledged that people may well shift the base of their expectations as they move

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4 I use the terms subjective and objective as Samuelson used the terms. However, I am not convinced that they represent a genuine cognitive disposition any more than it makes sense to distinguish rational from irrational behavior or distinguish between emotional and analytical behavior or right-brain and left-brain impulses. More often than not use of these terms represents a normative standard of behavior or a convenient analytical distinction that aids theory-building rather than being an empirically-justified statement about how people actually process information and behave.
forward in time. That is, expectations may well be conditional upon the move from $t$ to $t+1$ and the changing circumstances or prospects occasioned by knowing more about the present and future. Nonetheless, he doubted whether knowing more about the future would affect the process whereby people maximise their utility.

His formulation of utility still holds sway, underpinning introductory courses on microeconomics as well as the textbooks that accompany these courses. However, his approach had obvious shortcomings, notably its steadfast refusal to deal with the issue of new information. Simon (1956) came to the issue of individual behaviour assuming that people have a utility function and adapt their behaviour in accordance with the receipt of new information. In doing so, Simon represented decision-makers as information processors drawing upon rudimentary models of cognition inspired by the revolution then occurring in machine-based information processing (computers). His notion of individuals as information processors remains important.

If information is important in the process whereby individuals plan for the future then it is important to conceptualise the ways in which information is available to individual decision-makers. In a world where information – quality and quantity – is scarce there is a prima facie case to suppose the existence of a market for information (Spence 1976). In this regard, the literature spawned by research on the economics of information has been concerned with individuals’ acquisition and use of information as well as the welfare costs associated with the search for geographically-differentiated information (see Clark and Whiteman 1983). Economic geographers have also been conscious of the welfare costs associated with the strategic use of information by well-positioned market agents (see Leyshon et al. 2004, 2006).
Instead of information, Arrow (1962) focused on knowledge arguing that knowing how to do something efficiently given the available capital and resources explains how and why “different countries, at the same moment of time, have different production functions” for the same industry. In this account, knowledge trumps information in the sense that doing things efficiently is based upon self-reflection and the sequential evaluation of the efficacy of management practices in relation to observed outcomes. In his account, competitive advantage is realised by transforming experience into systems of decision-making. By this account, information by itself is not important. Rather, information is the servant of knowledge in that of is the raw material used to create knowledge. Learning-by-doing is deeply embedded in contemporary studies of innovation in economic geography.

There is, however, some ambivalence about the status to be attributed to experience and learning-by-doing in theory and practice. While the literature spawned by Arrow (1963) assumes that experience is an asset or benefit to individual decision-makers, some commentators are cautious of the transfer-value of experience. For example, Gertler (2001, 2003) argues that learning-by-doing is always embedded in a particular context thereby discounting the degree to which knowledge can be transferred between localities or, for that matter, within companies and across activities differentiated from one another by custom and tradition. He also argues that learning-by-doing is always framed within broader social processes including national institutions and policy practices. By some accounts, global competitive advantage is realised by taking advantage of local knowledge (Grabher 1993). But, being embedded can incur the costs of myopia.

In this respect, it is believed that experience is too-often ‘subjective’ in the sense of reinforcing the underlying preferences of those involved. For those doubtful about the value of experience, it is apparent that experience is, more often than not, confounded by emotion and first-order sensations. Indeed, there are those that believe experience is almost always reactive rather than planned carrying
with it the burden of dealing with events as opposed to realising long-term objectives. Worse, experience is often associated with thrill-seeking as opposed to being a process of self-conscious engagement with changing circumstances and all that implies for fashioning consistent rules of behaviour. In response, it is arguable that the value of experience must be judged against an independent reference point.

By this logic, learning-by-doing presupposes the existence of a body of knowledge sufficiently developed so as to impose discipline on the process whereby the lessons of experience can be effectively evaluated. This is precisely the point made by advocates of financial literacy. Doubting the integrity of experience and learning-by-doing, it is argued that the principles of financial literacy provide a reference point through which to evaluate experience and provide a check on the lessons to be drawn from experience (Lusardi and Mitchell 2014). Notice, the presumed relationship between the principles of financial literacy and experience: being formed and given objective status, the principles of financial literacy trump experience unless experience can be shown to justify the reframing of knowledge; in this case, financial literacy.

In a sense, we have returned to the distinction made by Samuelson between subjectivity and objectivity. Even so, the financial literacy program like other knowledge-based conceptions of individual behavior has an even more ambitious goal. It is believed that educational programs in financial literacy from an early age can produce a systematic way or lens through which individuals look at the financial world and frame behavioural responses whatever their standing or circumstances. In its strongest form, this idea is based upon a constructivist view of perception and decision-making which has found favour with social theorists. But it has not found favour with cognitive scientists concerned to understand the ways in which perception interacts with the environment and translates
into action. Notwithstanding the importance of beliefs and intentions anchored in social life, constructivism is not a reliable guide to individual decision-making.

The idea that these types of knowledge-based frameworks are comprehensive and systematic decision-tools denies the contingency of everyday life and the ways in which perception interacts with the changing environment and translates into human action (Carey 2009). If economic geography is to say something meaningful about cognition and the environment, it must take seriously the process of decision-making under risk and uncertainty.

**Decision-Making in Financial Markets**

As noted above, the financial literacy program presupposes financial decision-making involves the application of well-defined rules to the world-at-large.\(^5\) Separately, each test or rule embodies a principle which summarises the available knowledge on the topic. As such, each rule or principle provides an off-the-shelf solution to a related problem. That is, the solution is at hand even though more information about local conditions may be needed to fine-tune the application of financial knowledge to the situation (compare Aragones et al. 2005). Together these rules, and the related rules, are rulebooks for financial decision making across a broad range of topics in consumer finance. There are many self-help manuals available to translate these rules into practice.

*Financial markets and products*

\(^5\)/ The financial literacy program can be summarised in three test questions (Lusardi and Mitchell 2014). The first question tests whether respondents understand the benefits of compounding. The second question tests whether respondents understand the difference between the real and nominal value of money. The third question tests whether respondents understand the concept of diversification.
Consumers go to financial markets and purchase financial products for many reasons. Relevant to this discussion, the global financial services industry provides three interrelated functions. There are various ways of explaining the significance of these functions including those that link functions to institutions (see Crane et al. 1995) and those that situate functions with theories of financial market performance (see Merton and Bodie 2004). To simplify the exposition, assume that a representative agent would like to purchase a home via a down-payment and mortgage. This ‘simple case’ allows us to understand the practical significance of these functions.

- In the first instance, a mortgage is a means of making a forward commitment to purchase an asset through current and expected earned income. In effect, the mortgage issuer provides the needed capital at the time the house is purchased in exchange for the consumer’s commitment to pay-off the loan in regular instalments at a set or variable price over time.

- In the second instance, a mortgage contract is a means of allocating risk between the consumer and the provider of finance. In some countries, consumers can obtain a mortgage at fixed interest rate over a set period of time. In these circumstances, the provider bears the risks associated with unexpected changes (increases) in interest rates – not surprisingly, the provider may well offset those risks by selling on the mortgage contract to other parties more willing and/or able to bear the risk. In other countries, the consumer bears the interest rate risk – therefore, the consumer must make forward estimates of his or her ability to cope with changing interest rates given other expected commitments. On the other side of the market, the provider must assess the risk of default should the consumer not be able to cope with unanticipated increases in mortgage costs.
• In the third instance, financial markets provide participants opportunities to adapt or adjust to changing circumstances such that neither party is locked-in to a commitment which turns out to be inconsistent with future circumstances. So, for example, the sale of a house normally involves the completion of a mortgage contract subject to certain conditions regarding the payoff and/or transfer of the obligation. At issue, is the degree to which consumers can adapt to changing circumstances against commitments and the degree to which the providers of credit are able to accommodate changes in consumers’ circumstances.

In some industries and sectors, risk and uncertainty can be tamed through the convergence of agents and institutions on best practice and an optimal allocation of roles and responsibilities. In these circumstances, learning-by-doing is rewarded for its consistency and for the consequent adaptation of behaviour to a stable set of incentives and sanctions. Financial markets are subject to exogenous shocks that disturb in unanticipated ways behavioural norms and conventions. Financial markets are also subject to systemic shocks which, in effect, discount the value of inherited policies of risk allocation within and without the financial services industry (Weitzman 2007).

In these circumstances, a recipe book of financial principles and decision rules may be insufficient as an effective guide for purchasing financial products. As a result, behavioural psychologists and cognitive scientists have shown that how people make decisions is just as important as the substance of those decisions. Considering the discussion above about the types of decisions consumers must take in relation to the purchase of financial products three specific issues were identified: how people make decisions in time, how they assess risk, and how they adapt expectations to changing circumstances are key ingredients in many financial products.
The behavioural research programme led by Simon (1956), Tversky and Kahneman (1974) and Kahneman and Tversky (1979) has shown that people tend to discount the future attributing more value to the immediate future and much less value to the distant future. Put slightly differently, many people give precedence to options which have an immediate or slightly delayed expected payoff over those decisions that would see payoffs distributed into the future (Ainslie 2001). At the same time, comparing the discount functions of younger respondents with older people who have experience in financial markets it has been shown that younger respondents not only discount the future but can have incoherent conceptions of time. By contrast, respondents with relevant experience tend to have shallower discount functions and give more weight to the distant future relative to the short- and medium-terms (Clark et al. 2006, 2007).

Just as significant have been experimental findings to the effect that many people are risk averse and make financial decisions which overweight the costs of risk-taking in relation to the benefits of taking risk in relation to long-term welfare. The implications are twofold. First, being risk averse can result in consumers making suboptimal decisions by paying a premium for the non-risk option notwithstanding a low likelihood of a negative result. Second, being risk averse can encourage consumers to switch commitments as they encounter new options (not previously available) at a lower risk. Having encountered outcomes where taking risk incurs a penalty, consumers may switch-out to

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6/ The evidence supporting the behavioural biases and anomalies research program comes from testing university students rather than the population at large. There are fewer studies of adults with roles and responsibilities that demand a level of expertise consistent with the domain in which they make decisions. In part, lack of research on these issues reflects academics’ ease of access to students. It also reflects an interest in sustaining a common research program across the behavioural sciences (Fielder and Juslin 2006).
other options that promise a certain but lower return. Either way, the transaction costs involved in switching may be so significant that long-term welfare is adversely affected.

More generally, the behavioural program has shown that many people have difficulty in making forward estimates of the likelihood of certain events. Their understanding of probability is often poor, they have little understanding of, and the implications of, different kinds of probability distributions, and they tend to overweight the significance of current events in relation to the distribution of past events. Whereas standard decision theory assumes that individuals deploy Bayes’ rule when attributing value to the current manifestation of a larger process, many people focus on the present, ignore instances of the past that are inconsistent with current preferences, and attribute to themselves a level of control over the outcomes of past beneficial decisions not justified by the evidence (Jones and Love 2011; Oaksford and Chater 2009).

These behavioural biases are representative of a broader set of behavioural anomalies (Kahneman 2003; Krueger and Funder 2004). As such, the findings of the behavioural revolution have undercut the plausibility of any assumption to the effect that how people make financial decisions is less important than adhering to the rules of modern financial theory and practice. Whether people can be taught to avoid adverse behavioural predilections and thereby be more effective financial decision-makers whatever the substance of the particular issue at hand is open to debate (Hogarth 2001; Sedlmeier and Gigerenzer 2001). It is apparent, that these types of programmes need to be salient if they are to be effective (Bordalo et al. 2012; Clark 2014).

7. Throughout, I refer to the average person, rather than all people or for that matter those with relevant skills and expertise. It is the ‘average’ person that is the object of public policy (Atkinson 2008), initiatives such as ‘nudge’ (Thaler and Sunstein 2008), and attempts to better equip people with financial advice (Thoresen Review 2008).
Experience and Behaviour

I have suggested that the rules that embody codified knowledge are not sufficient for effective financial decision-making. It has also been argued that behavioural traits affect the process of financial decision-making especially in the context of risk and uncertainty. In these ways, my argument joins cognition (the acquisition and application of knowledge) and context (the environment in which decisions are framed and implemented). Whereas these two issues are often times treated separately, they are fundamentally entwined in the sense that cognition is always embedded in context (Simon 1956).

Experience – learning by doing

The financial literacy program assumes that people come to financial decisions with a stock of knowledge which is then applied to the problem at hand. In part, this assumption is the product of a model of reasoning which seeks to identify in a logical manner the elements or steps in decision-making (Schick 1997). In part, it is also a recipe for public policy in that if individuals’ knowledge can be deepened in relation to a broad class of financial issues then social welfare will be (presumably) advanced. As is the case across the social sciences, it is assumed that education contributes to the formation of human capital which itself is a prerequisite for long-term economic development (see Lucas 2009). Nonetheless, there remains debate about whether education drives economic development or is the product of economic development (see below).

On the other side of the argument is the notion that knowledge is a dynamic process wherein the stock of knowledge is forever being applied and re-conceived through experience. Put slightly differently, at any point in time the stock of knowledge summarises that which was inherited from the past and adapted to the present in relation to the future. So, for example, the idea that financial risk
is best managed through a diversified portfolio of investments reflects the principles of modern portfolio theory (Markowitz 1952) and the experience of many investors over the period leading-up to the global financial crisis (French et al. 2010). Through the financial crisis, however, it became apparent that these principles were not effective as the risks of different asset classes became highly correlated thereby discounting the benefits of diversification. Whether the financial system returns to ‘normal’ will determine whether portfolio diversification returns as a golden-rule underpinning investment management.

The importance attributed to experience has, as noted above, become one of the foundations of contemporary economic geography (Bathelt and Glückler 2011; Gertler 2003). Given the importance attributed to context, it is reasonable to suggest that the ontological status of the discipline is owed, in part, to its focus upon geographically-anchored experience and learning by doing. To illustrate, in Clark (2014) it is shown that the principles of financial literacy are given life when implemented at the local level thereby demonstrating the relevance or otherwise of certain principles as well as the ways in which these principles are re-conceived by experience. Local experience suggests that notwithstanding the three principles that dominate the test regime, other principles may be important including the premium on having a viable set of decision-options given the shifting boundary between noise and signal in financial markets (Scheinkman 2014).

Learning-by-doing is assumed to be the expression of judgements and decisions taken in relation to local circumstances (Stiglitz and Greenwald 2014). Nonetheless, experience and learning by doing at the local level are nested in processes and institutions found at the local, regional, national, and international scales. For example, the current and expected value of a house and mortgage are determined, in part, by the demand and supply of housing at the regional and national levels. While our agent doesn’t directly experience the national market for housing, many people attribute to the
local level the largest portion of house value (Clark 2012). The rules governing agents’ eligibility for a mortgage are typically set by provincial, national and even supra-national regulatory institutions. The effects of these rules can be observed directly, but not the process whereby the rules are set, implemented, and changed. As the global financial crisis demonstrated, the processes determining the value of housing and the price of a mortgage can be global in scope.

Two implications follow. First, experience can be direct and indirect. Being direct, experience can involve making an estimate of the current and expected price of a house and a mortgage (subject to repayment schedules and termination conditions). As people buy and sell houses, as they search for and switch between providers of credit, and as they experience changes in the current and expected price of the houses they purchase, they may well become adept at finding value and reaping the benefits of their decision-making. In doing so, they may better understand and apply the principles of financial literacy. Second, being indirect, experience and learning by doing may be reinforced or confounded by unobserved processes operating at higher tiers of the spatial scale. People may not always appreciate, until an event takes place, the connection between the value of their house and cost of the mortgage they have assumed in relation to the performance of global financial markets. In these circumstances learning by doing lags events forcing individuals into reaction and regret for past decisions (thereby reinforcing status quo bias; Samuelson and Zeckhauser 1988).

8/. The problem of spatial scale is twofold. When people look beyond the local to the global they must select and assimilate yet more information. At the same time, there is an issue of salience: deciding what is relevant given a lack of knowledge and understanding of higher-scale economic and political processes (Bordalo et al. 2012). With cognitive and resource constraints, people tend to overweight the local over the global. See Schneider and Barnes (2003) and, on the issue of framing inflation expectations, see Shafir et a. (1997).
Limits of learning by doing

The simplest, stylised model of learning by doing goes as follows: a plan is made to realise an intended outcome sometime in the future, past experience and current circumstances inform the design of the plan and the likelihood of realising the intended outcome, and as new information is received expectations are revised and the plan and/or the intended outcome are revised accordingly. Over a sequence of related plans and outcomes, agents converge on the best way of realising the intended outcome or outcomes. It is widely recognised that a stable environment accompanied by well-defined costs and benefits as regards the realisation of intended outcomes allows agents to develop effective decision-rules or heuristics that are case-specific and applicable to related cases (Gigerenzer et al. 1999).

If the environment is not stable, is subject to stochastic shocks that disturb the underlying distribution of the costs and benefits of alternatives courses of action, and always goes forward rather than repeating time and again events and outcomes then risk and uncertainty become important to the planning process. One response may be to shorten the planning horizon. Another response may be to limit commitments to the future so as not to impair agents’ options should events conspire to derail the best laid plans. The behavioural psychology and cognitive science literature is focused on the adverse effects of risk and uncertainty on decision-making demonstrating, for example, that people may systematically exclude options that are accompanied by possible losses should plans not be realised (Kahneman and Tversky 1979). Should decision-rules fail, procrastination is a likely result (O’Donoghue and Rabin 1999).

9/ The importance or otherwise of events in peoples’ lives for decision-making deserves greater attention. Elsewhere, we show that certain types of events that have the potential to significantly affect individuals’ long-term health and welfare tend to trump all other considerations including their knowledge and understanding of financial concepts and modes of reasoning (see Clark et al. 2012).
Heuristics may enable agents to ‘tame’ if not ‘neutralise’ the effects of cognitive biases and anomalies. Baron (2008, 53) cites Polya (1945) suggesting that heuristics are a form of reasoning which is partial and provisional, used to “discover” what works and does not work when solving a particular problem. Gigerenzer et al. (1999, 30) go further to suggest that heuristics are devices designed to deal with new issues and/or shifts in the underlying structure of the environment. For Gigerenzer and his colleagues, heuristics rely upon inference to produce “fast and frugal” solutions to problems. In a similar manner, Stanovich (2010, 128) refers to heuristic reasoning as a form of cognitive processing that “is fast, automatic, computationally inexpensive, and that does not engage in extensive analysis of all possibilities.” He distinguishes between heuristics and cognitive processing which is “slow, analytic, and computationally expensive.”

By this account, learning by doing has virtue. But it is unlikely to result in an optimal outcome – it is, by definition, partial and incremental and, as such, is likely to result in solutions which are “good enough” (Tversky and Kahneman 1974). There are other shortcomings to heuristic reasoning. First, by imposing limits on the relevant options individuals could reinforce the status quo (Samuelson and Zeckhauser 1988). Second, when people select options close at hand they are likely to reinforce past commitments or make decisions anchored in those commitments.10 Third, being a recursive process,

10/. Use of the term ‘select’ is meant to convey the fact that people take options from the environment in accordance with their goals and objectives. Faced with a volume of relevant information larger than their capacity to assimilate and process, people use various strategies including sampling to select information that approximates to their needs. See Caplin et al. (2011) who take the insights developed by Spence (1976) and others on the economics of information and adapt the underlying logic of this school of thought to the contingent nature of reasoning favoured by behavioural theorists.
there is no stopping-rule other than the available cognitive resources of the individual. By implication, reliance on heuristic reasoning as a form learning-by-doing can be self-defeating. Running parallel to the heuristics programme has been research demonstrating that heuristics have many of the behavioural biases and anomalies that confound effective decision-making (Baron 2008).

**Mapping Financial Risk**

Individual decision-making in the context of financial risk and uncertainty is a core concern of contemporary behavioural psychology and cognitive science. It has implications for how behaviour is conceptualised and modelled in economics and in economic geography (witness Laibson 1997; Clark et al 2012). However, this is not the complete story. Social scientists are also concerned with the relationship between individuals and institutions and the ways in which those relationships result in variable maps of individual behaviour and social welfare (Langley 2008; Preda 2009).

**Financial literacy (again)**

When the financial literacy test regime is applied around the world it is apparent that there is considerable variation amongst countries and within countries in terms of the performance of respondents. So, for example, there are striking differences between respondents’ performance comparing southern Italy with the Third Italy. Likewise, there are significant differences between Germany, UK, and the USA notwithstanding the heterogeneity of test results in the case of the USA taking into account the age, gender, race, earned income, and educational attainment of respondent (Lusardi and Mitchell 2011). Importantly, it is been shown that test scores are higher in major metropolitan regions than in provincial cities. Assuming that these differences are meaningful in the sense that the tests are a viable representation of financial literacy, one implication to be drawn is that observed shortfalls in financial literacy is a significant policy question.
Moreover, there are differences between countries and within countries according to the use of, and relevance of, financial instruments and products such as credit cards, home mortgages, retail investment products such as mutual funds and various kinds of insurance. In this regard, comparing Germany with other European countries and in particular to the UK, it has been observed that the average German household is less involved in the financial services industry. Many German households do not hold credit cards and have few ways of accessing short-term credit. Furthermore, it is quite remarkable that participants in workplace-sponsored Reister pension funds have, until recently, been guaranteed a minimum rate of return on their defined contribution pension accounts. Whether because of public policy, cultural attitudes to risk, and/or the relationships between social partners, the map of risk in Germany is different to the UK and the USA.

Observed patterns of financial literacy are the result of (a) the level of economic and financial development of the jurisdiction, and/or (b) the exposure of residents to financial products and services. To the extent that the sophistication of a country’s financial system is a prerequisite for economic development and that the financial sectors of most countries are concentrated in major metropolitan regions, it follows that local residents’ financial literacy reflect these processes. On the other hand, it could be that variable rates of financial literacy within and between countries reflect the options available and not available to residents. For example, in some countries, residents’ pension funds are protected from the costs of financial turmoil whereas in other countries this is not the case. One implication is that German households have not had to acquire the same level of financial literacy as Anglo-American households. Another implication is that because high-earning Anglo-American households often hold large defined contribution account balances, it makes sense that their risk exposure is matched by higher-than-average rates of financial literacy.

_Institutions and individual choice_
A functional perspective has the advantage of matching the demand for financial services with the different ways in which those types of services might be delivered (Crane et al. 1995, 11–16). As well, a functional perspective provides insight as to the relative efficiency of different institutional forms and consequently the role that regulators might play making a match which sustains social welfare. ¹¹ We should also be mindful that public and private institutions set the nature and scope of the risks individuals face when seeking access to certain kinds of financial services and can frame the desirability of the options available within and between different types of financial services. Put slightly differently, institutions can affect individual behaviour by virtue of the risks associated with various types of financial services and the advantages and disadvantages of the choices available therein. Inevitably, there is an intimate relationship between maps financial literacy and institutional structure. To illustrate, consider how various countries deliver certain functions – in the simplest case credit facilities and in the more complex case retirement income.

**Consumer credit.** In some countries, those in the lowest one third of earned income have difficulty in gaining access to short-term credit. As a consequence, they are vulnerable to companies that provide short-term credit in advance of wages on an extortionate basis. There are various explanations of this phenomenon. In some cases, lower income earners are excluded from the formal banking system by virtue of the multiple forms of identity required to open a bank account, required minimum account balances, and harsh penalties on being overdrawn. In other cases, where residents are able to establish their legal status, they are entitled to a bank account by virtue of government regulation.

¹¹/ In using the term ‘institutions’ I mean those informal and formal rules and organisations that legitimately impose boundaries on the nature and scope of individual behaviour (see also Bathelt and Gluckler 2014; Greif 2006). Boundaries can be imposed by incentives and sanctions and policed by public and private organisations. Coercion is one way of realising common goals. In some societies, norms and conventions are sufficient to frame what is legitimate and not-so-legitimate behaviour (Brennan et al. 2014; Storper 1993).
Here, however, establishing a line of credit is difficult given requirements to maintain a minimum account balance. Illegal immigrants, limited-term residents, and residents with poor language skills can be excluded from these types of credit facilities.

For simplicity’s sake, assume two types of people: one type which can meet the requirements for a bank account and credit and the other type which cannot. It is obvious that the former group faces lower risks when accessing credit facilities and has a broader set of options than the other type of person. Those excluded from the formal banking system by virtue of their identity and/or status also face much higher risks in the labour market both in terms of the volatility of employment and the probability of being systematically exploited (McDowell et al. 2008, 2009). For our purposes, these patterns illustrate the argument that how we design institutions and how we regulate financial service providers can systematically discount risks for certain types of people and reinforce their economic and social advantage, and profoundly disadvantage others. The evidence suggests that the first group scores well on tests of financial literacy and the second group does not. High test scores for the second group would do little to over-turn their institutional disadvantages.

**Saving for retirement.** The lessons of the behavioural revolution been applied to the design and management of countries’ pension systems (Thaler and Benartzi 2005; Conqvist and Thaler 2004). Here, there are three basic issues. First, because many people tend to discount the future they may simply ignore the importance of the topic. Second, because many people are myopic they may overweight current consumption as opposed to future consumption. Third, because many people are overconfident in terms of their capacity to adapt to future circumstances they may simply put-off planning for the future assuming that when they ‘get there’ adjustments can be made to secure an adequate retirement income. As a result, individuals, households, and their dependents face significant long-term risks to their economic well-being. These risks are, at one level, about individual
and household welfare given the systematic nature of behavioural traits. To the extent that some people are effective long-term planners and others are not, increasing income inequality is the inevitable result.

Many nation-states once offered retirement income guarantees either through their own programs and/or through private arrangements. Few countries now willingly assume such long-term risks. Likewise, employers have sought to avoid these risks. One response has been to encourage people to save for the future through tax concessions and benefits. Another response has been to require employers to provide retirement savings vehicles and require employees to participate in these programs. Yet another response has been to set mandatory contribution rates and regulate the costs and benefits of retirement savings instruments. Notice, however, that the long-term risks associated with saving for retirement are systematically unevenly distributed. To the extent these programs are tied to current and future earned income, those at risk to periods of unemployment, those at risk to variable rates of earned income, and those at risk to early retirement are likely to have much lower retirement incomes than those well-positioned in the labour market (Weil 2014).

These risks are well-known. At the same time, there is little research of the systematic processes whereby some types of people are, in effect, allocated more risk than others. A lack of knowledge about the issues, an inability to be an effective financial decision-maker over the long term, and an inability to affect the design and incentive structure underpinning a country’s pension system reinforce the risks borne by some people more than others while privileging some groups of people over others. Ironically, those that score well on tests of financial literacy are privileged groups of retirement planners whereas those that do not are those exposed to high levels of risk in terms of their future welfare.
Economic geographers are keenly aware of these issues, witness research on the demand for credit in poorer UK metropolitan neighbourhoods and the ways in which residents’ beliefs and expectations frame their responsiveness to loan sharks et cetera (see Leyshon et al. 2004, 2006). Nonetheless, it has taken a Nobel Prize winner in finance to state the obvious: “investors differ in geographic location, homeownership, profession, and so forth. We term these aspects an individual’s *position*. If two people have different positions they may wish to hold different portfolios. Similarly people may have different feelings about risk, present versus future gratification, and so on. We term these an individual’s *preferences*. Differences in preferences will lead investors to choose different portfolios” (Sharpe 2007, 11). One lesson to be drawn from recent research in economic geography is that “position” is fundamental to learning by doing and the creation of context-relevant knowledge.

**Implications and Conclusions**

Focusing upon recent research on behavior, I have suggested that the standard assumptions underpinning microeconomics are unfounded. Rational expectations fail because people are selective in terms of their use of past experience in relation to current circumstances and expectations of the future. Fielder and Juslin (2006, 8) note “(t)he information provided by the social and physical environment can be highly selective as a function of spatial and temporal constraints, social distance, control restrictions, or variable density of stimulus events. People are typically exposed to richer and more detailed information about themselves than about others, just because they are closest to themselves. Similarly they are exposed to denser information about in-groups than out-groups of their own culture than to other, exotic cultures. Not only does environmental input vary quantitatively in terms of the density or amount of detail; it is also biased toward cultural habits, conversational norms, redundancy, and specific physical stimulus properties.”
As observed, this is most obvious in the urban realm in many economies because of the spatial segmentation of living and working (Leyshon et al. 2008). And it is expressed in various ways – for example, a significant portion of the working population is excluded from well-regulated banking and related credit organisations. Many people are taken advantage of by well-placed individuals and organisations using the asymmetrical distribution of information in time and space to garner rents from their actions. At the heart of this paper, moreover, is an argument to the effect that, for many people, experience and learning-by-doing produces beliefs and expectations which are either self-defeating or so imperfect when measured against abstract principles like financial literacy that their short-term and long-term welfare is adversely affected.

One way of explaining the adverse consequences of experience and learning-by-doing is to suggest that people, if left to themselves, either collect the wrong kind of information, are excluded from some kinds of information relevant to their interests, or are unable to collect the type of information needed to make effective financial decisions. This is because they lack the sophistication or appropriate third-party reference points which could help in matching experience and learning-by-doing with how the world works. At this level, it is an issue of sampling: that is, individuals are ‘partial’ in terms of the nature and scope of information they select from the environment. For some theorists, this is not particularly problematic in that there may be ‘solutions’ at hand including the third-party provision of information as well as institutional interventions which, at the local level, mediate the relationship between the producers and consumers of financial information.

These are reasonable responses albeit subject to an effective match between design (at one level) and implementation (at another level). It is apparent that programmes of financial literacy designed for middle-class consumers with access to banking institutions and consumer credit do not resonate with those at the margins of labour markets and housing markets (Clark 2014). More problematic is the
fact that behavioural psychologists and cognitive scientists show that selection is not (just) an issue of circumstances but is a profoundly important human trait in that people always sample the environment. Even so, some circumstances may be sufficiently rich in the pre-processing and organisation of information that the costs and consequences of sampling are discounted in favour of the average consumer. In other circumstances, not so rich in social resources, the average financial consumer is left to their own devices.

The contrast to be drawn is between a vision of strong rationality which underpins universal conceptions of behaviour across time and space and the circumstantial logic underpinning the observed behaviour of people in time and space. On one hand, it is assumed that given appropriate knowledge of financial principles people can make sense of their own circumstances and select the information needed to make informed decisions consistent with their welfare and the welfare of others. On the other hand, it is believed that people, more often than not, begin from their own circumstances and select information from that which is immediately available consistent with their beliefs and expectations even if inconsistent with their notional long-term best interests. The contrast to be drawn is between rational expectations and bounded rationality wherein the latter is understood as an issue of cognition and behavioural predisposition rather than limited information per se (Doherty 2003).

Whereas the behavioural research programme in economics has focused upon the inconsistency of preferences over time, the discounting of future commitments and the apparent inability of many people to place themselves and their interests into the future, the economic geography implicit in the behavioural revolution has been largely ignored. And yet, embedded in many tests of reasoning and the formation of beliefs and expectations is a presumption shared by many behavioural psychologists and cognitive scientists that experience and learning-by-doing is almost always local. Bringing these
issues front and centre through the medium of economic geography would be one way of understanding behaviour in context.

Bibliography


Gertler, M. S. (2003), ‘Tacit knowledge and the economic geography of context, or the undefinable tacitness of being (there)’, *Journal of Economic Geography*, 3(1): 75-99.


