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## Article

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# **Anchoring in Economics: On Frey and Gallus on the Aggregation of Behavioural Anomalies**

*Peter E. Earl*

## **Abstract**

This paper examines the research area identified by Frey and Gallus (*Aggregate Effects of Behavioral Anomalies: A New Research Area*, 2014) and the relationship between it and the choices that economists make. It supports the Frey and Gallus view that, as a consequence of individuals employing external inputs rather than relying upon their own judgemental capacities, the quality of decision-making may differ at the market and macro levels from what has been observed in laboratory experiments. It seeks to forestall potential moves by rational choice theorists to argue that such processes, imposed by competitive pressures, will swiftly eliminate anomalous behaviour. But it questions Frey and Gallus's use of conventional rational choice theory as the reference point for judging the quality of real-world decisions. It argues that choice is an activity based on evolving sets of habits and rules, rather than based on given preference systems, and that Frey and Gallus's failure to consider alternative reference points is itself a manifestation of anchoring.

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## **1 Introduction**

Frey and Gallus (2014) have made a valuable contribution by highlighting an area where much research is needed, namely, the real-world market- and macro-level significance of human tendencies to behave at odds with conventional rational choice theory. Human fallibility has been studied extensively by psychologists in a laboratory setting (a useful account of some key aspects of this is provided by Kahneman, 2011), and economists such as Richard Thaler (beginning with Thaler, 1980) have provided us with many anecdotal examples of individuals seemingly conforming with the heuristics and biases identified in such experiments. But economists so far have invested little effort in studying the impact of human fallibility on the functioning of particular markets, or the economy as a whole, and the implications of this for consumer welfare and policy design. Frey and Gallus argue that, outside the laboratory, economic agents can call upon additional inputs when making decisions and that empirical research is needed to ascertain whether this results, in the context in question, in behavioural anomalies being ameliorated or exacerbated. Furthermore, even insofar as consumers remain ‘predictably irrational’ (Ariely, 2009), the outcomes of attempts by an individual supplier to exploit their customers’ decision-making shortcomings may be to some degree offset or amplified by the responses of other suppliers. This, too, needs to be studied before conclusions are reached about the need for policy interventions in particular contexts.

Economists can use the Frey and Gallus perspective in a reflexive way – that is, in relation to the quality of the choices that economists make about how to do economics. The heuristics and biases literature implies that economists, too, are likely to suffer from, for example, ‘sunk cost bias’ and be ‘anchored’ to their familiar ways of doing economics. This could be dysfunctional, and heterodox economists believe that mainstream rational choice approaches warrant such a categorization, labelling their own approach as ‘post-autistic’ or ‘real-world’ economics. However, in the light of Frey and Gallus, we must recognize that there is potential for social inputs (for example, from heterodox economists) and competitive pressures (research quality audits and research grant allocation processes) to limit the extent to which economists operate in ways that result in them losing touch with reality via abstract models based on wildly unrealistic assumptions. But if there is little openness to alternative possibilities and the

market for economic ideas functions as a self-serving monopoly, dysfunctional ways of thinking could fail to be corrected even if, out in the wider world, potentially superior approaches are on offer. External critiques could even be counterproductive, promoting more defensive behaviour and a fortress mentality instead of a greater openness to pluralism that might have been maintained had the discipline operated in a more civil manner.

This reflexive perspective underpins the present paper. The paper is written in the belief that the Frey and Gallus research agenda has major implications for how economists should view the scope and nature of behavioural/psychological economics. However, I am concerned that the research agenda will not be widely adopted: I fear that mainstream economists may seize upon the core propositions of Frey and Gallus's paper and use them as a basis for arguing that market processes can be assumed to correct individual shortcomings and hence that economists should backtrack on their recent openness to the modern behavioural approach. Those who would prefer not to engage with psychology and who wish to conceal their unwillingness to accommodate what psychologists have discovered about the limits to rationality may be expected to say, in effect, that 'Yes, we know what happens in psychology laboratories, but out there in the real economy human shortcomings will be tempered by social interaction and competitive pressures and it is therefore OK to model consumers "as if" they are fully rational until anyone presents us with evidence that the market process fails to induce rational choices'. A major goal of this paper is therefore try to forestall this possibility in as civil a manner as I can muster. Further, I will be arguing that Frey and Gallus presented their research agenda in a manner that is itself anchored in a dysfunctional way to the dominant rational choice perspective. Such anchoring may ensure mainstream economists are more likely to read the Frey and Gallus paper attentively but, in not canvassing the ideas in relation to alternative views of rationality, the anchored approach makes it easier to construct a case against any major change in core economic thinking.

## **2 The challenge implied in the Frey and Gallus research area**

The focus of Frey and Gallus is on the impact of social interaction and the competitive process on the quality of decisions that individuals take. Their

opposition to simplistic aggregation from individual-based models of choice has a very different basis from the anti-reductionist approach of Post Keynesian economists such as Chick (1983) and Jespersen (2009). The latter argue that those who view macroeconomic outcomes as simple aggregates of micro-level choices are committing a ‘fallacy of composition’ error. They maintain that central to Keynes’s (1936) theory of employment was his recognition that one person’s spending shapes another person’s income. This opens the way to phenomena missed in modern macroeconomics, such as the ‘paradox of thrift’ whereby individuals’ attempts to increase their rates of saving do not result in higher levels of aggregate saving and, indeed, by reducing overall spending and thereby discouraging investment, may actually result in lower aggregate saving. Because of the way the macro-economy operates as a complex system, needlessly poor welfare outcomes are possible even if individual decision-makers are not prone to making dysfunctional choices on the basis of bias-inducing heuristics of the kind that provide the foundations for modern behavioural economics and behavioural finance.

For Frey and Gallus, the issue is not how the macro-economy works as a complex system but whether the susceptibility of individual human decision-makers to behavioural biases is restrained or amplified by the fact that their choices take place within evolving socio-economic systems. However, the Frey and Gallus research agenda potentially complements that of the Post Keynesians since individuals’ levels of spending may be affected by processes of social interaction and by the advertising strategies of firms, along with the behaviour of those in financial institutions who authorize loans. Consider, for example, the view of George Katona (1960), one of the pioneers of psychological economics, that shifts in confidence across the economy may derail the schemes of advertising strategists and macroeconomic policy designers: such shifts may reflect both individual reactions to changes in the ‘state of the news’ and crowd behaviour. Likewise, housing bubbles that are fuelled by investment in rental properties may take off as a result of the mutation of real estate-related decision rules as they are transmitted around social networks and processed by the minds of individuals (see Earl et al., 2007).

In sidestepping the Keynesian macroeconomic issues, Frey and Gallus leave us to recognize that aggregate economic outcomes do not depend merely on personal

modus operandi that individual consumers apply when choosing in markets. Such outcomes also depend on:

- a) the extent to which people employ inputs from the ‘market for preferences’ (Earl and Potts, 2004) – such as social rules and expertise from the wider community, and market institutions such as social media, online reviews, discussion boards and product comparison websites – as means of taking better decisions;
- b) the extent to which suppliers set out skilfully to exploit their customers’ decision-making limitations (for example, in ways considered by Hanson and Kysar, 1999a, 1999b); and
- c) the extent to which suppliers and those who design, approve and implement regulations are themselves operating subject to behavioural biases.

By outsourcing aspects of judgement and choice, real-world consumers might be able to overcome their inherited decision-making limitations. However, it should be noted that the generation of outcomes closer to those expected by rational choices theorists could depend upon phenomena that are rather alien to the rational choice approach. In particular, we should recognize the role of the altruistic human tendency to want to teach others about one’s experiences – known in anthropology as ‘natural pedagogy’ (Csibra and Gergely, 2011). Sharing experiences and decision rules is time-consuming but has obvious evolutionary advantages for humans as a species. It should also be noted that choosing in a social setting might instead magnify individuals’ shortcomings, and the wisdom of the experienced decision-maker may get ‘lost in translation’ in the process of being picked up by others (Earl et al., 2007) or may simply be out of date by the time it is acquired.

Similarly, on the supply side, organizations might enhance their performance by engaging in benchmarking and calling in consultants, but consultants could in some cases be working with dysfunctional heuristics – for example, ideas that are obsolete or based on managerial ‘fads’ that were informed by small, historically-specific samples. Social welfare might be substantially less than it could be, due to consumers taking poor decisions, being manipulated by suppliers and/or being presented with products that offer needlessly poor value for money because suppliers, too, are not making the most of the resources at their disposal. If consumers are slack in their shopping behaviour and do not aim high, they may fail to prompt search and creativity by suppliers and hence may only be able to

find products that meet their modest aspirations. On the other hand, missed opportunities will be rare if all players are well-advised and avoid succumbing to biases or are protected from their irrational tendencies by well-conceived regulations.

Note the complex distributional issues that arise here. Consumers may be getting poor deals from poorly-run or guileful firms but this may enable those working in such organizations to enjoy a more relaxing life at work than they otherwise might have done if consumers were as rational as they are traditionally assumed to be. But the benefits of weak competition in product markets might instead be enjoyed by the shareholders or managers rather than by workers lower down in the corporate hierarchies. Shareholders, managers and those who are managed have preference sets, too, and it is far from obvious what the distribution of benefits will be if the rules of the competitive game are changed.

What actually happens, overall, in particular contexts cannot be resolved a priori; empirical investigations are needed. A priori, the effects of one firm's devious use of, say, a novel way of advertising *might* be offset if its rivals follow suit (albeit with a deadweight loss of resources used in implementing such strategies), but possibly some firms, or sectors, will end up gaining from consumers if such strategies are widely used. Similarly, ingenuous attempts by firms to get a competitive edge by offering their customers a wider range of choice may have adverse welfare consequences if rivals emulate their strategies and turn that sector into a 'confusopoly'. If so, policies that seek to improve consumer welfare by making it easier for new players to enter might make matters even worse by compounding information overload and leading consumers to fall prey to suppliers that deviously offer supposedly cheap 'one-size-fits-all' products whose very simplicity makes them hard to compare with offers tailored carefully to particular market niches. However, perhaps market institutions will be created (such as product comparison websites, as in the case of mobile phone connection service plans) that will enable consumers to cope well with the challenge. In cases such as these, where conveniently deterministic predications are absent, policy-makers need to be informed by knowledge of what consumers are actually doing and how well, in some sense, they are coping.

The task of discovering what consumers ought to be choosing may itself be compounded by human shortcomings: in the case of mobile phone service contracts, for example, finding out how much more consumers are paying than

they really need to pay may prove problematic if they have a poor idea of their rates of service usage, thereby rendering their questionnaire responses useless. Matters are also complicated by the possibility that, if regulatory intervention is judged to be necessary to protect consumers, suppliers may then set out to find other, still-unregulated ways of exploiting sources of predictable irrationality, leading to further responses from their competitors (see Waterson, 2003).

Moreover, we should be mindful of the possibility that, even if consumers seem to be wasting their money in the face of current market conditions, this does not necessarily imply that they could actually avoid paying so much if somehow they became more 'rational' en masse. We can use comparative statics to consider what happens if an individual chooser discovers a better deal, because we can assume the change in the individual's behaviour will not affect relative prices and what firms offer. But we cannot make such an assumption when considering what will happen if consumers en masse try to switch to what they now realize is cheaper than what they have hitherto been buying. In the latter case, suppliers may need to rethink their strategies because the change in buyer behaviour significantly reduces their revenues, possibly even to the point of driving them into losses. If there is strong competition to make money out of imperfectly rational consumers via confusing prices discrimination strategies, profits in most cases may not be super-normal. Indeed, total spending by the confused population of consumers may not be that different from the revenue that the industry would need to extract to continue supplying the same population of consumers if they became more competent at choosing – unless suppliers found ways of reducing their operating costs, as they might be expected to do from the standpoint of the behavioural theory of the firm (see Cyert and March, 1963; Leibenstein, 1966). Without considerable supply-side knowledge, it may thus be very difficult to reach conclusions about consumer wellbeing even if at first sight it appears that individual consumers potentially could be doing a lot better, *ceteris paribus*, by changing their behaviour.

The scale of the research needed to evaluate what is going on and the impact of policy interventions in any particular context is thus daunting. It would be a much more complex undertaking than most behavioural economists have hitherto attempted. Unlike the behavioural economists of the 1960s (such as Cyert and March, 1963, and Leibenstein, 1966) who focused primarily on the behaviour of organizations and said little about end-consumers, modern behavioural economics



has so far focused essentially on departures from rational choice by end-consumers and has said little about organizations. Modern ‘behavioural industrial organization’ research thus considers how firms might be trying to exploit departures of consumers from ‘rational’ choices and what this implies for competition between firms. The study of shortcomings of decision-making processes in firms has been left to other business disciplines and modern students are rarely introduced to Leibenstein’s notion of *X*-inefficiency. This will have to change if economists are to venture into the research area identified by Frey and Gallus.

Economists will need to start recognizing that the great majority of transactions by value are between businesses (‘B2B’), not between businesses and consumers (‘B2C’), and that business decision-making may be just as biased as – or even more biased than – that of end-consumers, compared to conventional rational choice reference points. Public choice analysts similarly need to recognize that cognitive biases may affect the politicians who vote on legislative motions (or who, as ministers, authorize regulatory orders) that would change the environment faced by firms and consumers. For example, politicians may succumb to how lobbyists frame their messages, or may be prone to engage in hyperbolic discounting. But politicians can take advice, too, and may thereby reduce their susceptibility to the agenda of lobbyists. Furthermore, by taking advice from skilful ‘spin doctors’, they may be able to enhance how they frame what they say in ways designed to play on the heuristics and biases of voters.

If economists do not understand the decision-making interplay between consumers, organizations and politicians, they are poorly equipped to appraise arguments about policy and constitutional design. Without this sort of research, they will be unable to design lobbyist-resistant policy proposals or pronounce upon, say, whether Thaler and Sunstein’s (2008) liberal paternalism is necessary or, if it is indeed necessary and nudges are well conceived and implemented, whether it is enough, or whether a much more tightly regulated economic environment is necessary.

### **3 The infinite regress problem and Day versus Winter revisited**

The Frey and Gallus research agenda thus challenges those who would use ideology as the basis for choosing policy programmes. But in setting it out they have possibly laid the way for those who have an ideological commitment to the fully rational economic agent to continue preaching in their traditional manner. This could have consequences for modern behavioural economics that are similar to what happened to Herbert Simon's (1957) earlier satisficing-based approach to behavioural economics after Day (1967) argued that, by a process of iteration in the face of competitive pressure, satisficers would eventually end up discovering optimal solutions. This seemed to imply that evolutionary selection processes would leave a population of firms that maximized profits. The mainstream reaction to this was, in essence, to take the view that 'Well, it's OK to carry on assuming all choices involve constrained optimization'. By the time that Winter (1971) pointed out that Day's argument would only hold in a static, innovation-free environment, it was too late to revive the satisficing perspective.

Over the past two decades, psychology has been admitted into mainstream economics essentially as a means of shoring up its degenerating research programme by serving as a means of disposing of empirical anomalies identified in laboratory settings (Sent, 2004). Where necessary, a twisted form of optimizing behaviour (such as Prospect Theory, proposed by Kahneman and Tversky, 1979) has increasingly been allowed to replace the regular rational choice model of optimization as the mode of analysis. However, as is evident from Rabin and Thaler (2001), mainstream economists only allowed psychology in with great reluctance. Because of this, and the anchoring role of the traditional psychology-free vision of economics, we should expect psychology to be cast out if reasons for doing so can be found.

Whether or not it was their intention, Frey and Gallus have provided a means for rational choice theorists to try to continue applying 'as if' justifications for adhering to the traditional approach and for there to be a backlash against behavioural economics. Given what we know about the importance of core concepts in shaping emotional responses and resistance to change, we should not be surprised to see rational choice theorists starting to argue that the market mechanism will ensure that products are available – self-help books (such as

Belsky and Gilovich, 1999) and product review and comparison websites, or fee-for-service professional inputs into decisions, along with politicians who will try to win votes by promising to introduce regulatory policies – to enable consumers to avoid errors and prevent them from having their choices manipulated by firms that are unscrupulously applying laboratory research findings regarding human heuristics and biases.

More generally, we should expect free-market ideologues to argue that competitors will have incentives to expose attempts to exploit consumers or to emulate such strategies, thereby neutralizing them and leaving patterns of demand just as they would have been had there been no attempt to manipulate consumers. We might even see mainstream economists emphasizing that consumers, too, operate in a competitive environment (even though the mainstream models normally do not recognize this) and have the incentive of higher social status as a reason for trying to avoid succumbing to inherited tendencies to be predictably irrational: the more efficient consumers are as shoppers, the more they can display their affluence via their possession of items of conspicuous consumption.

Such a presumption about how biases observed in the laboratory will be corrected in the real world deserves to be challenged. As already noted, potential routes for limiting the consumer's chances of being mistaken or manipulated do not imply, *a priori*, that consumers *will* avoid wasting their resources or being duped. But there is a much more fundamental issue here: any attempt to argue that consumers will be able to make rational choices by outsourcing aspects of the choice process where their capabilities fall short of what is required for rational choice runs into a problem of infinite regress. That is to say, to improve one's choice, one has to make choices, and the latter choices thus could be far from rational owing to the presence of the in-built heuristics and biases, etc., that one is trying to overcome: for example, which comparison website should I trust? Which member of my social network should I view as the best source of knowledge for dealing with a particular kind of choice problem? Which reviews on Amazon.com should I trust when trying to buy books to improve my decision-making? Should I judge which reviews to take seriously on the basis of how many others found them useful? How deeply should I dig into Google search results when I am trying to find a potentially helpful website? Should I be using only Google as my search engine? Should I use the Internet as a medium of search in the context at hand?

In trying to address such puzzles en route to achieving better choices, consumers can only choose using their existing means for making judgements and ranking alternatives possibilities. Cognitive biases may prevent economic agents even from realizing that they could benefit from seeking assistance in the first place but, if they do start considering possible means of enhancing the quality of their decisions, their existing biases may have an impact on how they go about searching for solutions and how they appraise potential solutions. The stimuli being emitted by those who might be most able to help them are not guaranteed to arrest their attention or be construed as these parties had intended. For example, if Shackle's (1961) theory of attention is correct, hyped-up claims that seem somewhat implausible may crowd out more modest claims that seem perfectly possible.

In short, if aids to rational choice are to be selected rationally, one must be capable of rational choice in the first place, so there should be no presumption that real-world decision-makers will necessarily end up arming themselves with the appropriate means to avoid succumbing to inbuilt biases even if such a means is 'out there' in the market for preferences. This is the logical basis for the research area that Frey and Gallus have identified. It is a part of a more general infinite regress problem that rational choice theorists have ignored for at least half a century, one that challenges the logic of the core assumption that choice is an optimizing activity, even if we go as far as allowing that it is a potentially twisted activity of a predictability irrational kind.

Optimization is only possible within a closed problem space and only where the scale of the problem does not overload the computational capacity of the decision-maker. With open ended problems, attempts to get to the bottom of the problem of which ends to be pursuing, the prospective set of means for pursuing these ends and the prospective performance of any of these means in respect of the ends merely raise further problems of choice. To close such problems it is necessary to impose arbitrary cut-off rules (see Elster, 1984, p. 13). Moreover, in the face of uncertainty, as Shackle (1961) realized, there is the fundamental problem that we can only go as far as our imaginations will permit: we may imagine possibility *A* but then imagine it could be prevented from taking place by possibility *B* but that possibility *B* could be prevented by possibility *C* so long as possibility *D* does not take place, and so on. The 'and so on' aspect is why we are left with uncertainty and potential for surprise: our attention is finite and many

things that happen surprise us because we failed to imagine them or failed to imagine things that stopped other events from happening instead. At some point, it is actually *necessary* for time constraints and limits to the imagination to force a halt to the process of working out what to do, for open-ended problems have no other stopping point. This version of the infinite regress problem should have resulted in Simon's (1957) rule-based satisficing approach to choice supplanting the constrained optimization approach, but most mainstream economists seem unaware that the problem exists.

#### **4 Competitive pressure and economic efficiency**

Frey and Gallus are absolutely right to stress that those who have poor decision-making skills are likely to fare relatively badly when competing against those who are better at taking decisions. The former may find it harder to achieve career advancement and social standing, and may have trouble maintaining their wealth. Firms that are run by relatively incompetent entrepreneurs and managers may suffer diminishing market shares or be squeezed out of business altogether. However, it is important for economists not to presume that competitive pressures will necessarily remove *all* those who persist in behaving in ways that are at odds with the conventional microeconomic view of rationality. Such a presumption would provide an alternative way towards avoiding entering the daunting Frey and Gallus research area: one might use it to argue that the real world should not display long-term evidence of the anomalies observed in laboratory experiments. It might be argued that fools and their money will soon be parted. Sure, there will be some casualties along the way, but this does not imply we need liberal paternalism or regulatory intervention, and a safety net merely dulls incentives to learn how to choose well.

It is clear that Frey and Gallus are aware that Friedman (1953) used Alchian (1950) to argue that, given competitive selection processes, it is reasonable to theorize 'as if' decision-makers behave optimally. In mentioning both of these sources, they reinforce the anchoring of the mainstream view that highly competitive markets only allow the survival of those who, by one means or another, end up acting like rational optimizing agents. However, contrary to the impression given by Friedman, which Friedman's readers have helped impose as

an anchor on economic thinking over the past sixty years, Alchian himself did *not* argue that market processes will ensure that only the ‘fittest’ survive and hence that sooner or later markets become populated by those who, on the basis of knowledge or luck, happen to make optimal choices. Rather, as Kay (1995) has demonstrated, Alchian recognizes that in order to survive in a competitive environment, one must merely be fit enough relative to the opposition, given the capacity of that environment.

If market populations include both less-than-fully-rational suppliers and less-than-fully rational customers, we should not presume that competitive selection processes eliminate all players whose decision-making capabilities fall short of ‘best-practice’. Incompetent suppliers may survive if there are enough incompetent customers who fail to discover the better deals being offered by best-practice suppliers or who are lucky enough to avoid heading to suppliers who are very good at setting traps for the unwary. Less-than-fully-rational suppliers may also win sales from those who are applying best-practice decision rules but who are unlucky in a statistical sense – for example, in the results that their sampling procedures generate. The competent firms will supply to competent customers, and to lucky incompetent customers who chose to buy from them accidentally. Competent and lucky-but-incompetent customers may indeed find better deals than unlucky or unwary incompetent customers but this does not mean the latter necessarily will suffer financial and social ruin if they persist in their ways of operating. Rather, they may simply continue to operate with lower levels of consumption and social standing, just as incompetent firms may fail to become giant corporations but may at least bumble along serving incompetent/unlucky consumers. What matters is being able to find a niche or league that one is fit enough to inhabit.

It needs to be emphasized, however, that situations in which consumers are enduring poor quality products and services do not necessarily signify incompetence on the part of the consumers – such as choosing an expensive default option – or on the part of firms. Rather, it may simply reflect an oligopolistic situation, epitomized by the airline and banking sectors, where the competitive process involves experimentation with cost-cutting strategies through which services are degraded. In these cases it has not proved viable for any players to enter the market by offering the kind of superior and somewhat more expensive product that used to prevail. Such situations may be produced by a variety of

factors. First, there is the issue of minimum efficient scale for delivering the premium service: it may be that the size of the disgruntled niche who would happily pay the old price is simply not big enough because many of those who used to pay for such standards of service were previously losing consumer surplus and prefer to pay less for a lower standard of service. Secondly, any would-be entrant stands to make a loss on the sunk costs of setting up operations and marketing the premium service, as the incumbent suppliers might retaliate by adding premium services that they remain equipped to offer and can introduce with lower marketing cost than new entrants. A third potential issue is the presence of switching costs – though anyone picking up the Frey and Gallus research agenda would be wise to explore the possibility that customer perceptions of switching costs may be inflated via tendencies to engage in hyperbolic discounting and by the availability of horror stories told by friends about the reality of switching between providers.

The proportion of the population comprising the category of incompetent consumers attached in the long terms to incompetent and/or devious suppliers may of course be rather small. Such consumers would be isolated from those who could help them make better choices and/or be unduly prone to be trapped by their perceived switching costs. Social isolation may be particularly an issue in markets where there is a perceived ‘cringe factor’ and the product or service (for example, a traditional dating agency) is consumed secretively. But that does not mean their cases should not be of concern to policy-makers: the key issue underlying the Frey and Gallus research proposal concerns the costs of regulating markets in order to improve the wellbeing of potentially only a limited section of the population, a sector whose size it may be expensive to ascertain. With a product that is widely used, one can readily offer a justification for the research needed to identify the scale of the problem and explore potential solutions (for example, ‘This project will pay for itself in social terms even if it only results in this country’s mobile phone service users saving an average of just one dollar in just one year’). But with potentially small dysfunctional segments, a moral issue seems to warrant consideration: is it right to ignore a potentially small group of under-achievers if protecting them seems likely to involve a subsidy from the rest of the population?

The anchor of a mainstream equilibrium perspective is likely to result in rosy assessments of the power of social interaction and the competitive process to restrain dysfunctional human tendencies, for the equilibrium approach takes one’s

attention away from the passage of time and the coming and going of different cohorts of consumers as time passes. The mainstream rational choice/equilibrium/‘leave it to the market’ perspective has trouble accommodating the idea of individuals chronically missing opportunities to improve their wellbeing: given enough time, like the firms in Day’s (1967) paper, they should be able to learn the best way to choose and then live ‘happily ever after’. If new cohorts come along, they should learn rapidly how to avoid errors made by the earlier generations.

The mainstream ideology has more than a grain of truth to offer despite its emphasis on convergence to equilibrium, but it has limits in a Schumpeterian world where new products keep bringing new challenges – Winter’s (1971) critique of Day applies here as well. Moreover, despite the altruistic human tendency towards natural pedagogy, the market for preferences may fail to ensure that new cohorts readily discover the things that previous cohorts regretted doing and hence they may repeat their predecessors’ errors. The market for preferences will fail where consumers fail to engage with those who have the requisite knowledge, or who at least know how to put them on a sufficiently low-cost trail to those who have such knowledge, or where the consumer’s way of looking at the world is impervious to potentially helpful inputs from others. There may be natural pedagogy in abundance, but some people simply will not listen or, if they are prepared to listen, are not able to soak up the messages.

This is especially significant in the kinds of situation in which competitive pressures wipe out those who do not choose in the manner prescribed by rational choice theory. These situations are precisely those where the probabilistic philosophy that has underpinned so much behavioural research is of questionable applicability – namely, decisions that involve what Shackle (1961) called ‘crucial experiments’. These are choices in which the chooser puts at risk the great part of his or her wealth in pursuit of a particular gain. For the individual embarking on a crucial experiment, the outcome is a significant one-off event and the choice is something they will either be in no position to repeat (if it goes badly) or may never need to repeat (if it goes well). In episodes of financial instability of the kind emphasized in the work of Minsky (1975), those who suffer disastrous losses of their life saving typically do not do so on the basis of their own assessments of the risks associated with the assets in which their investments are made; rather, they unwittingly delegate their choices to unscrupulous financial advisors.



When people suffer catastrophic losses in this kind of way, others ought to learn to be more cautious in their choices of financial advice, but the patterns of behaviour get repeated, with new cohorts of risk-takers, in the manner chronicled across the centuries in Kindleberger and Aliber (2011). In other words, those who research the aggregative consequences of anomalous choices need to keep in minds that, in the real-world, the population of agents is continually being refreshed: as lay observers often ruefully comment about instances of poor choices and/or gullibility, ‘There’s one born every minute’.

It needs also to be noticed that those who fail the test of a competitive market do not necessarily vanish without having an enduring impact. Wildly innovative projects that spectacularly contradict their proponents’ optimistic financial expectations may nonetheless eventually be made to work in engineering terms. As a result, even if those who staked their wealth and/or reputations on such projects are indeed selected out by market processes, the fossils of their decisions sometimes continue to be employed for years after: sunk cost bias may result in money being poured into grand designs that never fully recoup their fixed costs, but if the projects are successfully completed in a technical sense, they may continue to be operated so long as their revenues cover the subsequent variable costs and operational overheads.

From an evolutionary standpoint, such projects, born and nurtured on the basis of so-called anomalies and biases, may play a socially beneficial role by shifting the production possibility frontier or, at least, contributing to knowledge of where the limits to possibility lie (Potts, 2004). The lesson here is that we must be careful not to take a static view of rationality and efficiency when assessing the aggregate effects of anomalies. From an evolutionary economics perspective, choice is not about finding the best allocation of a given set of resources with statistically known outcomes for each option. Rather, it can be a means for generating new knowledge and opening up new possibilities. From this standpoint, heuristics that rational choice theorists see as causes of anomalies may actually be every bit as functional as those of a ‘fast and frugal kind’ that are emphasized in the writing of Winter (1964) and Gigerenzer et al. (1999). For example, optimism bias may be necessary for dynamic efficiency. Sunk-cost bias may also be necessary for human progress, since tenacity on the whole is a desirable attribute if one is trying something new and difficult.

## **5 Anchoring to the wrong reference point**

Like the economic agents whose choices they study, academic economists are mere mortals. They need to operate with humility (Smith, 2008, p. 2), for they are potentially subject to using dysfunctional heuristics and prone not always to be open to suggestions (for example, from journal referees) that they could do better by acting differently. If the processes that Frey and Gallus have identified as in need of investigation are to enhance the efficiency of the market for economic ideas, the discipline of economics will need to operate in a pluralistic manner and be open to external criticism. For if academic economists draw their scholarly inspiration from a closed set of sources and only appoint as colleagues people similar to themselves, they are at great risk of being blind to problems with their ways of looking at the world.

If Frey and Gallus had sought to take account of the reflexive significance of their arguments, they might have produced a more pluralistic case for the research area that they have identified. A pluralistic case for studying the significant of potentially dysfunctional individual human tendencies in a world of social interaction and creative competition would not use the default position of most economists – the ‘as if’ world of rational choice by fully-informed, unbiased decision-makers who act like expert statisticians – as its only point of reference as regards the quality of choices that consumers might make. Frey and Gallus could have written a longer paper in which they considered other perspectives for judging the quality of choices, and the implications of these other perspectives for the research that they rightly are urging economists to undertake. I am not suggesting that Frey and Gallus would object to the consideration of alternative reference points such as, say, Simon’s (1976) ‘procedural rationality’ or Smith’s (2008) ‘ecological rationality’. But I think it is unfortunate that they anchored their paper only to the default option that came readily to mind via the ‘availability’ bias, namely, rational choice theory. In the process, they granted that viewpoint a status that logically and empirically it simply does not deserve.

Adherents to the default position will of course claim that any model involves some kind of simplification and that they are merely engaging in ‘as if’ modelling and that the evidence (which could include evidence gleaned by those who operate in the research area identified by Frey and Gallus) will determine whether or not their approach is ultimately viewed as the way ahead in analysing economic

behaviour. Now, of course, the ‘as if’ justification for the rational choice approach to economics does have a reasonable starting point, one that is commonly taught via cartographical analogies: a one-to-one map is of no use to anybody; we do indeed have to work with partial models. But this does not provide a *carte blanche* basis for making whatever assumptions one fancies making and for producing models that display an autistic disengagement from the world ‘out there’.

The rational choice theorist’s way of using the ‘as if’ justification for building models that opt to make patently false assumptions is the equivalent of a cartographer building a map of the London Underground that has line drawn between stations depicting direct routes that do not actually exist, purely because these lines are easy to draw. The famous London Underground map that Henry Beck originally designed is indeed false in terms of matters of scale, in order to be easy to read when planning a journey, but its role is primarily to depict what is known about which routes are possible, rather than to indicate the length of a route accurately. There is, analogously, a profound difference between:

- a) building models based on assumptions that conflict with knowledge of humans cognitive capacities and modes of operation, in order to ensure that a particular cherished way of modelling can be employed (as in rational choice theory), and
- b) building models that involve earnest attempts to take account of what is known (as in Prospect Theory or ‘fast and frugal’ models of choice as a process of coping with complexity) whilst having to consign some factors (that rational choice modellers would similarly consign) to the ‘other things equal’ basket, or otherwise treating them ‘as if’ they are of no significance, in order to prevent the analysis from becoming too complicated to shed any light on the problem at hand.

Many behavioural economists may indeed have been overly willing to operate ‘as if’ laboratory findings automatically translated into behaviour outside of the laboratory. This may be in part due to them having been trained primarily in terms of rational choice theory, with no reference to the institutional and evolutionary approaches that assign great importance to the social transmission of decision rules. They may also have seen behavioural economics being tacked on as a modified ‘as if’ approach (see further, Berg and Gigerenzer, 2010) to

accommodate, via a twisted form of optimization, external allegations that the rational choice model is empirically lacking.

With no a priori basis for assuming that humans' inherited shortcomings would be eliminated in everyday choice settings, it is surely wiser to begin by acknowledge these limitations, for this is more conducive to considering processes that might offset them, and hence for deriving policy implications. For example, the Earl and Potts (2004) analysis of the market for preferences took its authors from a behavioural starting point to a more institutional analysis: it began with the problem of bounded rationality, combined with the infrequent use that consumers make of many markets, which results in differences in what people know about good ways of choosing a particular product at a particular point in time. The consumer's problem is to find a route from problem-recognition to an effective solution, for it is not possible just to go straight there in the manner of a rational choice model. Those who choose to start by assuming that there are no such impediments to rational choice are likely to end up failing, as rational choice theorists generally have failed, to consider the role of market institutions in helping people to make better choices. Moreover, the empirical work that might force the mainstream to concede the limitations of their approach is unlikely to get done, or have much impact, if it can only be placed in lower-status, less-accessible journals.

There seems to be a presumption in the Frey and Gallus analysis that economists can identify the choices that economic agents should be making in particular contexts. If consumers will reveal their objective functions, the economist can use the rational agent model to discover, say, how much money they are wasting by choosing as they do, such as by sticking with a default option. But this presumes that it would indeed be possible to pin down the consumer's underlying utility function (which may not be the case, given the limitations of what can be asked of research subjects before they start suffering from respondent fatigue), and that the choice set is closed and static (which may not be the case if the market is one that operates in a Schumpeterian manner). In other words, the kind of research that Frey and Gallus advocate may prove problematic in some markets because, in these contexts, optimal choices are elusive to economists, too. If economists are to make pronouncements about the quality of choices that people are making in such markets, they may need a reference point other than that of standard rational choice theory.

If people are beset by the kinds of heuristics-driven biases that have been identified in psychological experiments, then it could turn out to be most unwise to view economic agents ‘as if’ they have given preference orderings. Rather, it might be wiser to devote attention to how people evolve through time as individuals with complex rule systems for coping with life’s challenges. If these systems produce loss aversion and the endowment effect, a reversal of a change in relative prices will not produce a reversal of behaviour (Kahneman, 2011, ch. 27). One way of responding to this is, of course, simply to proceed ‘as if’ a particular preference ordering existed only at the moment of each choice unless, via the sort of processes Frey and Gallus are asking us to study, people learn how not to be prone to loss aversion. But this is likely to be a distraction from potential implications of the consumer’s willingness to make trade-offs being path-dependent. More fundamentally, we should note Ariely’s (2009) discussion of anchoring and imprinting processes, Hodgson’s (2003) analysis of the social processes by which habits are developed, and the personal constructs approach to psychology (founded by Kelly, 1955) that suggests people in everyday life should be viewed as if they are scientists, developing hypotheses and running experiments that are aimed at developing their abilities to predict and control events. Taken together, these contributions imply a serious challenge to the idea that economic actors make their (possibly ‘biased’) choices in terms of existing preference systems rather than merely doing what they do because they have latched on to particular initial ways of operating and then explored and refined them in a strongly path-dependent manner.

The fact that economists are able to generate ‘revealed preferences’ and ‘contingent valuations’ should not lead us to infer that these are determined by preference orderings that people ‘have’ in the kind of way they are viewed ‘as if’ they have them in rational choice theory. Rather, the process of ‘making up one’s mind’ about what to do may entail literally ‘making up one’s mind’ in the sense that the rankings and valuations that emerge from such studies may be what the subjects in these studies are *constructing* on the spot by applying rules – including the heuristics on which modern behavioural economists focus. If so, responses to changing price incentives are reflections of the lives consumers have so far had, that have resulted in particular anchors and rules being picked up or constructed. The rules may be evolving rather slowly but be prone to generate very different outputs depending on the context at hand. Hence it might be wise to try to uncover

the rules that drive choices, including the rules that allow for changes of rules, rather than to take any revelation of willingness to make trade-offs in a particular setting ‘as if’ it is an output of an optimization process involving a given set of preferences and constraints. (And note that constraints themselves are mental constructs, subject to being shaped by heuristics and biases.) If consumers were to wake up tomorrow suffering from mass amnesia about what they had previously been willing to purchase, then, as Ariely (2009, ch. 2) argues (and as had been recognized much earlier by Townshend, 1937), they would have no idea what trade-offs they should be making: rather than being grounded in preferences, value may be simply ‘up in the air’, held up by its own bootstraps.

## **6 Conclusion**

In setting out their new research field, Frey and Gallus have implicitly presented economists with a very challenging task. But they have not explicitly presented it to be as challenging as it is. As a result, there is the risk that those with ideological commitments to rational choice theory and so-called ‘free markets’ will use the core idea as a basis for justifying keeping psychology out of economics and not bothering to do the sort of research urged by Frey and Gallus. This paper has attempted to forestall such a reaction by showing why it would be wrong to argue that the working of the market for preferences and competition between firms mean there is no need to worry in the long run about humans having inherited psychological processes that make them ‘predictably irrational’.

Mainstream economists need to embrace the research area that Frey and Gallus have identified. But they, and most modern behavioural economists, including Frey and Gallus, need also to consider how the heuristics and biases literature is relevant for understanding the behaviour of economists. If they do so, they may have a better chance of realizing that the traditional rational economic agent perspective should not be their only point of reference when judging the quality of choices that are being made in any context. Just as consumers may achieve better outcomes by calling upon the ways of looking at the world that others have developed, economists likewise may serve society better if they are open to inputs from other disciplines and from other approaches to economics.

If economists cease regarding their conventional reference point as the only one to use, they will still need to undertake the kinds of empirical studies entailed in the Frey and Gallus research agenda. Consumers who lack any underlying preference ordering of the kind traditionally assumed, and whose behaviour is instead based on habits and rules, can end up being fleeced by unscrupulous suppliers or making other choices that are seriously dysfunctional in social or personal terms. Even if only a small proportion of the population turns out to be badly afflicted by dysfunctional heuristics, their behaviour may still be socially significant: for example, the effectiveness of measles and whooping cough vaccination programmes may be jeopardized by a small minority who overweight the probability of their children suffering adverse side effects of the vaccine and hence choose not to immunize them. But given that market regulations and government edicts can have adverse consequences, too, it is also important to know where the market for preferences and competition between suppliers work well to counteract human fallibility.

If mainstream economists can start to become more pluralistic and cease allowing their work to be anchored by the rational choice view (with its core positive heuristic exhorting them to ‘model all acts of choice as if they involve constrained optimization in terms of given preferences’), they will need other ways of assessing the quality of decision-making in the real world. To this end, the alternative views of rationality suggested by Simon and Smith warrant serious discussion. There are probably other contenders. And, in considering these alternative reference points, economists would be wise not to forget the logical barriers to optimization and to try to be alert to instances in which heuristics that seem conducive to anomalous behaviour in terms of the orthodox reference point may have positive evolutionary value.

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## References

- Alchian, A. (1950). Uncertainty, evolution, and economic theory. *Journal of Political Economy*, 58(3, June), 211–21.  
<http://www.caps.am/materials/diaspora%20writings/Alchian%20on%20uncertainty%20and%20development.pdf>
- Ariely, D. (2009). *Predictably irrational: The hidden forces that shape our decisions*. New York: HarperCollins.
- Belsky, G., & Gilovich, T. (1999). *Why smart people make big money mistakes and how to avoid them*. New York: Simon and Schuster.
- Berg, N., & Gigerenzer, G. (2010). As-if behavioral economics: Neoclassical economics in disguise? *History of Economic Ideas*, 18(1), 133–166.  
[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1677168](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1677168)
- Chick, V. (1983). *Macroeconomics after Keynes: A reconsideration of the general theory*. Oxford: Phillip Allan.
- Csibra, G., & Gergely, G. (2011). Natural pedagogy as an evolutionary adaptation, *Philosophical Transactions of the Royal Society (B)*, 366, 1149–1157.  
<http://rstb.royalsocietypublishing.org/content/366/1567/1149>
- Cyert, R. M., & March, J. G. (1963). *A behavioral theory of the firm*. Englewood Cliffs, NJ: Prentice-Hall.
- Day, R. H. (1967). Profits, learning and the convergence of satisficing to marginalism. *Quarterly Journal of Economics*, 81(2), 302–11.  
<http://qje.oxfordjournals.org/content/81/2/302.full.pdf>
- Earl, P. E., Peng, T.-C., & Potts, J. (2007). Decision rule cascades and the dynamics of speculative bubbles. *Journal of Economic Psychology*, 18(3, June), 351–64.  
<https://ideas.repec.org/a/eee/joepsy/v28y2007i3p351-364.html>
- Earl, P. E., & Potts, J. (2004). The market for preferences. *Cambridge Journal of Economics*, 28(4), 619–33.  
[http://econpapers.repec.org/article/oupcombje/v\\_3a28\\_3ay\\_3a2004\\_3ai\\_3a4\\_3ap\\_3a619-633.htm](http://econpapers.repec.org/article/oupcombje/v_3a28_3ay_3a2004_3ai_3a4_3ap_3a619-633.htm)
- Elster, J. (1984). *Ulysses and the sirens: Studies in rationality and irrationality* (revised edition). New York: Cambridge University Press; Paris: Editions de la Maison des Sciences de l'Homme.
- Frey, B. S., & Gallus, J. (2014). Aggregate effects of behavioral anomalies: A new research area. *Economics: The Open-Access, Open-Assessment E-Journal*, 8 (Special Issue on Economics, Psychology and Choice Theory), 1–15.  
<http://dx.doi.org/10.5018/economics-ejournal.ja.2014-18>



- Friedman, M. (1953). The methodology of positive economics. In M. Friedman (Ed.), *Essays in positive economics* (pp. 3–43). Chicago, IL: University of Chicago Press.  
<http://isites.harvard.edu/fs/docs/icb.topic1134148.files/April%203%20Readings/Friedman%20-%20The%20Methodology%20of%20Positive%20Economics.pdf>
- Gigerenzer, G., Todd, P. M., & the ABC Research Group. (1999). *Simple heuristics that make us smart*. New York: Oxford University Press.
- Hanson, J. D., & Kysar, D. A. (1999a). Taking behavioralism seriously: The problem of market manipulation. *New York University Law Review*, 74(3), 630–749.  
<http://www.nyulawreview.org/sites/default/files/pdf/NYULawReview-74-3-Hanson-Kysar.pdf>
- Hanson, J. D., & Kysar, D. A. (1999b). Taking behavioralism seriously: Some evidence of market manipulation. *Harvard Law Review*, 112(7 (May)), 1420–572.  
[http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1286703](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1286703)
- Hodgson, G. M. (2003). The hidden persuaders: Institutions and individuals in economic theory. *Cambridge Journal of Economics*, 27(2), 159–75.  
[http://econpapers.repec.org/article/oupcombje/v\\_3a27\\_3ay\\_3a2003\\_3ai\\_3a2\\_3ap\\_3a159-175.htm](http://econpapers.repec.org/article/oupcombje/v_3a27_3ay_3a2003_3ai_3a2_3ap_3a159-175.htm)
- Jespersen, J. (2009). *Macroeconomic methodology: A post-Keynesian perspective*. Cheltenham: Edward Elgar.
- Kahneman, D. (2011). *Thinking, fast and slow*. New York, NY: Farrar, Strauss and Giroux.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica*, 47(2), 263–91. <https://ideas.repec.org/a/ecm/emetrp/v47y1979i2p263-91.html>
- Katona, G. A. (1960). *The Powerful Consumer: Psychological studies of the American economy*. New York: McGraw-Hill.
- Kay, N. M. (1995). Alchian and 'the Alchian thesis'. *Journal of Economic Methodology*, 2(2), 281–286. <https://ideas.repec.org/a/taf/jecmet/v2y1995i2p281-286.html>
- Kelly, G. A. (1955). *The psychology of personal constructs*. New York, NY: W. W. Norton.
- Keynes, J. M. (1936). *The general theory of employment, interest and money*. London, Macmillan.
- Kindleberger, C. P. & Aliber, R. Z. (2011). *Manias, panics and crashes: A history of financial crises* (6th ed.). Basingstoke: Palgrave.
- Leibenstein, H. (1966). Allocative efficiency vs. 'X-efficiency'. *American Economic Review*, 56(3, June), 392–414. <http://www.jstor.org/stable/1823775>

- Minsky, H. P. (1975). *John Maynard Keynes*. New York: Columbia University Press.
- Potts, J. (2004). Liberty bubbles. *Policy*, 20(3), 15–21.
- Rabin, M., & Thaler, R. H. (2001). Anomalies: Risk aversion. *Journal of Economic Perspectives*, 15(1), 219–32. <https://ideas.repec.org/a/aea/jecper/v15y2001i1p219-232.html>
- Sent, E.-M. (2004). Behavioral economics: How psychology made its (limited) way back into economics. *History of Political Economy*, 36(4), 735–760. <https://ideas.repec.org/a/hop/hopeec/v36y2004i4p735-760.html>
- Shackle, G. L. S. (1961). *Decision, order and time in human affairs*. Cambridge: Cambridge University Press.
- Simon, H. A. (1957). *Models of man*. New York, NY: Wiley.
- Simon, H. A. (1976). From substantive to procedural rationality. In S. J. Latsis (Ed.), *Method and appraisal in economics* (pp. 129–148). Cambridge: Cambridge University Press.
- Smith, V. L. (2008). *Rationality in economics: Constructivist and ecological forms*. Cambridge: Cambridge University Press.
- Thaler, R. H. (1980). Toward a positive theory of consumer choice. *Journal of Economic Behavior & Organization*, 1(1), 39–60. <https://ideas.repec.org/a/eee/jeborg/v1y1980i1p39-60.html>
- Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth and happiness*. New Haven, CT: Yale University Press.
- Townshend, H. (1937). Liquidity premium and the theory of value. *Economic Journal*, 47(185, March), 157–169. [www.jstor.org/stable/2225313](http://www.jstor.org/stable/2225313)
- Waterson, M. (2003). The role of consumers in competition and competition policy. *International Journal of Industrial Organization*, 32(2, February), 129–150. [http://econpapers.repec.org/article/eeeindorg/v\\_3a21\\_3ay\\_3a2003\\_3ai\\_3a2\\_3ap\\_3a129-150.htm](http://econpapers.repec.org/article/eeeindorg/v_3a21_3ay_3a2003_3ai_3a2_3ap_3a129-150.htm)
- Winter, S. G. (1964). Economic ‘natural selection’ and the theory of the firm. *Yale Economic Essays*, 4, 225–272. <https://ideas.repec.org/h/ssa/lemchs/winter-1964.html>
- Winter, S. G. (1971). Satisficing, selection and the innovating remnant. *Quarterly Journal of Economics*, 85(2), 237–261. [http://econpapers.repec.org/article/tpqrjecon/v\\_3a85\\_3ay\\_3a1971\\_3ai\\_3a2\\_3ap\\_3a237-61.htm](http://econpapers.repec.org/article/tpqrjecon/v_3a85_3ay_3a1971_3ai_3a2_3ap_3a237-61.htm)

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